information paper

intergovernmental oceanographic commission

15

UNESCO/NS/IOC/INF - 102

FOREWORD

During the Fourth Session of the Intergovernmental Oceanographic Commission, which took place in Paris from 3 to 12 November 1965, the ad hoc Co-ordination Group for the IIOE met to discuss the preparation of the IIOE Atlases. Following the recommendations of this ad hoc Group, the Commission approved the proposals presented for Atlases by Dr.C. Ramage (Meteorology of the Indian Ocean), Dr. K. Wyrtki (Physical and Chemical Oceanography of the Indian Ocean) Dr. G.B.Udintsev (Geology and Geophysics of the Indian Ocean) and Dr. J. Krey (Chemical Biology of the Indian Ocean). The authors of these proposals were officially appointed as Chairmen of the respective Editorial Boards established by the Commission. Full information on the Commission's work in connexion with the IIOE will be given in the next issue of this Information Paper.

Even now, this and the following issues of the Information Paper will be printed after the official close of the expedition. The IIOE symbol - two arrows on a background of sea and sky - which so many of our readers have become accustomed to see on the pennants of their research ships, will now reappear on the volumes of data reports and scientific publications.

unesco

Unesco Office of Oceanography
Paris, December 1965

WS/1265.139 - AVS

IIOE INFORMATION PAPER No.15

1. Exchange of Information and Data

1.1 Cruise Reports

Australia

Summaries of cruises of H.M.A.S. DIAMANTINA Dm 1/65 and Dm 2/65 have been received from the Australian National Coordinator; an extract from them is reproduced below and the station maps are attached in Annex I of this issue.

H.M.A.S. DIAMANTINA Cruise Dm 1/65, April 17 - June 4, 1965

Scientific Personnel

D. Rochford (Cruise Leader)
F. Davies
N. Dyson
J. Klye
J. Prothero
B. Scott

Itinerary

17.4.65	0900	Departed Fremantle
24.4.65	0900	Arrived Cocos I.
26.4.65	0800	Departed Cocos I.
3.5.65	0900	Arrived Colombo
6.5.65	0800	Departed Colombo
18.5.65	0800	Arrived Port Louis
23.5.65	1000	Departed Port Louis
4.6.65	0900	Arrived Fremantle

Programme

Stations

96 stations Dml/1/65 - Dml/96/65

bathythermograms at 92 stations
subsurface hydrology at 90 stations
primary production at 48 stations
pigments at 48 stations
simulated in situ
primary production at 6 stations
zooplankton at 20 stations
micronekton at 4 stations

(plan of this cruise appears in No. 14 of this Information Paper)

H.M.A.S. DIAMANTINA Cruise Dm 2/65, July 17 - 29, 1965

Scientific Personnel

R. G. Chittleborough
N. Dyson
J. Prothero
L. Thomas

Itinerary

17.7.65	0915	Departed Fremantle
29.7.65	0900	Arrived Fremantle

Programme

Stations

43 stations Dm2/97/65-Dm2/139/65

subsurface hydrology at 34 stations
midwater trawling at 16 stations
zooplankton at 15 stations

(plan of this cruise appears in paragraph 1.2 of this issue)

Pakistan

PNS ZULFIQUAR Cruise Zulun 1, November 9 - 19, 1965

The cruise report of the above has been published with the IIOE emblem on the cover page, although the cruise was not originally included in the "List of IIOE Cruises" (IIOE Inf. Pap. No. 8, July 1964).

The Cruise was undertaken as part of the Regional Shipboard Training Course for Oceanography in Pakistan sponsored by Unesco. The oceanographic party consisted of two instructors from abroad, fourteen Pakistani trainees and seven foreign trainees. The programme was developed as an exploratory investigation of the water on the continental shelf during the calm period following the south-west monsoon.

Twenty-three stations were occupied; one among them was an anchored station where twenty-four hour continuous observation was carried out (see Annex I). At each station observations were taken in the following order:

1. bathythermograph
2. hydrographic cast
3. secchi disk
4. bottom grab
5. corer (gravity corer)
6. vertical haul with phytoplankton net (200m to surface)
7. vertical haul with IOS-net (200m to surface).

Continuous echo sounding was carried out almost for entire tracks, and, at the anchored station, bathythermograph casts, current measurements, plankton sampling (phytoplankton and zooplankton) and bottom sampling were undertaken.

Salinity with an inductive salinometer, dissolved oxygen contents by Winkter method and inorganic phosphate with a spectrophotometer were measured on board, while studies for plankton and bottom samples were made at a shore laboratory as part of the training programme.

The report contains a short summary of results, charts showing horizontal and vertical distribution of temperature, salinity, oxygen, plankton and bottom sediments, as well as tables of results.

MACHERA Cruise November 30 - December 3, 1964

The above report also contains a short report on surveys carried out on board the research trawler MACHERA of the Fisheries Department of Pakistan. Eight stations were occupied in an area to the south and west of Karachi (see Annex I). Fish and shrimp trawling were carried out, in addition to observations on the micro-benthic fauna (polychaetons, annelids, gammarid, amphipods, mollusca and miscellaneous crustacea), zooplankton and dissolved oxygen at the sea bottom, 3m above the bottom, and at surface. Salinity and water temperature were also measured. Tables of results also appear in the report.

U.S.A.

ANTON BRUUN

The final cruise report of the r.v. ANTON BRUUN, Cruise 6, May 15 - July 13, 1964, was published in July 1965; the content of the report is similar to that of the previous cruises (IIOE Inf. Pap. No. 11).

ATLANTIS II Cruise 15, January 21 - November , 1965

The U.S. National Coordinator for IIOE has forwarded a copy of "A Cursory Cruise Report, ATLANTIS II, Cruise 15", which he had received from Dr. A. R. Miller of the Woods Hole Oceanographic Institution. The following is an extract from the report, and the partial cruise track is reproduced in Annex I.

> This brief report is intended only for informational purposes and cursory examination because, at the time of writing, substantial amounts of data yet to be reported remain aboard the ship. Atlantis II has just finished the Indian Ocean phase of her cruise, having completed a section from Africa to Australia and from Australia to the Philippines. These data are not available until the ship reaches her next port-of-call.

The following table lists the number of hydrographic stations made to Durban, South Africa, the number of standard-type water samples taken, and the number of casts made for this purpose. A station list is appended.

	Stas.	No.	Acc.	Sample	Acc.	Cast	Acc.
Woods Hole-Ceuta	514	1	1	9	9	1	1
Ceuta-Port Said	515-521	7	8	107	116	11	12
	WB8-WB19	12		24		12	
Suez Canal	522-536	15	35	45	185	15	39
Suez-Aden	537-545	9	44	134	319	15	54
Aden-Bombay	546-584	39	83	789	1108	59	113
Bombay-Colombo	585-620	36	119	719	1827	61	174
Colombo-Mombasa	621-672	52	171	1042	2869	76	250
Mombasa-Nossi Bé	673-680	8	179	170	3039	15	265
Nossi Bé-Seychelles	681-711	31	210	610	3649	46	311
Seychelles-Mauritius	712-731	20	230	423	4072	33	344
Mauritius-Durban	732-760	29	259	562	4634	41	385

Other water samples were taken for primary production at every station and, where possible, samples of bottom water were obtained. In special areas water samples were collected with a new device for hydro carbon analysis. Whenever it was feasible rain water samples were also collected and analysed for sodium content. A track chart is appended showing the locations of the hydrographic stations. Further a continuing programme of collection throughout the cruise was initiated for surface samples and samples at keel depth, five meters, and analysed for salinity.

