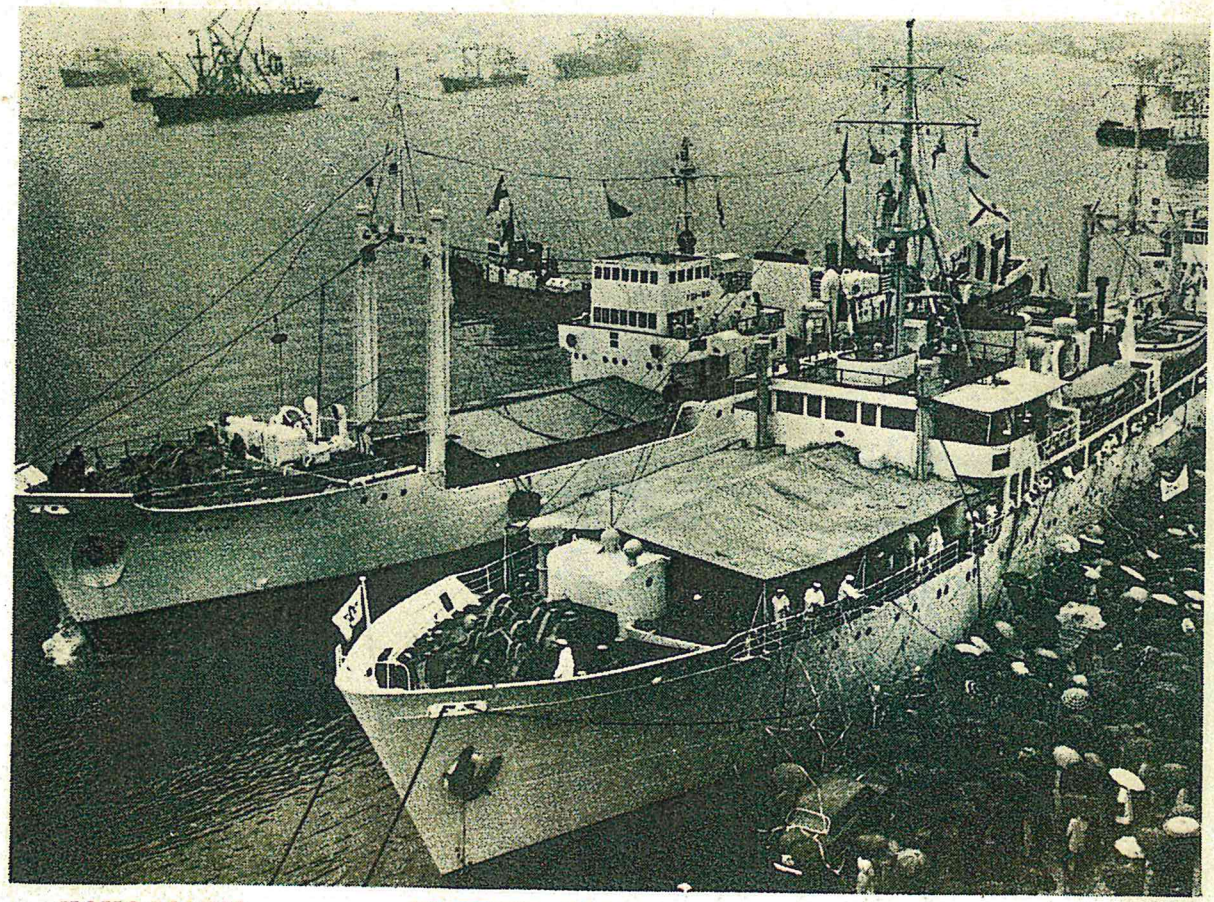
IIOE NEWSLETTER OF JAPAN

No. 2 November 1962

Bon Voyage, Umitaka Maru and Koyo Maru!

As our first official participation for IIOE, the Koyo Maru and the Umitaka Maru left Tokyo for their 1962-1963 IIOE cruises. The IIOE Data Center of Japan heartily wishes their success and Bon Voyage!

The IIOE Data Center of Japan



KOYO-MARU UMITAKA-MARU By the courtesy of the Asahi Press

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IIOE DATA CENTER OF JAPAN
Marine Division, Japan Meteorological Agency
Tokyo, Japan

The 2nd Session of the Intergovernmental Oceanographic Commission

The 2nd Session of the Intergovernmental Oceanographic Commission was held in Paris, September 20-29, 1962. In this meeting, the IIOE was treated as one of the most important items and the three resolutions concerning IIOE were adopted.

