

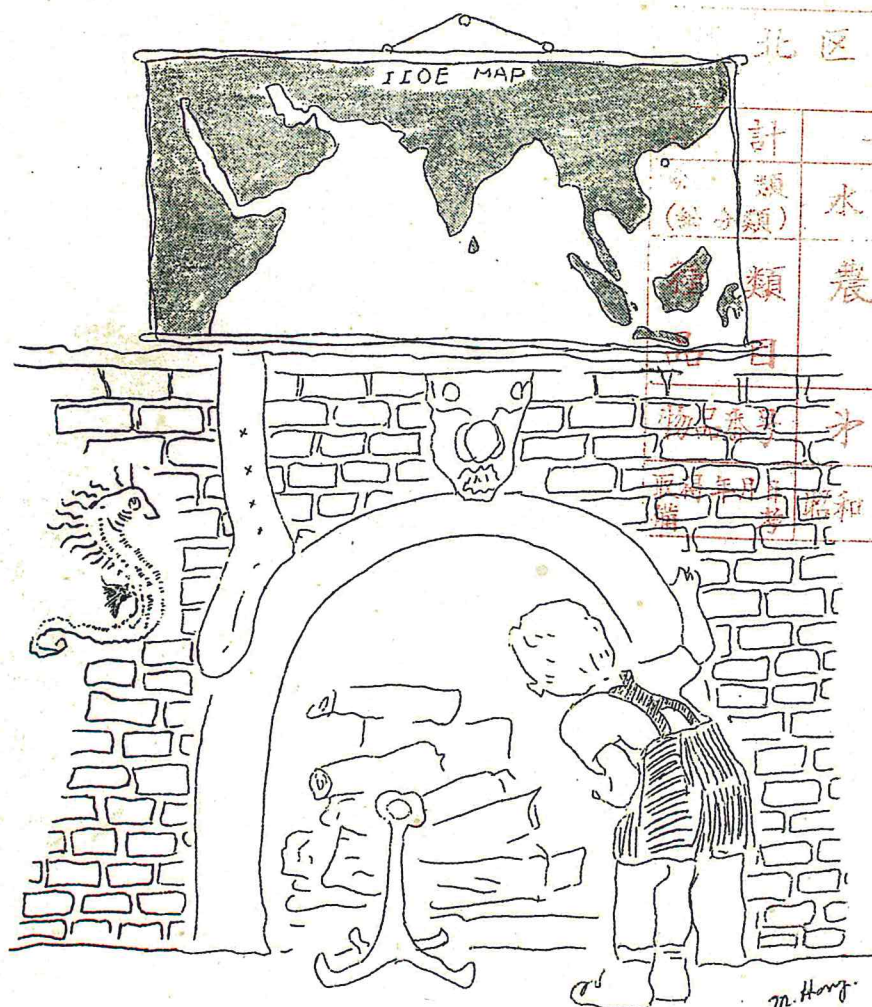
IIOE NEWSLETTER OF JAPAN

No. 4

December 1963

Season's Greetings

The staff members of the IIOE Newsletter of Japan wish to take this opportunity to extend the Season's Greetings to their friends concerning International Indian Ocean Expedition. We wish your successful and fruitful New Year. Especially, we extend our sincere greetings to the scientists and crews now on board of various survey ships making enthusiastic observations in the Indian Ocean.



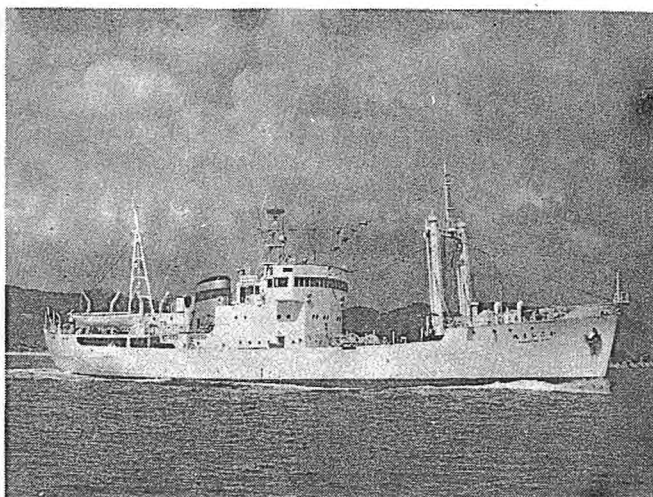
Published by
IIOE DATA CENTER OF JAPAN

Marine Division, Japan Meteorological Agency
Tokyo, Japan

Cruising Programme of Japanese Vessels in 1963 - '64 Observation

Details of four Japanese ships who already left Japan to participate the IIOE are as follows:-