Water samples were analysed aboard ship for salinity, oxygen, organic phosphorus, total phosphorus, nitrite, nitrate, silicate contents and acidity. Samples were stored for deuterium and oxygen isotope analysis and for trace chemistry. At several levels about the ship salt nuclei in the air were collected by impingement methods.

In connection with the nutrient programme, plankton samples were collected and stored for analysis of the organic carbon, nitrogen, and phosphorus content. In the southern Indian Ocean special plankton tows were made with a tin tow net in cooperation with the East African Marine Fisheries Research Organisation. The Indian Ocean standard net was not used. A bird observation programme had enthusiastic support, with several qualified personnel taking part. A small party was put ashore on Coco Island in the Cargados Carajos Shoals to observe the habitat of various types of sea birds.

Geological samples and cores from the sea floor were taken throughout the Red Sea and Arabian Sea. At a rendezvous with the German r.v. METEOR off the coast of Oman, special free-fall corers were transferred, along with one ATLANTIS II scientist. The excellent cooperation of the METEOR permitted the taking of more coring samples from the Persian Gulf and the Arabian Coast. Piston cores, dredge samples, free-fall cores and pilot cores were taken in conjunction with the hydrographic water sampling. With the aid of an echo sounding pinger attached to the hydrographic wire and the hydrographic weight replaced by a pilot corer, cores and bottom water samples are being taken on a routine basis. The cores are being stored frozen. It is of interest to note that cores and samples dredged from the shallow Bitter Lake have shown that halides are insulated from the water by a layer of gypsum. It is also interesting that one piston core 200 miles off the Somali Coast in 2000 fathoms was composed of shell, pebbles, and corals.

The meteorological programme was greatly enhanced with the cooperation of the U.S. Weather Bureau. Radio sonde observations were taken at specified intervals, along with standard marine surface observations. The Portman Meteorological suit was in continual observational status. To aid in the Island Station, programme calls were made at Mombasa, Comores Islands, Diego Garcia, Seychelles, Rodriquez, Mauritius, and Madagascar to service and repair meteorological and other types of instruments. Humidity gradients, total sky cloud coverage, solar and net radiation, precipitation, evaporation, salt nuclei observations were made continually. Wave observations, both visual and automatic, were taken at each station.

Bathythermograph lowerings were made at each station and underway on an hourly basis. The magnetometer was streamed whenever the ship was underway. A salt-bridge GEK was also streamed whenever it was practicable. Because most of the Arabian Sea was in the magnetic equator, the GEK was not used in the area. A towed weighted fish was used occasionally with streamlined fairings attached to the cable. The fairings permitted the weight to be towed at standard speed at depths in excess of 100 meters. Temperature and depth were sensed from the fish and the information recorded aboard ship. On the passage through the Suez Canal, a plastic tube open at the weight's depth enabled sampling of the water near the bottom of the Canal.

A general-purpose computer and an automatic data acquisition system have been in almost continual use throughout the cruise. Programmes for the computer were and are being developed. Its primary use at present is the interpretation and computation of messages from the Satellite Radio Navigation system. It had been planned for the analysis of hydrographic data and the computation of wave power spectra.

Gradually programmes for the latter purposes are coming into being. For instance, data from the expendable bathythermograph are fed into the computer while the BT is dropping. This information can be displayed, stored, and edited. The data acquisition system sequentially reads, digitises, and stores information from various sensors throughout the ship. During a cycle it is possible to include manual input of information, such as depth from the echo sounder. A system of bird-logging in coded form is presently being devised for storage and collation with other data.

ATLANTIS II was able to coordinate its work with at least four research vessels of other countries. After several radio contacts with the METEOR from Germany, a rendezvous was arranged off the Coast of Oman, where the two ships and their personnel exchanged visits. A meeting was arranged with the Indian r.v. KRISHNA near Ceylon, but no contact was made. In Mombasa, personnel from the East African Fisheries r.v. MANEHINE came aboard ATLANTIS II. Near Mauritius, radio contact was made with the Australian r.v. DIAMANTINA. Comparisons of mutual station data showed good agreement. At every port contacts were made with the scientific communities and research establishments. Guest scientists aboard ATLANTIS II made active and important contributions to the programme. A partial list of foreign scientists participating in the research programme of ATLANTIS II follows:

Don Natalio Cano		
	Instituto Espanol de Oceanografia	**Spain**
Drs. Selim and Mary Morcos		
	University of Alexandria	**Egypt**
Dr. Ahmed Ammar		
	Suez Canal Authority	**Egypt**
M. Lucien Gamberoni		
	Institute d'Oceanographie Physique	**France**
Mr. Georg Losse		
	East African Marine Fisheries Research Organisation	**Zanzibar**
Mr. R. D. Bang		
	Naval Oceanographic Research Unit	**South Africa**
Dr. K. N. Fedorov		
	Intergovernmental Oceanographic Commission (UNESCO)	**USSR**

Chief Scientists of Cruise 15

ATLANTIS II

A. R. Miller	Woods Hole (Jan. 21)	to Nossi Bé (May 9)
J. Stanbrough	Nossi Bé (May 10)	to Durban (June 16)
N. Fofonoff	Durban (June 17)	to Fremantle (July 16)
H. Stommel	Fremantle (July 17)	to Kobe (Aug.)
L. V. Worthington	Kobe (Aug.)	to Tokyo (Sept.)
C. O'D Iselin	Tokyo (Sept.)	to San Diego (Oct.)
A. R. Miller	San Diego (Oct.)	to Woods Hole (Nov.)

1.2. Cruise Plans.

Australia H.M.A.S. DIAMANTINA Cruise 2/65, July 17 - July 31, 1965

The plan of H.M.A.S. DIAMANTINA Cruise 2/65 has been received from the Australian National Coordinator; the following is an abstract of the plan and the schedule track chart is reproduced in Annex II.

Area

As shown on accompanying chart.
From Fremantle a series of traverses between latitudes 24° and 34°S and to Fremantle.

Objectives

To study the distribution and growth of the larval stages of the Western Australian crayfish (Panulirus cygnus).

To examine the hydrological conditions and circulation of water masses off the Western Australian Coast.

Stations

At the Reference Station (32°S, 111°50'E in 5000m) and at Position Stations shown on chart.

Work at Stations

Reference Station: (32°S, 111°50'E in 5000m)
Hydrological sampling to the bottom for temperature, salinity, oxygen, nitrate, inorganic phosphate, total phosphorus and particulate phosphate.

Indian Ocean standard net haul from 200m.

Position Stations: Hydrological sampling to the bottom for temperature, salinity, oxygen, nitrate and inorganic phosphate.
Indian Ocean standard net haul from 200m.
Oblique tow by midwater trawl from 200m. to surface. Simultaneous plankton net tow at surface.

Personnel

R. Chittleborough (Cruise Leader)
N. Dyson
W. Prothero
L. Thomas

Probable Itinerary

Depart Fremantle July 17
Arrive Fremantle July 31

Sampling and Observations

Hydrology:

Reference Station: (32°S.$111^{\circ}50'$E. in 5000m)
Nansen bottle sampling at 0, 25, 50, 75, 100, 150, 200, 300, 500, 700, 900, 1100, 1300 and 1500m and then at 500m intervals to the bottom.

Samples for temperature, salinity, oxygen nitrate and inorganic phosphate at all depths.