In the special working group of IIOE, Dr. Uda, Tokyo University of Fisheries, and Dr. Terada, Japan Meteorological Agency, editor of the NEWSLETTER, attended the meeting as the Japanese delegates for IIOE. Some copies of No. 1 of this NEWSLETTER were distributed among the participants and were welcome by them, especially by Dr. G. F. Humphrey, President of SCOR.

Extracts of these resolutions are reproduced as follows:-

RESOLUTION 3 COORDINATION OF THE INTERNATIONAL INDIAN OCEAN EXPEDITION

The Intergovernmental Oceanographic Commission

Requests that each IOC Member State participating in the IIOE and each participating non-member state who has not already done so appoint as soon as possible a national coordinator for its national IIOE program. These National Coordinators, collectively, will constitute an International Coordination Group meetings of which together with the Secretary of IOC and the relevant experts will be called by the IOC Bureau whenever it deems such a meeting to be necessary,

Requests that SCOR, at its Executive Meeting 1 - 3 October, appoint a small group of experts concerned with the Expedition, each of whom will represent one of the pertinent scientific disciplines represented in the IIOE. Each will review the work accomplished to date in his discipline, evaluate the present plans for future work, and advise IOC through SCOR of his specific recommendations prior to 31 March 1963.

These recommendations will be reviewed by the IOC Bureau and the National Coordinators in order that Member States can consider modifying the national plans as necessary to accomplish the overall scientific objectives of the IIOE.

RESOLUTION 4 METEOROLOGICAL ASPECTS OF THE INTERNATIONAL INDIAN OCEAN EXPEDITION

The Intergovernmental Oceanographic Commission

Urges its member governments to make adequate financial provision for the planned programs.

Decides that because responsibility for coordination of the expedition has passed from SCOR to IOC, the International Scientific Coordinator for Meteorology previously appointed by SCOR will work under the responsibility of the Secretary of the Commission.

Noting that research service to Expedition vessels at the International Meteorological Center (IMC), Bombay would be greatly helped by promptly radioed weather messages, and since all ships traversing the Indian Ocean are being asked to cooperate,

Recommends that operators of all participating oceanographic vessels should ask the meteorological services of their respective countries to designate these vessels "selected ships" and, in accordance with standard WMO practice, to provide them with instructions for the making and rapid transmission by radio, of surface weather observations, and that observations should be made at or near 00,06,12 and 18 hours GMT encoded, and sent as soon as possible to the most convenient ship-shore radio station for inclusion in meteorological broadcasts, and that the same routine should be followed for shipboard upper air observations.

Noting that since daily synoptic surface and upper air charts will be plotted and analysed at the IMC for two years, starting 1 January, 1963,

Recommends that operators of oceanographic vessels should specify their day to day requirements for forecasts, coded or facsimile charts, etc. to the Director of IMC, and that the Director of IMC should make every effort to satisfy these requirements.

Noting that since Indian Ocean Research, particularly in fisheries, would be aided by charts of sea surface temperatures,

Recommends that the Director of IMC should arrange for the construction of semi-monthly sea surface isothermal charts for the two year period starting 1 January, 1963 and that he should make reproductions of the charts available at cost to interested scientists and arrange for publication of the charts at the conclusion of the IIOE, in addition furnishing copies of the charts and data at no cost to World Data Centres A and B,

Invites WMO to take all possible action to assist in the establishment and operation of the IMC.

RESOLUTION 5 FISHERY OCEANOGRAPHY IN THE INDIAN OCEAN

The Intergovernmental Oceanographic Commission

Appreciating that much of the information arising from the IIOE can be of much greater value if by appropriate means it can be made immediately available to fishermen and scientists in the interested countries:

Commends to its Member States the substance of these resolutions and reports for incorporation in the framework of the IIOE programs, requests their assistance in making available to fishery scientists for these purposes the most detailed statistics possible of catch and effort of all commercial fisheries in the Indian Ocean, and further requests that both these matters be brought to the attention of the fisheries scientists of such Member States and interested organizations for appropriate actions;

Recommends to fisheries organizations of participating States the systematic collection of oceanographic data on all fisheries research vessels, insofar

as the primary mission of the vessels will allow, and the prompt transmission of these data to world data centers,

Invites in particular, the collaboration of FAO and SCOR in securing the achievement of these ends, and

Requests the Secretary, in consultation with the appropriate advisory bodies to appoint a Subject Leader for the fisheries aspects of the International Indian Ocean Expedition, who shall be responsible under the Secretary for coordinating the programs concerned, and for securing the utmost benefit from the IIOE in respect to all fisheries of the area, existing and potential. The Secretary, in consultation with appropriate bodies, will develop adequate means of supporting financially the work of the Subject Leader.