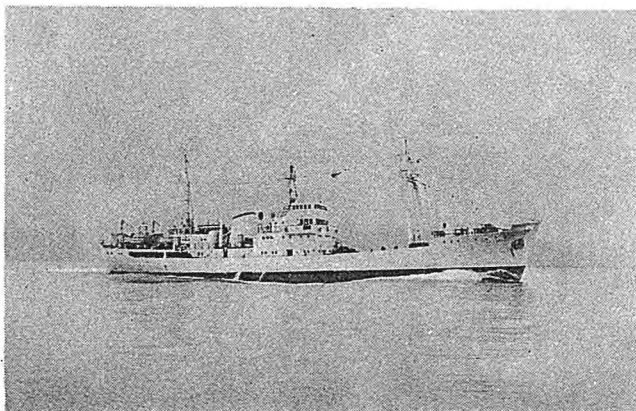
KAGOSHIMA - MARU, Faculty of Fisheries, Kagoshima University,
Ministry of Education, Kagoshima.



Specifications

Length, overall: 60.5 m	Air conditioned: Captain's room, day room, laboratory, wireless room, saloon, lecture room, mess room, hospital, cadet's quarter, crew's quarter
Breadth, moulded: 10.8 m	
Depth, moulded: 5.4 m	
Full loaded draft, moulded: 4.3 m	
Gross tonnage: 1,038 tons	Scientific winches:
Main engine: Diesel, 1,700 H.P. (1 set)	Trawl and deep-sea: Electric, D.C. 90 H.P.
Propeller: Single, fixed	Hydrographic: Oil-hydraulic, 15 H.P.
Cruising speed: 13.0 knots	Hydrographic: Electric, A.C. 15 H.P.
Cruising range: 13,000 nautical miles	Hydrographic: Electric, A.C. 5 H.P.
Complement: 95 (Officers: 15, Crew: 27, Cadets: 48, Scientists: 5)	G.E.K.: Electric, A.C. 15 H.P.
Laboratory: One room, 23.0 m ²	Built: September 15, 1960
	Shipyard: Mukaijima Shipyard of Hitachi Ship-building Co., Ltd.

KOYO - MARU, Shimonoseki University of Fisheries,
Ministry of Agriculture and Forestry, Shimonoseki.

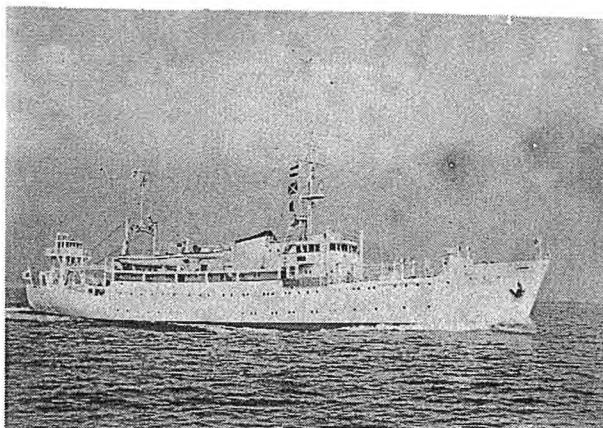


Specifications

Length, overall: 72.2 m	Laboratory: One room, 14.7 m ²
Breadth, moulded: 11.2 m	Air conditioned: Laboratory, living quarters, lecture room
Depth, moulded: 5.6 m	
Full loaded draft, moulded: 4.5 m	
Gross tonnage: 1,215 tons	Scientific winches:
Main engine: Diesel, 1,800 H.P. (1 set)	Trawl: Electric, D.C. 90 H.P.
Propeller: Single, fixed	Deep-sea: Oil-hydraulic, 20 H.P.
Special steering gear: Active rudder	Hydrographic: Electric, A.C. 7.5 H.P.
	Hydrographic: Electric, A.C. 5 H.P.
Cruising speed: 13.0 knots	Built: September 10, 1958
Cruising range: 15,000 nautical miles	Shipyard: Shimonoseki Shipyard of Mitsubishi Shipbuilding Co., Ltd.
Complement: 129 (Officers: 15, Crew: 29, Cadets: 80, Scientists: 5)	

UMITAKA - MARU,

Tokyo University of Fisheries,
Ministry of Education, Tokyo.