Samples for particulate phosphate and total phosphorus at 0, 50, 100, 200, 300, 500, 700, 900, 1100, 1300, and 1500m and then at 500m intervals to the bottom.

Position Stations (X and Ⓧ): Nansen bottle sampling to a maximum depth of 1500m at the depths listed above.

Samples for temperature, salinity, oxygen, nitrate and inorganic phosphate at all depths.

Physics: Bathythermograph cast to 274m.
Echo sounding continuously.
Meteorological reports on station.

Zooplankton: Indian Ocean standard net haul from 200m off the continental shelf (at Position Stations 0 and Ⓧ). Plankton net tow at surface for early stage larval crayfish during mid-water trawl tow.

Micronekton: Oblique tow from 200m to surface by mid-water trawl off the continental shelf (at Position Stations 0 and Ⓧ).

Laboratory Work

Shipboard:

Hydrology: Salinity, oxygen, inorganic phosphate and total phosphorus determinations.

Zooplankton: Concentration and storage of samples.

Micronekton: Concentration and storage of samples.

Perth:

Micronekton: Examination of particular taxa.

Zooplankton: Examination of particular taxa from surface tow.

Cochin (I.O.B.C.):

Zooplankton: Taxonomic studies from Indian Ocean standard net samples.

2. Indian Ocean Biological Centre

2.1 New Curator for I.O.B.C.

Dr. Edward Brinton of the Scripps Institution of Oceanography (U.S.A.) has been appointed by Unesco as Curator for the Indian Ocean Biological Centre. He assumed the new post on 20 September 1965, after visiting Unesco Headquarters in Paris, Dr. R. Glover, Chairman of the I.O.B.C. Consultative Committee in Edinburgh, and F.A.O. in Rome. He began his work in Cochin on 15 October 1965.

2.2 Plankton Samples in I.O B.C.

Dr. R. Glover, Chairman of the I.O.B.C. Consultative Committee, has prepared a chart "Distribution of the plankton samples in the International Collection of I.O.B.C.", and this is reproduced in Annex III.

2.3 Rules for the loan and analysis of samples from the International Collections at I.O.B.C.

In IIOE Information Paper No. 14, the Report of the Third Meeting of the Consultative Committee for the Indian Ocean Biological Centre was published as Annex II. "Scientific Aspects of the Constitution for the International Collections at IOBC" was published as Appendix 1 of this Annex; this was modified as "Rules for loan and analysis of samples from the International Collections at IOBC" at the IIOE Coordination Group Meeting in June. The revised text appears as Annex IV of this issue, and this should replace the former.

3. Symposia and Meetings

3.1 Symposium on the Meteorological Results of the International Indian Ocean Expedition

As it has been announced - in No. 13 of this Information Paper - the above Symposium was held from 22-26 July, 1965, at the Tata Institute of Fundamental Research in Bombay, and was organised jointly by the Indian Meteorological Department and the Indian National Committee for Oceanic Research and was co-sponsored by Unesco and W.M.O. Twenty-three foreign scientists from nine countries and more than one hundred Indian scientists participated. Nine invited lectures and forty-one other papers were presented. The following is the topics of the Symposium and the titles of invited lectures; the speakers are also given.

Air-Sea Interaction Studies

Chairmen: Dr. W. C. Swinbank and Dr. A. F. Bunker

Interaction of the summer monsoon air with the Arabian Sea
.....by Dr. Andrew F. Bunker

Evaporation over Arabian Sea and Indian south-west monsoon
.....by P. R. Pisharoty

Review of the problem of atmosphere-ocean exchange
.....by Dr. W. C. Swinbank
(eight other papers were presented under this topic)

General Circulation

Chairmen: Mr. P. R. Krishna Rao, Mr. D. H. Johnson and Mr. R. L. Southern

General circulation of the atmosphere over the Indian Ocean and adjoining areas
.....by Dr. R. Ananthakrishnan

Cyclonic vortices on either side of the equator and their implications
.....by Mr. C. R. V. Raman

(ten other papers were presented under this topic)

Morphology of Monsoons and Synoptic Models for the Tropics
Chairman: Dr. K. R. Ramanathan

The summer atmospheric circulation over the western Arabian Sea
.....by Dr. C. S. Ramage

(two other papers were presented under this topic)

Tropical Cyclones
Chairman: Dr. P. R. Pisharoty

Revised model of cyclone structure in tropical latitudes
.....by Dr. H. Arakawa

(three other papers were presented under this topic)

Satellite Meteorology
Chairman: Dr. C. S. Ramage

Satellite meteorology in the International Indian Ocean Expedition
.....by Colonel J. C. Sadler

(four other papers were presented under this topic)

Morphology of the Monsoon and Monsoon Forecasting
Chairmen: Mr. K. N. Rao, Dr. R. Ananthakrishnan and Mr. C. Ramaswamy

On synoptic methods of forecasting vagaries of south-west monsoon over India and neighbouring countries
.....by Mr. C. Ramaswamy

(thirteen other papers were presented under this topic)

3.2 Forthcoming Meetings of Interest.

The Second International Oceanographic Congress

Circular No.1 - Preliminary announcement of the above Congress (which will be convened in Moscow from 30 May to 9 June, 1966) - has been widely circulated among interested bodies and scientists. The programme contains "Oceanography of the Indian Ocean and the Antarctic".

4. Recent Publications

4.1 Bibliography on Physical Oceanography of the Indian Ocean

The American Meteorological Society has published the above Bibliography as a contribution to "Special Bibliographies on Oceanography", compiled for, and with the assistance of, the National Oceanographic Data Centre of U.S.A.

The Bibliography contains abstracts of scientific books and papers dealing with the physical oceanography of the Indian Ocean from 1841 to 1965. The total number of papers contained is 474. The scope is limited to the different aspects of physical oceanography viz. temperature, density, salinity, chemical composition, waves, currents, circulation, methods of measurement, instruments, etc. A comprehensive subject outline is attached, which helps readers to find material in specific subject areas. The U.S. National Oceanographic Data Center has kindly supplied a sufficient number of copies for distribution among National Coordinators for IIOE; interested scientists may contact their country's National Coordinator.

4.2 Effects of the Indian Ocean Expedition by Victor K. McElheny

The above article was published in "Science" (Aug. 27, 1965). A short review of the history of the Expedition and its important findings are given; the establishment, with international assistance, of the International Meteorological Centre in Bombay and the Indian Ocean Biological Centre in Ernakulam is particularly described at some length, and also the plan of the Indian Government for creating a National Institute of Oceanography as a nucleus for these two centres.