Observation line of the Koyo Maru 1962-1963

Because of various reasons, observation line of the Koyo Maru 1962-1963 was fixed along the 94°E line, instead of the former scheduled 96°E line.

Preliminary intercalibration cruises for IIOE

Preliminary intercalibration cruise was carried out by the Ryofu Maru of the Japan Meteorological Agency in Sagami Bay during September 6-9, 1962. Oceanographers from Japan Meteorological Agency, Meteorological Research Institute, Hydrographic Office, Tokyo University of Fisheries, Nagoya University and Shimonoseki College of Fisheries joined the cruise. Calibration of dissolved oxygen and inorganic phosphate-phosphorus was carried out.

Preliminary test of plankton sampling and primary productivity measurements for IIOE was carried out on board the Umitaka Maru of the Tokyo University of Fisheries in Sagami Bay during September 27-28, 1962. Biologists and oceanographers from the Hokkaido University, Shimonoseki College of Fisheries, Japan Meteorological Agency, and Nagoya University joined the cruise. Several types of nets to be used in the IIOE were tested. Primary productivity measurements were also carried out.

Address of port agencies of the Koyo Maru (1962-1963 Cruise)

Name of Port	Period	Address	Cable address
Singapore	Nov. 16-20, '62 Jan. 29-Feb. 2, '63	Sinnan S. & T. Co., Ltd. No. 23-25 Robinson Road Singapore	"SINNAN"
Colombo	Dec. 13-18, '62	James Finlay & Co., Ltd. P.O. Box 59 Colombo, Ceylon, R. P.	"MERCATOR COLOMBO"
Fremantle	Jan. 9-14, '63	McIlwraith McEacharn Ltd. 10 Phillimore Street P.O. Box 81 Fremantle, W. Australia	"COOMERA FREMANTLE"

Hong Kong	Feb. 8-12, '63	Hang Seng Bank Building Des Voeux Rd., Central Hong Kong	"SHOSEN HONGKONG"

Address of port agencies of the Umitaka Maru (1962-1963 Cruise)

Bangkok	Nov. 13-19, '62	UMITAKA MARU "Tokyo University of Fisheries" c/o The Bornei Road Bangkok, Thailand
Singapore	Nov. 22-27, '62 Jan. 21-26, '63	UMITAKA MARU "Tokyo University of Fisheries" c/o Sinnan S. & T. Co., Ltd. No. 23-25 Robinson Road Singapore
Colombo	Dec. 20-26, '62	UMITAKA MARU "Tokyo University of Fisheries" c/o The Cargo Boat Despatch Co., Ltd. No. 39/41, Queen St. Colombo, Ceilon

Drift bottles will be released by the Koyo Maru and the Umitaka Maru

Some 2,000 drift bottles will be released by the Koyo Maru in the Indian Ocean. Specifications of ocean current card put in the bottle is as follows. Actually, the Japanese, English, Malay, and Indonesian languages are used. Here, only the English note is reproduced.

OCEAN CURRENT CARD

This drift bottle containing this card, has been released to investigate the currents of the Indian Ocean, conducted by the International Indian Ocean Expedition. Whoever picks this up, please fill in each blank of the left column and send this card to the Japanese Embassy or Consulate near you at your earliest convenience. Reward will be offered. We thank you for your cooperation with our research activity. (For your information, the addresses are given on the reverse. Please take a trouble to address this card to anyone of them according to your convenience.)

Shimonoseki College of Fisheries
Yamaguchi Prefecture, Japan

TIME DATE MONTH YEAR

WHEN FOUND: _____

WHERE FOUND: a) At sea _____ Miles off _____
b) On the shore of _____

NAME & ADDRESS
OF THE FINDER: _____

Also some 2,000 bottles will be released by the Umitaka Maru in the Indian Ocean. One hundred bottles will be released at each oceanographic station.