Specification

Length, overall: 73.4 m

Breadth, moulded: 11.3 m

Depth, moulded: 5.5 m

Full loaded draft, moulded: 4.5 m

Gross tonnage: 1,453 tons

Special construction: Stern slip-
way and
trawl bridge

Main engine: Diesel, 2,100 H.P.
(1 set)

Propeller: Single, fixed

Cruising speed: 13.0 knots

Cruising range: 14,400 nautical
miles

Complement: 118 (Officers: 15,
Crew: 36,
Cadets: 56,
Scientists: 11)

Laboratories: 2 rooms, 47.8 m²
(Chemical: 13.4 m²
Geology, Geophysics,
Biology, etc.: 34.4 m²)

Air conditioned: Laboratories and
living quarters and
lecture room on the
lower deck

Scientific winches:

Trawl and deep sea: Electric, D.C.
150 H.P.

Hydrographic: Electric, D.C. 20 H.P.

Hydrographic: Oil-hydraulic 7.5 H.P.

B.T.: Electric, D.C. 2 H.P.

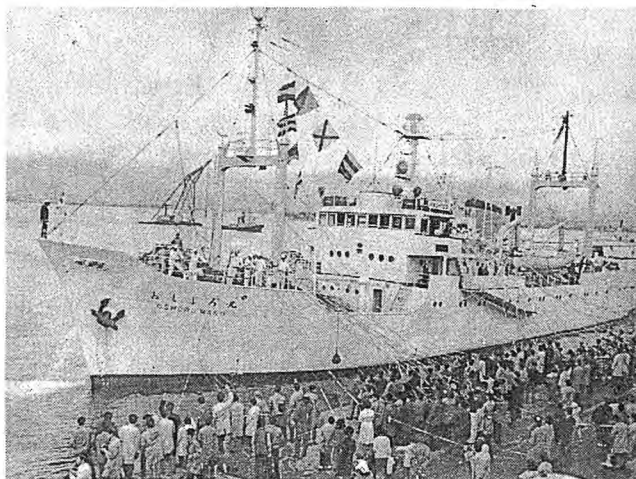
G.E.K.: Manual

Built: August 15, 1955

Shipyard: Osaka Shipyard of Fujinagata
Ship-building and Engineering
Co., Ltd.

OSHORO - MARU,

Faculty of Fisheries, Hokkaido University,
Ministry of Education, Hakodate.



Specifications

Length, overall: 66.7 m	Air conditioned: All living quarters, saloon, mess room, dispensary and hospital, laboratories, lecture rooms, wireless room
Breadth, moulded: 11.8 m	
Depth, moulded: 5.4 m	
Full loaded draft, moulded: 4.3 m	
Gross tonnage: 1,181 tons	Scientific winches:
Special construction: Stern slipway: reinforced forward of the hull for ice breaking	Trawl: Tentatively using old one, electric, D.C. 55 H.P. (to be replaced by oil-hydraulic, 120 H.P.)
Main engine: Diesel, 2,000 H.P. (1 set)	Hydrographic: Tentatively using old one, Electric, D.C. 5 H.P. (to be replaced by oil-hydraulic, 15 H.P.)
Propeller: Single, variable pitch	Biological: Tentatively using oil-hydraulic, 15 H.P. (to be replaced by oil-hydraulic, 20 H.P.)
Cruising speed: 12.5 knots	B.T.: Electric, A.C. 3 H.P.
Cruising range: 11,000 nautical miles	G.E.K.: Electric, A.C. 3 H.P.
Complement: 106 (Officers: 13, Crew: 27, Cadets: 56, Scientists: 6, Spare berths: 4)	Net vision: Manual
Laboratories: 2 rooms, 33.2 m ² (Physical oceanography, geophysics, and bacteriology, 13.7m ² , Biology, Chemistry and primary productivity measurement 19.5 m ²)	Built: September 29, 1962
	Shipyard: Osaka Shipyard of Fujinagata Ship-building and Engineering Co., Ltd.