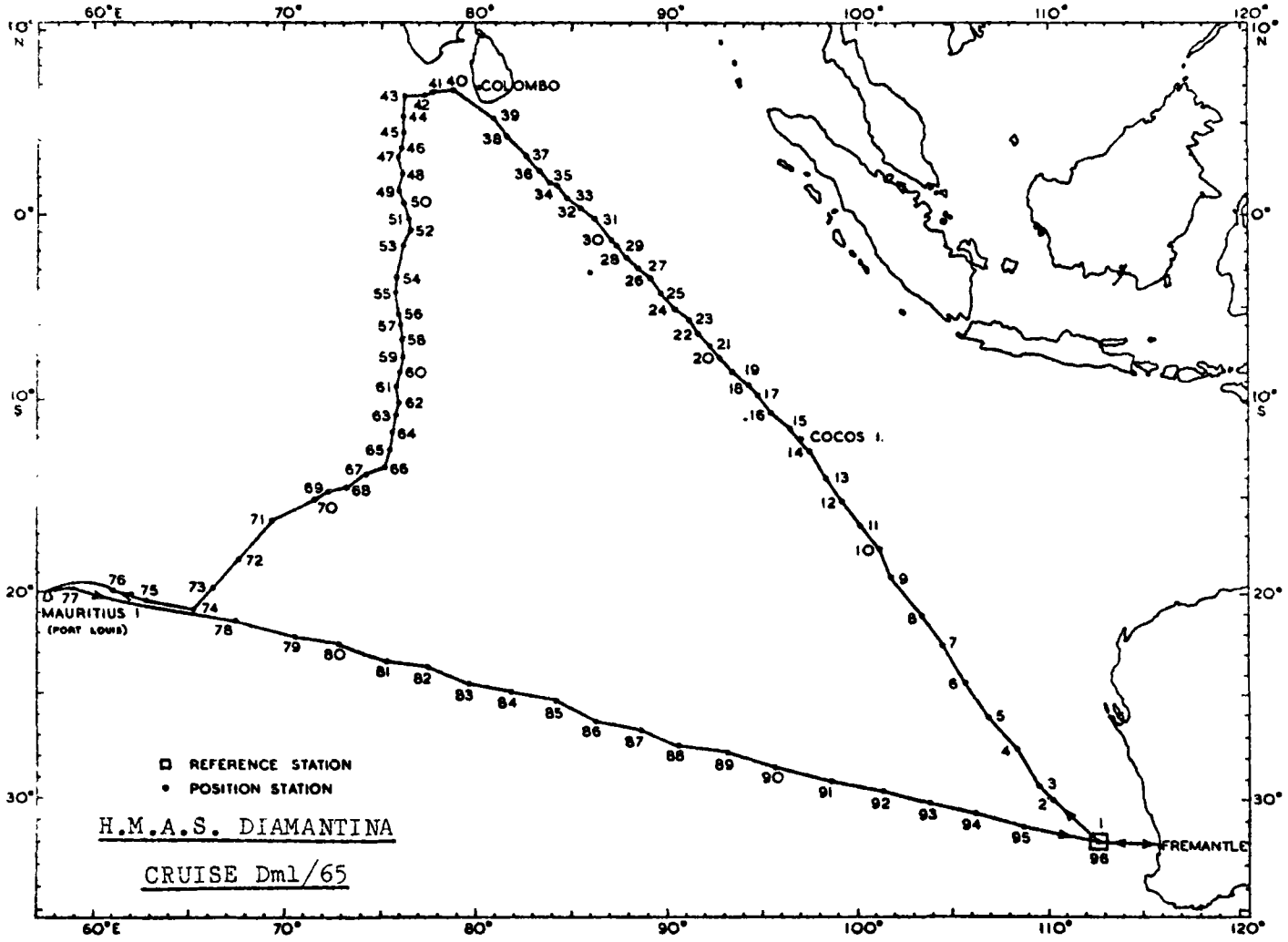
4.3 Collected Reprints of the IIOE, Vol. I and II

These have now been printed. The IOC Secretariat regrets the delay in their distribution, which has been caused by the revision of the mailing list. It is expected that both volumes will be sent together to oceanographic laboratories, and institutions, and to scientific libraries in January 1966. Distribution to individual scientists is not envisaged, in accordance with the recommendation of the Coordination Group.

4.4 Circulation Superficielle dans l'Ocean Indien by Jean Martin, Pierre Guibout, Michel Crepon and Jean-Claude Lizeray

Reprints of "Cahiers Oceanographiques, XVII, Supplément No. 3 (1965)" have been received and distributed among the regular recipients of this Information Paper.