OCEANOGRAPHIC OBSERVATION PROGRAM OF THE UMITAKA MARU AND THE KOYO MARU

Name of Ships	UMITAKA MARU		
	Name	Affiliation	Major
Scientific Staff	Hiroshi Niino (Head)	Tokyo University of Fisheries	Geology, Geography
	Sigeru Motoda	Hokkaido University	Biology
	Kei Oshide	Hokkaido Gakugei Univ.	Geology
	Yasukazu Saito	Tokyo Univ. of Fisheries	Physics
	Yoshimi Morita	"	Chemistry
	Yatsuka Saijo	Nagoya University	Biology
	Makoto Ishino	Tokyo Univ. of Fisheries	Physics
	Kenjiro Konno	"	Biology
	Satoru Kanamori	Nagoya University	Geophysics

ITEMS	
(1) Number of station	20
(2) Serial observations	0 - bottom ... 6 stations, 0 - 3,000m ... 10 stations, 0 - 1,000m ... 4 stations
(3) Surface water temperature	Continuous recording
(4) BT observations	On each station and on each mid-station point. (39 points)
(5) GEK observations	10 stations
(6) Two-currentmeter measurements	In the equatorial region and at special points. (10 points)
(7) Transparency and color of the sea	Frequent observations
(8) Drift bottle	2,000 bottles, 100 bottles at each station.
(9) Chemical observations	Salinity, dissolved oxygen, nutrient salts, etc.
(10) Chlorophyl & Productivity C_{14}	Scheduled
(11) Eye observation at sea	Scheduled
(12) Special biological observation	Scheduled
(13) Collection of plankton*	Scheduled

* Detailed information on planktological and biological observations is given in the Dr. S. Motoda's report on "Information Bulletin on Planktology in Japan", No. 8, August 1962, published by the Plankton Society of Japan, c/o Plankton Laboratory, Faculty of Fisheries, Hokkaido University, Hakodate, Hokkaido, Japan.

KOYO MARU

Name	Affiliation	Major
Takuo Chiba (Head)	Shimonoseki College Fisheries	Biology
Yasuaki Tsuruoka	Japan Meteorol. Agency	Aerology & Meteorology
Takero Sato	Shimonoseki College of Fisheries	Physics & Meteorology
Keiichiro Shazuki	"	Chemistry
Takeo Taniguchi	"	Bathymetry & Biology
Kaoru Takesue	"	Productivity & Chemistry
Michinori Nakano	"	Bacteria & Chemistry

(1) 24

(2) 0 - 3,000m ... 24 stations (19-22 layers)

(3) Continuous recording, reading every 10 minutes.

(4) 3 hourly observations. (48 stations)

(5) St. 14 - St. 23 ... 2 hourly observations, 36 times.

(6) St. 2 - St. 13, 15, 20, 23 ... 15 stations.

(7) 24 stations.

(8) 2,000 bottles.

(9) Dissolved oxygen, pH, R, ΣP, Si ..... 24 stations, Ca 500 bottles
Cl ..... 24 stations and other 82 station ..... Ca 580 bottles
HO_3 ..... 24 stations, 6 layers ..... 144 bottles

(10) 25 times 6 layers.

(11) Scheduled

(12) Not scheduled

(13) Scheduled

(14) Sampling of macro-plankton, fish larvae and small nekton	Scheduled
(15) Sounding, bottom configuration	Continuous recording while underway
(16) Collection of bottom sediments	Six special points, off the west coast of Malay and near 1° N, 90° E.
(17) Meteorological observations	Scheduled
(18) Solar radiation	Continuous recording
(19) Aerological Observations	Not scheduled
(20) Bacteria	/
(21) Midwater trawl	/

CRUISE SCHEDULE OF THE UMITAKA MARU AND THE KOYO MARU, 1962-1963

UMITAKA MARU

Location	Arrival	Departure	Remarks
Tokyo		Oct. 29, '62	
Bangkok	Nov. 13	Nov. 19	Total milage: 14,930M,
Singapore	Nov. 22	Nov. 27	106 days, inclusive of
3°S, 78°E	Dec. 10		fishing operation for
Colombo	Dec. 20	Dec. 26	training students.
5°S, 78°E	Dec. 29		
25°S, 78°E	Jan. 6, '63		
Singapore	Jan. 21	Jan. 26	
Tokyo	Feb. 11		