ANNEX I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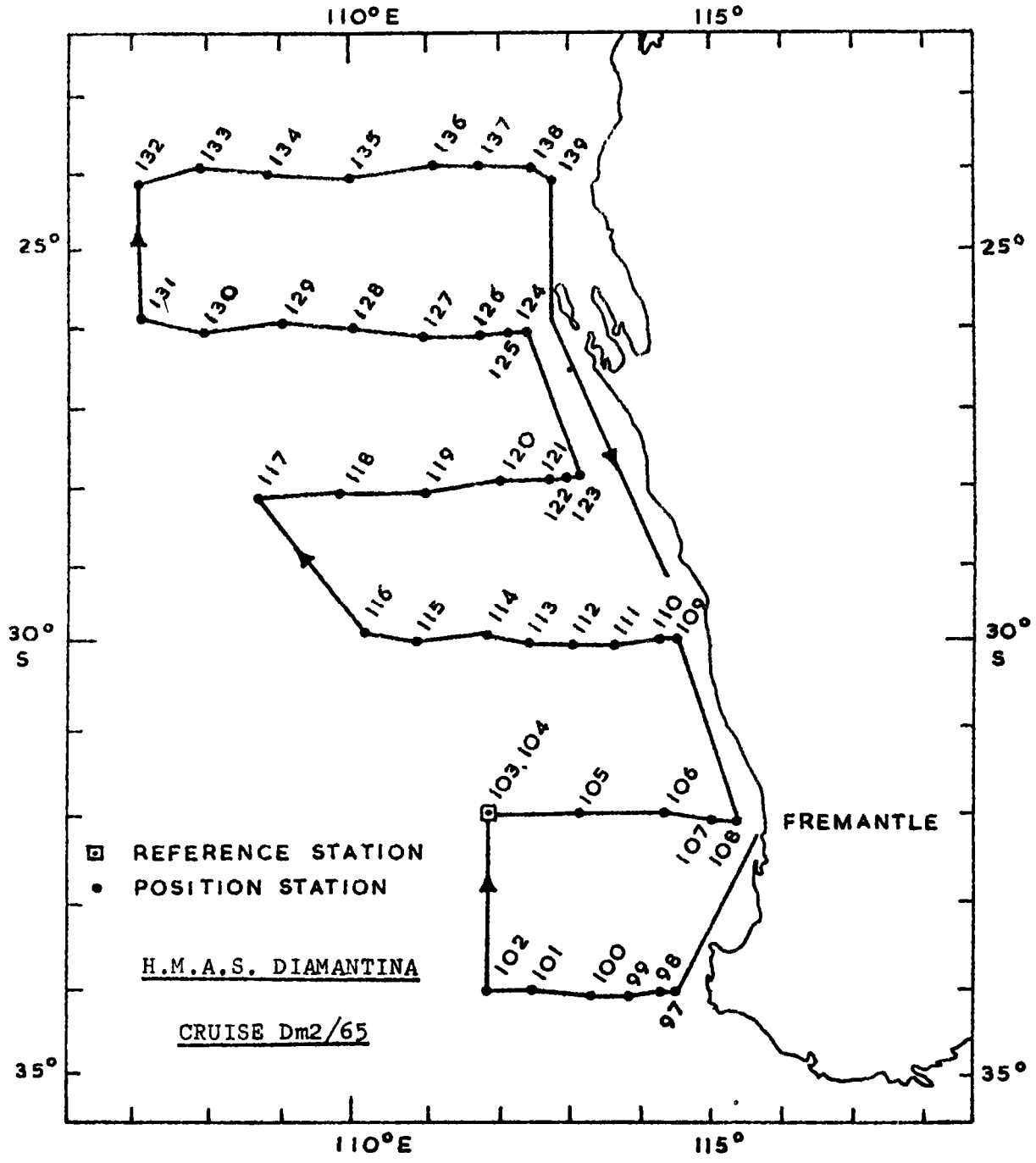
120°
10° N
0°
10° S
20°
30°
COLOMBO
COCOS I.
MAURITIUS I
(PORT LOUIS)
FREMANTLE
REFERENCE STATION
POSITION STATION
H.M.A.S. DIAMANTINA
CRUISE Dm1/65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30° S
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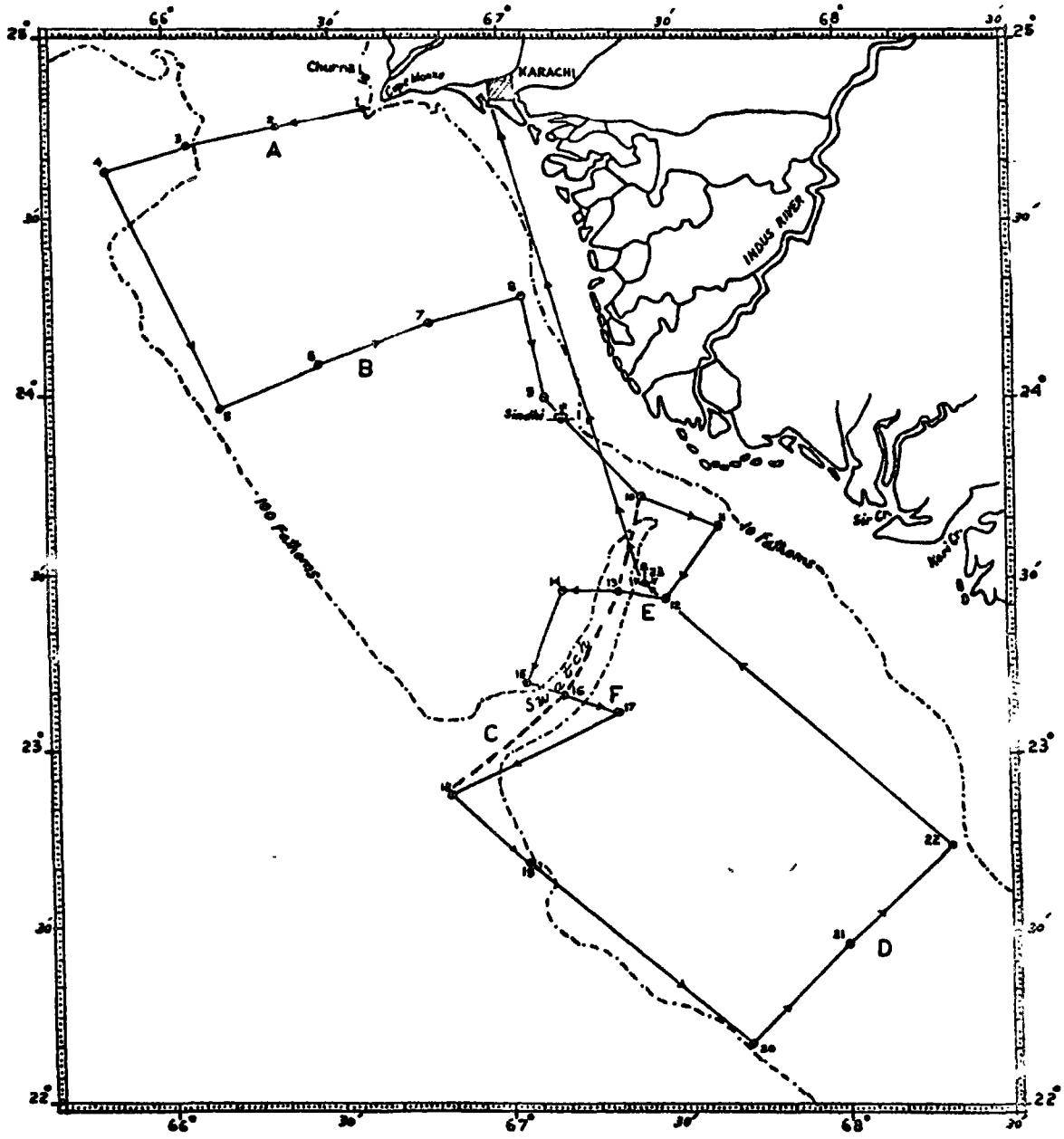
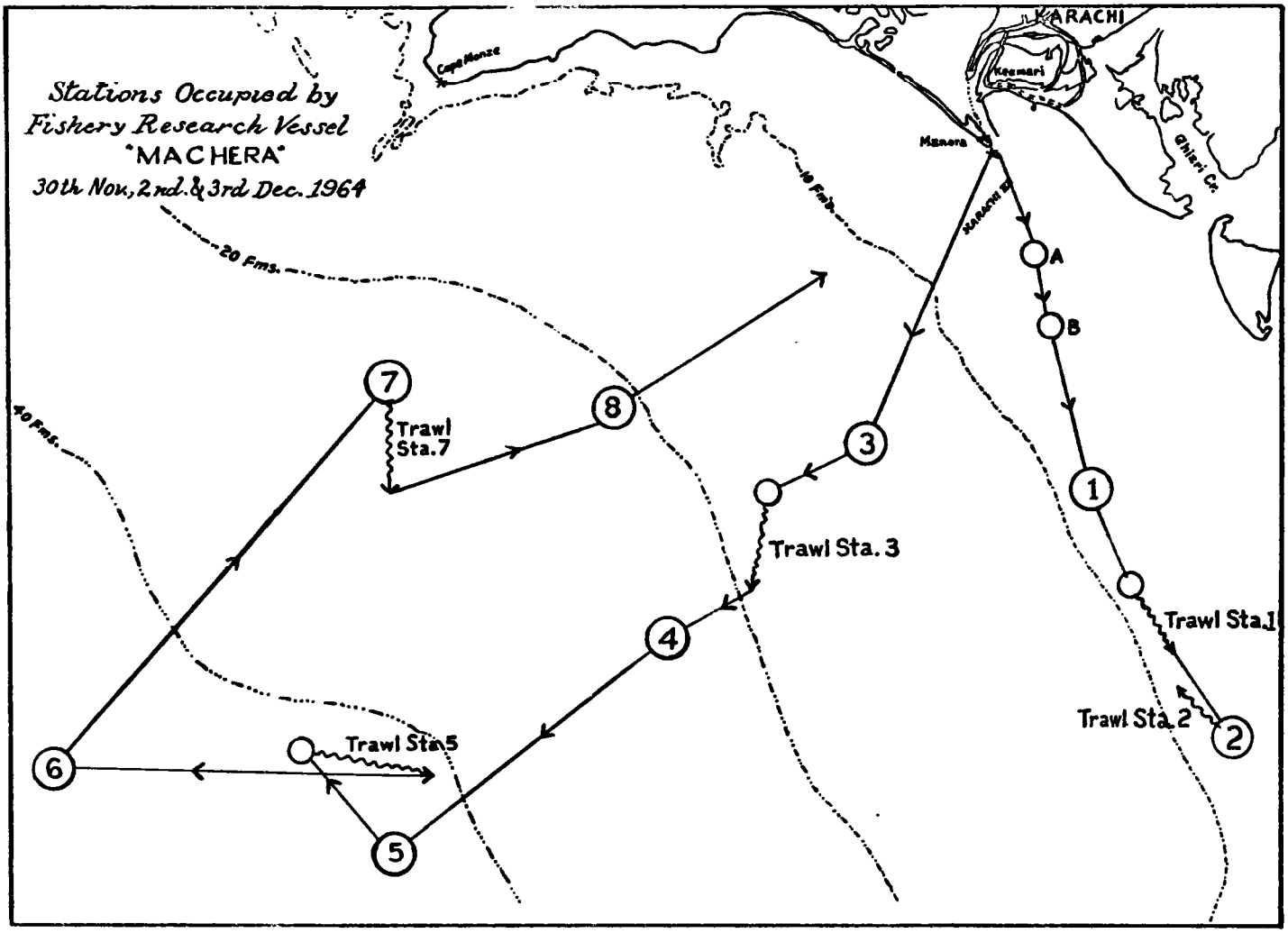
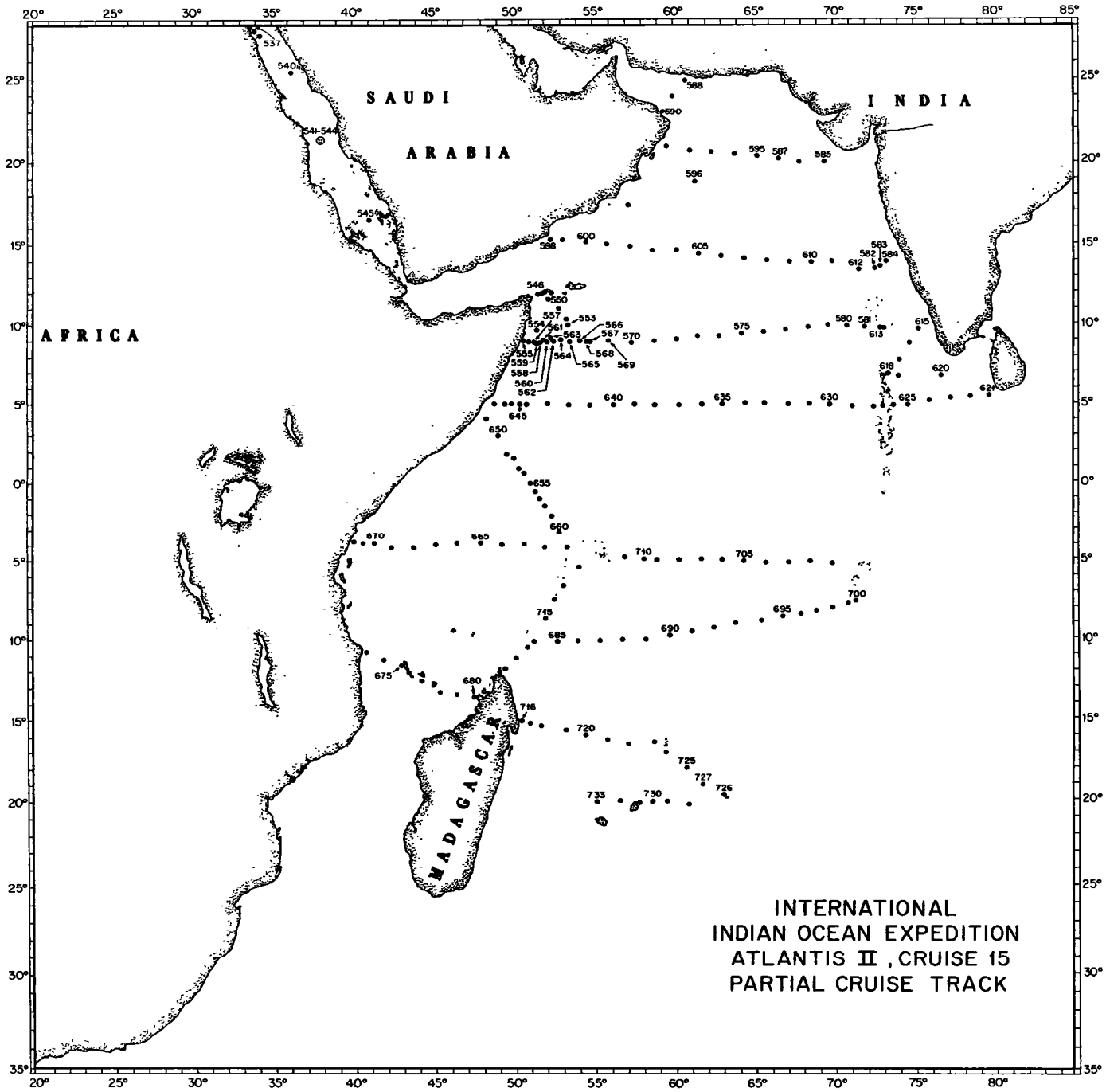
FREMANTLE
REFERENCE STATION
POSITION STATION
H.M.A.S. DIAMANTINA
CRUISE Dm2/65

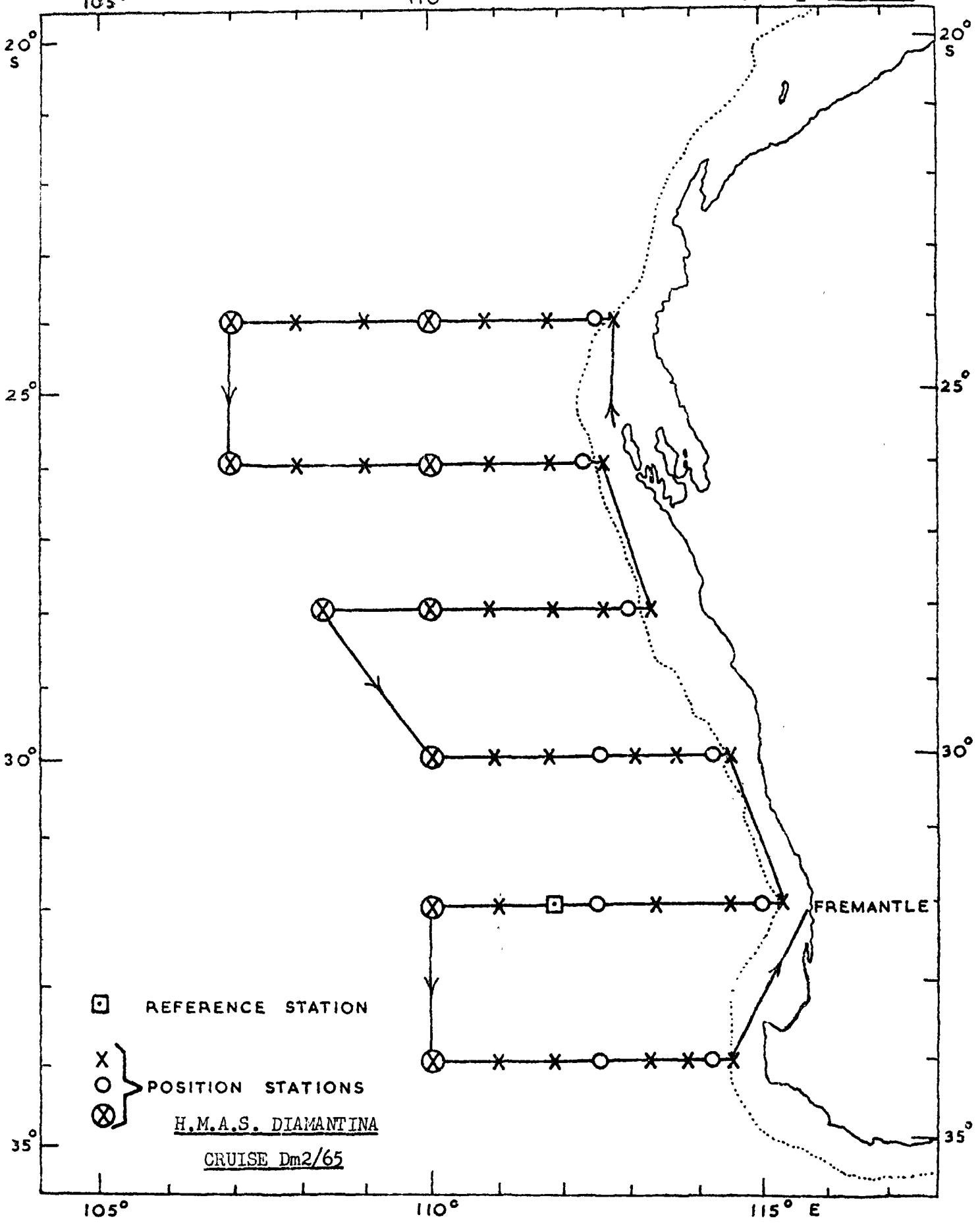
Unesco Oceanographic Cruise (ZULUN)
P.N.S. Zulfiquar
9th to 14th Nov. 1964