KOYO MARU

Location	Arrival	Departure	Remarks
Tokyo		Nov. 6, '62	
Singapore	Nov. 16	Nov. 20	Total milage: 17,067M,
Colombo	Dec. 13	Dec. 18	118 days, inclusive of
Fremantle	Jan. 9, '63	Jan. 14	fishing operation for
Singapore	Jan. 29	Feb. 2	training students.
Hong Kong	Feb. 8	Feb. 12	
Shimonoseki	Feb. 18		

(14) Scheduled

(15) Continuous recording while underway

(16) Not scheduled

(17) 4 times a day, 00Z, 06Z, 12Z, 18Z

(18) Continuous recording

(19) Raio-sonde and pibal observations ..... 40 times
Along the 94° E line; between St. 14 and Colombo; between St. 23 and Frementle.

(20) 11 stations

(21) 12 times

SITE OF OCEANOGRAPHIC STATION

Station Number	Umitaka Maru (78° E)	Koyo Maru (94° E)	Station Number	Umitaka Maru (78° E)	Koyo Maru (94° E)
1	7° 30' N	5° N	11	5° S	3° S
2	6	4	12	7	4
3	4 30	3	13	9	5
4	3	2 15'	14	11 15'	6 30'*
5	2	1 30	15	13 30	8
6	1	0 45	16	16	9 30
7	0	0	17	18	11
8	1 S	0 45 S	18	20	12 30
9	2	1 30	19	22 30	14
10	3	2 15	20	25	15
			21		17
	Near Nicobar Islands, fishery are scheduled for training students.		22		18
			23		20
				* Will be occupied two times.	

Received publications

The IIOE Data Center of Japan acknowledges the receipt of the following publications from various institutions for the period of May - October, 1962.

Name of publication	Name of institution
* A Partial Bibliography of the Indian Ocean, Woods Hole Oceanographic Institution, U.S. Program in Biology I.I.O.E.	Woods Hole Oceanographic Institution
* Oceanographic Conversion Tables for Use by the I.I.O.E. Manual Series. Publication M-1	N.O.D.C., U.S.A.
* Physical and Chemical Data Form for Oceanographic Stations	N.O.D.C., U.S.A.
* Processing Physical and Chemical Data from Oceanographic Stations. Manual Series. Publication M-2	N.O.D.C., U.S.A.
* Manual for Coding and Punching Oceanographic Data on Cards. U.S. Navy Hydrographic Office	U.S. Navy Hydrographic Office
* Indian Ocean. Oceanographic Cruise Tracks Completed to 1 January, 1962. September, 1962, H.O. 17138-B	Robert G. Snider, Coordinator I.I.O.E.
* Indian Ocean. Oceanographic Cruise Tracks Scheduled after 1 January, 1962. September, 1962, H.O. 17138-C	Robert G. Snider, Coordinator I.I.O.E.
* Report of the U.S. Participation in the I.I.O.E.	John Lyman, Indian Ocean Coordinator, National Science Foundation, U.S.A.
* Report of the U.S. Delegation to the I.I.O.E. Working Meeting on Coordination of Operating Plans in the Arabian Sea	John Lyman, Chairman of the Delegation, U.S.A.
* The Indian Ocean Expedition An International Venture	Robert G. Snider, Coordinator I.I.O.E.
* The International Indian Ocean Expedition	John A. Knauss
* International Indian Ocean Expedition, Brief Summary, Status of Participation in I.I.O.E. as of 4 April, 1962	Robert G. Snider
* University of Michigan Participation in the I.I.O.E. Meteorology Program	Donald J. Portman
* Indian Ocean Oceanographic Cruise Tracks July, 1962. H.O. 17138	Robert G. Snider
* Indian Ocean Outline Chart H.O. 17138-A	Robert G. Snider

Informative documents

The following informative documents are now on file at the IIOE Data Center of Japan.

* IOC (Intergovernmental Oceanographic Commission) Second Session, UNESCO Paris 20-29 September, 1962.