Stations Occupied by
Fishery Research Vessel
"MACHERA"
30th Nov, 2nd. & 3rd Dec. 1964
KARACHI
Cape Monze
Manora
Keamari
Ghizri Cr.
18 Fms.
20 Fms.
40 Fms.
A
B
1
2
3
4
5
6
7
8
Trawl Sta.7
Trawl Sta. 3
Trawl Sta.1
Trawl Sta.2
Trawl Sta.5


SAUDI
ARABIA
INDIA
AFRICA
MADAGASCAR
INTERNATIONAL
INDIAN OCEAN EXPEDITION
ATLANTIS II, CRUISE 15
PARTIAL CRUISE TRACK

ANNEX II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110°
115° E
20° S
25°
30°
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FREMANTLE
REFERENCE STATION
POSITION STATIONS
H.M.A.S. DIAMANTINA
CRUISE Dm2/65

ANNEX III

INDIAN OCEAN BIOLOGICAL CENTRE

THE DISTRIBUTION OF PLANKTON SAMPLES IN THE INTERNATIONAL COLLECTION

The Report of the Third Meeting of the Consultative Committee for the IOBC is contained in the IIOE Information Paper No. 14 (UNESCO/NS/IOC/INF-72, ANNEX II).

This additional information paper provides some details regarding the plankton samples received at the IOBC and their geographical distribution in the Indian Ocean.

On 31 May, 1965, a total of 1,646 samples had been received from participants in the IIOE, as follows:

	Samples		Samples
Australia	206	Portugal	0
France	0	South Africa	166
Germany (Fed. Rep.)	95	Thailand	0
India	397	USSR	50
Indonesia	0	U.K.	206
Japan	109	U.S.A.	395
Pakistan	22		

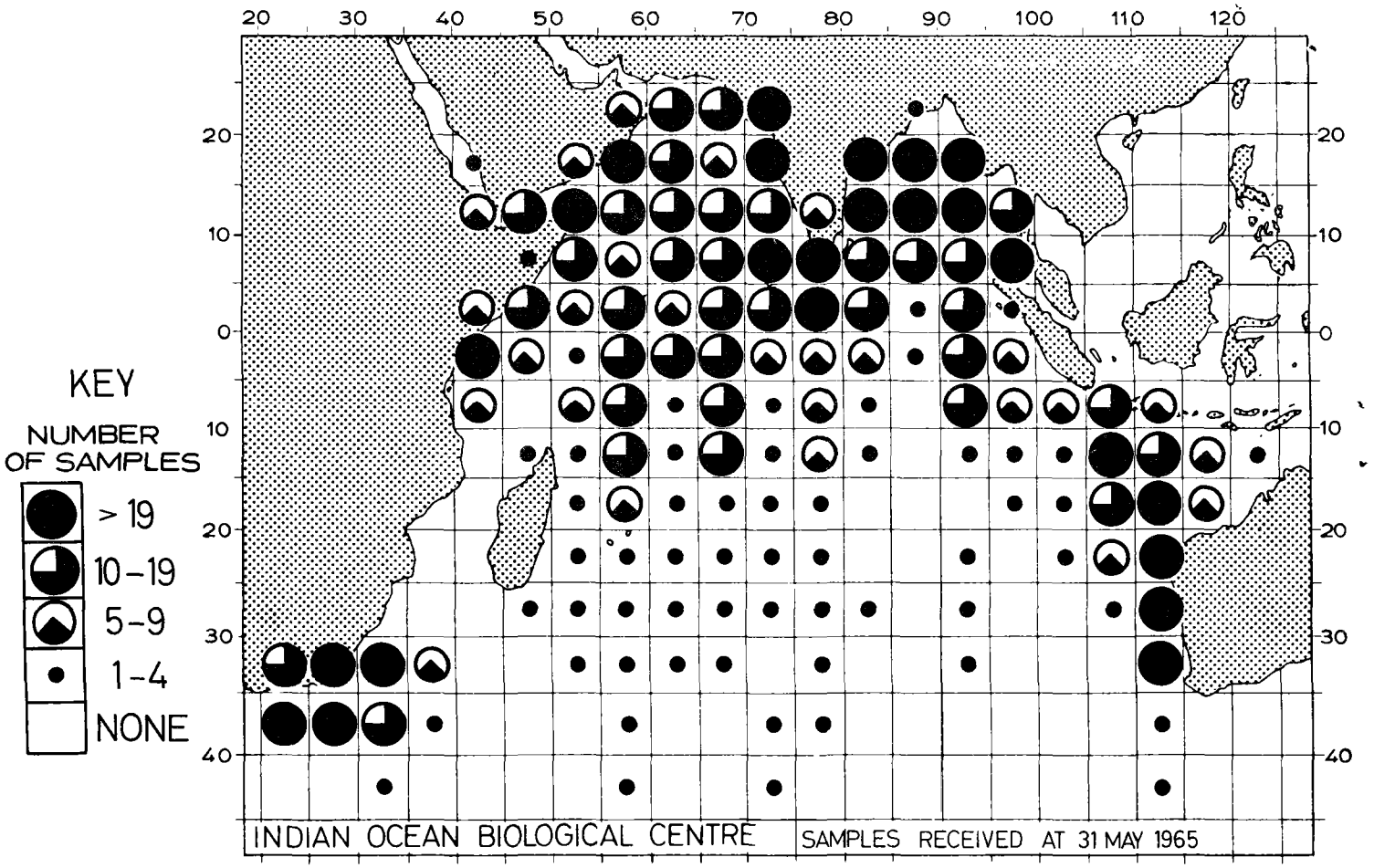
The upper chart on the attached page shows the distribution of these samples. It is clear that the sampling south of the Equator was inadequate, except for coastal regions near Australia and South Africa. Although the northern regions are well represented, the Consultative Committee (p.6 of the Third Report) concluded that there had been insufficient repetition of sampling to permit an analysis of seasonal variation.

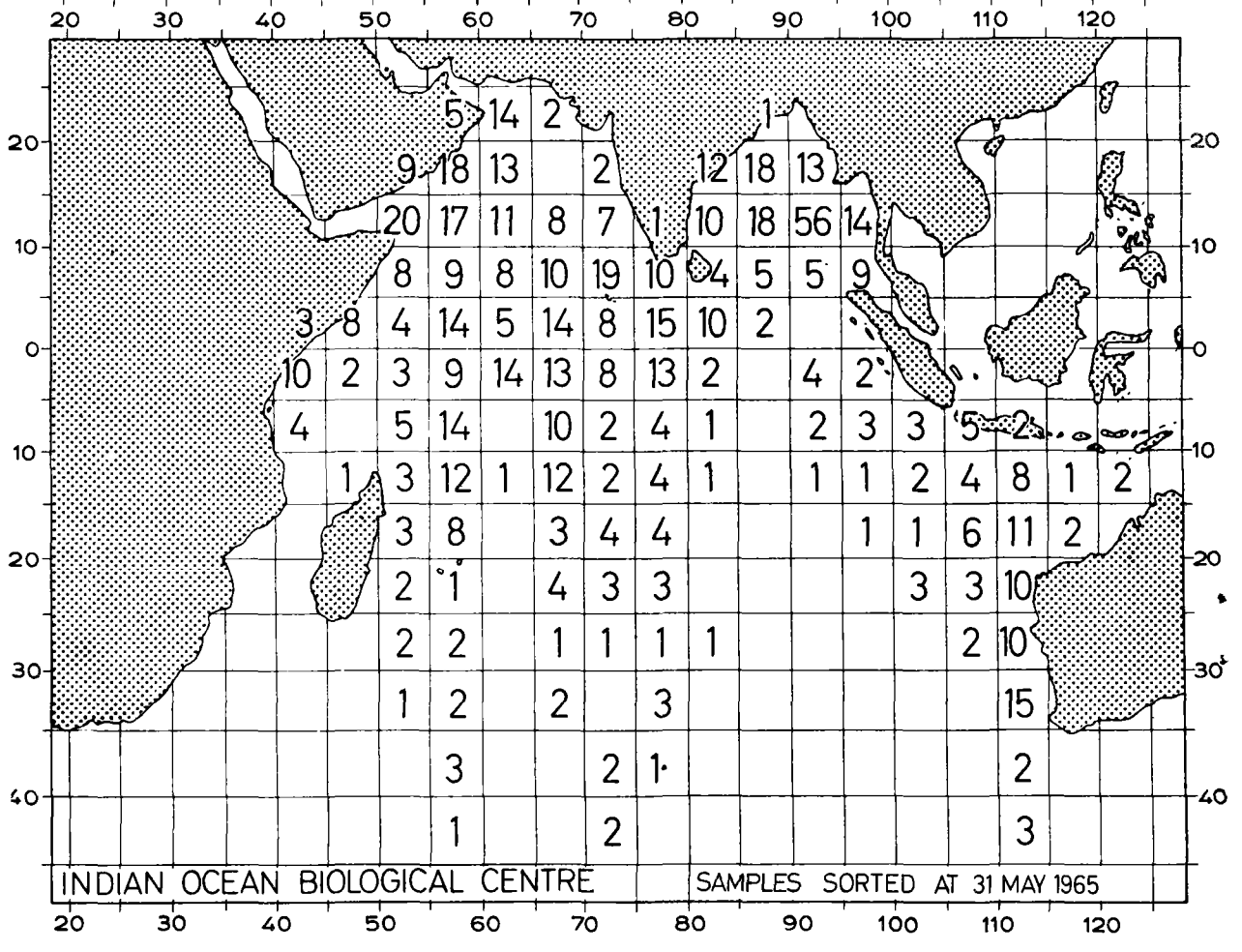
The Consultative Committee made a strong plea for additional sampling in order to improve the temporal coverage in the north and to fill the geographical gaps in the south. It is hoped that these requirements will be borne in mind whenever research ships pass through the poorly sampled areas during and after the conclusion of the IIOE, and that nations will continue to donate standard samples to the IOBC at Ernakulam.

At the IOBC, the samples are sorted into 80 major taxonomic groups. The distribution of 830 samples which had been sorted at 31 May, 1965 is shown in the lower chart attached. At 1 October, 1965, the total number of samples in the Collection had increased to 1,795, of which 1,100 had been sorted. More detailed analysis of the sorted fractions has been started as a first step towards a study of the biogeography of the plankton in the Indian Ocean. For this it is hoped to enlist the collaboration of specialists throughout the world.

R.S. Glover, Chairman,
Consultative Committee
for the Indian Ocean
Biological Centre

Edinburgh
21 October 1965


KEY
NUMBER OF SAMPLES
> 19
10-19
5-9
1-4
NONE
20 30 40 50 60 70 80 90 100 110 120
INDIAN OCEAN BIOLOGICAL CENTRE
SAMPLES RECEIVED AT 31 MAY 1965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INDIAN OCEAN BIOLOGICAL CENTRE
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ANNEX IV

Rules for the loan and analysis of samples from the International Collections at IOBC

The International Collections consist of plankton samples taken from the research ships of various countries participating in the International Indian Ocean Expedition. Most of the samples were taken in the upper 200m with the Indian Ocean Standard Net, according to a standard procedure. It is envisaged that the Collection will be augmented by further samples taken after the end of the IIOE.

The primary aim of research on the International Collections will be the investigation of the distribution, abundance, and factors governing the plankton in the Indian Ocean. This investigation will of necessity be based on taxonomic studies. The Consultative Committee of IOBC will invite experts to collaborate in the study of the material which will be pre-sorted by the staff of IOBC according to a standard procedure. Work on the various systematic groups may be done either at IOBC or in other scientific institutions to which material will be lent. Although the study will be primarily biogeographical and taxonomic, material will also be released for related studies. Any loan of material is subject to the following rules and conditions:

(1) Samples will normally be lent to institutions only, rather than to individuals. Requests for samples should be made to the Curator of IOBC in an approved form containing a description of the proposed research project and naming the scientist who will be responsible for the material and the work which may be carried out by himself or by others under his supervision and guidance. The proportion of time which these individuals will devote to the work should also be indicated.

(2) When requesting the samples, the institution should give an estimate of the time needed for working up the samples. Once a year, a progress report should be given. Whenever the study is likely to last for more than two years, the Curator of the IOBC may ask that fractions of the samples already studied be returned to the Centre. The Consultative Committee will review the progress reports each year and reserve the right to withdraw the material in the case of undue delay or unsatisfactory treatment of the samples.

(3) Institutions interested in a specific systematic group should be willing to work up all the samples of that group as collected during the IIOE and delivered to the International Collections. In general, team work on a national or international basis would be appreciated, as it may ensure speedier results, appropriate checking, and further training in taxonomy and systematics.

continued..

(4) After the material has been studies, it should be returned, properly labelled, to the IOBC, where it will be kept for further studies and as a reference collection. If the institution wishes to retain specimens, it should apply for permission to the IOBC. While every encouragement will be given to individuals to publish their own results, a final report should be submitted to the Centre, containing the following information for each sample: number of specimens of each species, the size, sex and developmental stage of each specimen with notes on morphological anomalies and infestations.

(5) In the case of new species, holotypes should be submitted to the Zoological Survey of India (Indian Museum). Paratypes should be given to IOBC and the Consultative Committee will formulate rules for their deposition. One or more paratypes will be retained in IOBC and will normally not be lent outside the Centre.

(6) Publication of the results should be in one of the four official UNESCO languages, or should contain a summary in one of these languages. The source of the material should be acknowledged and, if possible, five reprints should be delivered to the IOBC.