  Resolution 3: Coordination of the International Indian Ocean Expedition

  Resolution 4: Meteorological aspects of the International Indian Ocean Expedition

  Resolution 5: Fishery oceanography in the Indian Ocean

* Hydrogen for aerological ascents from International Indian Ocean Expedition Oceanographic vessels (Circular letter of C. S. Ramage, Scientific Director for Meteorology, IIOE, dated May 24, 1962).

* Punching procedures for synoptic surface maritime meteorological observations during the International Indian Ocean Expedition. No. 4596/I/O.C., Annex, W.M.O. Re No. 4.596/TOC 3, Geneva, March 27, 1962.

* Precipitation measurements aboard ships during IIOE. WMO No. 1.178/T/MA, Geneva, January 23, 1962.

* WMO Resolution 20 (CE-XIII), International Maritime Meteorological Punchcard, Re No. 4/T/MA Geneva, January 2, 1962.

* WMO Recommendation 28 (CSM-III), Coding 7RRtRtR, Re No. 6.453/T/SY Geneva, May 9, 1962.

Publications

The following publications were issued by or with the assistance of the IIOE Data Center of Japan.

IIOE Date Center of Japan: Kokusai Indo-yo Kansoku Sokushin Kankei Manual. In Japanese. (Manual of Bathymetric Observations for use in the IIOE) Mimeograph pp. 26 with table. August 1962.

Here and there

* IOC Second Session was held in Paris, September 20-29, 1962 and Morikuni Toda (Chief), Kazuhiko Terada, Michitaka Uda, Masaaki Kuramoto, Ryuuichi Kuribayashi (Observer) were the Japanese delegates.

* Dr. Mizuki Tsuchiya of the Meteorological Training College joined the Argo expedition of the IIOE for the period of June - October, 1962.

* Masashi Yasui of Marine Division, Japan Meteorological Agency was assigned as a staff of IIOE Data Center of Japan after Jotaro Masuzawa, who went to U.S.A. to study at the Johns Hopkins University.

* Yasukazu Saito of the IIOE Data Working Group has left for the Indian Ocean as a staff member of the Umitaka Maru.

* Dr. Yoshio Sugiura went to Sydney, Australia to attend the meeting of standardization of chemical analysis method for IIOE in July-August, 1962.

ADDITIONAL FOREIGN MAILING LIST

Note: Numbers in margin indicate number of copies of data to be sent each.

1 - Captain de Navio Luis R. A. Capurro
Chief, Navy Hydrographic Service, Buenos Aires, ARGENTINA

1 - Dr. G. F. Humphrey, Chief
Division of Fisheries and Oceanography, Sydney, AUSTRALIA

1 - Dr. W. M. Cameron, Director of Oceanographic Research,
Department of Mines and Technical Surveys, Toronto, CANADA

1 - The Chairman, National Committee on Oceanic Research
Farmaceutiske Hojskole, Universitetsparken, Copenhagen, DENMARK

1 - Director, Fédération des Services Permanents d'Astronomie et de Géophysique Tidal Institute, Birkenhead, ENGLAND

1 - Secrétaire Général, Union Géodesique et Géophysique Internationale 140, rue de Grenelle, Paris 7e, FRANCE

1 - The Secretary, National Committee on Oceanic Research Laboratore d'Oceanographie Physique du Museum, 43 rue Cuvier, Paris 5, FRANCE

1 - Prof. C.S. Ramage, International Meteorological center
Colaba Observatory, Bombay-5, INDIA

1 - The Chairman, National Committee on Oceanic Research
P.O. Box 5192, Jerusalem, ISRAEL

1 - Director, International Hydrographic Bureau
MONACO

1 - The Secretary, Committee for Indian Ocean Expedition
Mesnil aux Roses, Vacoas, MAURITIUS

1 - The Chairman, National Committee on Oceanic Research
Royal Society of New Zealand, Victoria University College Bldg.
Wellington W. 1, NEW ZEALAND

1 - The Chairman, National Committee on Oceanic Research
Institut fur Marin Biologi B, Universitet i Oslo, Blindern, NORWAY

1 - Secretary General, World Meteorological Organization
Geneva, SWISS

1 - Secretary General
FAO, Food and Agricultural Organization, Rome, ITALY

1 - The Secretary, National Committee on Oceanic Research
Stacja Morska, PAN, Sopot, POLAND

2 - Van Camp Foundation
739 Golden Park Avenue, San Diego 6, California, U. S. A.

1 - Dr. John Marr, Director, Honolulu Biological Laboratory
Bureau of Commercial Fisheries, Honolulu, Hawaii, U. S. A.

1 - Director, Bureau of Commercial Fisheries
Department of the Interior, Washington 25, D.C., U. S. A.

2 - Acquisition Dept., Library, University of California,
San Diego, La Jolla, California, U. S. A.

1 - Director, WDC-A World Data Center A, Oceanography
Washington 25, D.C., U. S. A.

1 - Director, WDC-A World Data Ceneter A, Meteorology
National Weather Records Center
Grove Arcade Building, Asheville, North Carolina, U. S. A.

1 - Dr. Roger Revelle, Science Adviser to the Secretary of the Interior
Washington 25, D.C., U. S. A.

1 - Head, Department of Oceanography, University of Hawaii
Honolulu, Hawaii, U. S. A.

1 - Commander, U.S. Navy Oceanographic Office
Washington 25, D.C., U. S. A.

3 - Director, U.S. National Oceanographic Data Center
Washington 25, D.C., U. S. A.

1 - Director, WDC-B World Data Center B, Oceanography
Molodezhnaya 3, Moscow B-296, U. S. S. R.

1 - Director, WDC-B World Data Center B, Meteorology
Institute of Aeroclimatology, Ulitsa Vorovskogo,
33/35 Moscow G-69, U. S. S. R.

3 - Vice-Admiral V. A. Tchekourov,
Chief, Hydrographic Service, CCCP, Leningrad, U. S. S. R.

1 - The Secretary, National Committee for Oceanic Research
26 Maronovsky Pereulok, Room 21, Moscow V-49, U. S. S. R.

1 - Prof. Ilmo Hela, Director
IAEA, Laboratory of Marine Radioactivity, MONACO

Corrigenda of No. 1 of the Newsletter

Page 3. Koyo Maru 96°E ⟶ 94°E

Page 5. Correct the observation line of Koyo Maru 1962-62 from 96°E to 94°E.

Page 8. Prof. Ilmo Hela ⟶ Director

Page 9. Dr. N. K. Panikkal ⟶ Dr. N. K. Panikkar
Woods Hole Oceanographic Institution, Woods Hoke ⟶ Woods Hole

The Regional Association II of WMO was held at Bangkok from 18 to 30 October 1962 and the important problems concerning IIOE has discussed as follows: ---

14.1 International Indian Ocean Expedition

14.1.1 Prof. C. S. Ramage, International Scientific Co-ordinator for meteorology of the International Indian Ocean Expedition, was present at the meeting when the questions relating to this Expedition were discussed. He gave full explanations on the aims and the programmes of the Expedition.

The Association noted with great interest the establishment of the International Meteorological Centre at Bombay and its proposed meteorological programme. It decided that full support should be given to all activities of the Centre and urged the Members concerned to collaborate fully with the Centre.

The Association adopted in this connexion Resolution 14.1/I (III-RA II).

Res. 14.1/I (III-RA II) - INTERNATIONAL INDIAN OCEAN EXPEDITION

THE REGIONAL ASSOCIATION FOR ASIA,

NOTING, (1) Resolution 19 (EC-XIV);

(2) The decisions of the second session of the Intergovermental Oceanographic Commission and in particular Resolution 5.

CONSIDERING that the International Meteorological Centre being established at Bombay, provides a unique opportunity for the collection of valuable meteorological data from the Indian Ocean as well as for studies on tropical meteorology and specially the monsoon and tropical cyclones;

DECIDES, (1) That Members operating oceanographic vessels shall register those vessels as selected ships; and that such vessels shall make synoptic observations at 00, 06, 12 and 18 GMT which shall be sent with the minimum delay to the most convenient receiving coastal station;

(2) That these ships should also make upper air observations at 00 and 12 GMT as far as practicable and should also transmit these observations with the minimum delay to the most convenient receiving coastal station;

(3) That copies of meteorological logs maintained on such ships during the International Indian Ocean Expedition be sent to the International Meteorological Centre;

(4) That Members maintaining weather radar stations endeavour to provide the Centre with 35 mm photographs of the scopes of the radars for each synoptic hour where echoes are present and at more frequent intervals during disturbed periods;

(5) To request Members to take full advantage of the opportunities provided by the International Meteorological Centre for training and research; and to consider the possibility of providing or obtaining fellowships for that purpose.