Activities of the Japanese IIOE Working Group of the
Science Council of Japan

In order to make up the 1963 - 1964 Japanese winter season observation plan for IIOE, a combined working group meeting was held at the Science Council of Japan on July 4, 1963.

The following are the résumé of the proceedings of each working group.

Working Group for the Physical Oceanography in IIOE

(Japanese Project for the Winter Survey of 1963-'64)

The working Group agreed to the following. Members attended are as follows:-

Michitaka Uda (Chief) (Tokyo University of Fisheries),

Hidetaka Futi (Japan Meteorological Agency),

Tadao Takahashi (Kagoshima University, Faculty of Fisheries),

Takero Satoo (Shimonoseki University of Fisheries),

Masaaki Saen (Kagoshima University, Faculty of Fisheries),

Hideaki Kunishi (Kyoto University, Faculty of Science).

- (1) Coordination of the line of observation and spacing of stations.

The results are shown in the maps attached.

Participating three boats are "UMITAKA MARU", "KOYO MARU" and "KAGOSHIMA MARU" in this second cruise of IIOE.

- (2) Depths of observations

0, 10, 20, 30, 50, 75, 100, 125, 150, 200, 250, 300, 400, 500, 600, 800,
1,000, 1,200, 1,500, 2,000, 2,500, 3,000m., or more.

"UMITAKA MARU" as a principle, down to 3,000m. depth and possibly more deeper.

"KOYO MARU" 0 - 5,000m. depth (7 Sts. among 23 Sts.)
 0 - 3,000m. depth (8 Sts. " " ")
 0 - 2,000m. depth (7 Sts. " " ")
 0 - 1,500m. depth (1 St. Twice repeatedly)

"KAGOSHIMA MARU" ... 0 - bottom (intermediate 16 sts. 0- 1,500m.)

- ### (3) BT Observation

"UMITAKA MARU" 27 Sts. (regular St. interval: 120 miles) and
their intermediate Sts. (interval: 60')

"KOYO MARU" All Sts. (22 regular Sts. and Ref. Sts. 9°S, 105°E, and 32°S, 110°50' E.) and their intermediate stations (interval of 3 hours i.e. 30-35')

"KAGOSHIMA MARU" similar to the above

(4) Current measurements

- a) By means of two currentmeter method (Ekman type used).
(for each boat freely as possible as they can.
Standard layer to be referred 800m. depth.
Specially emphasized area for measurement 10° - 15° S.
was added.)

"UMITAKA MARU" at several stations.

"KOYO MARU" at each Sts. between 5° N- 5° S and 3 Sts. on 100° E
line. If possible, at each St. of 60' interval.

"KAGOSHIMA MARU" ... at each St. between 5° N- 5° S, every 30' between
 $1^{\circ}30'$ N- $1^{\circ}30'$ S, every 45' between $4^{\circ}30'$ N(S)-
 $1^{\circ}30'$ N(S).

- b) GEK
(At every Stations not carrying the measurement by two-currentmeter
method).

(5) Salinometer All boats equipped.

(6) Hydrographic casts in the fishery oceanographic survey in cooperation.

Working Group on Fishery Aspects of Oceanography for IIOE

(Japanese Project for the Winter Survey of 1963-'64)

1. The working Group was set up on 4th of July, 1963. Members attended at
that meeting were as follows:*

Tokyo University of Fisheries Michitaka Uda*, Yukiyasu Sasaki,
and Jiro Senno.

Ministry of Agriculture and
Forestry, Shimonoseki University
of Fisheries Yutaka Yoshida, Shiro Minami, and
Takero Sato.

Kagoshima University, Faculty of
Fisheries Tadao Takahashi, Masaki Saen.

Hokkaido University, Faculty of
Fisheries Shigeru Motoda.

* Dr. Uda who initiated this project was elected as the chief of
this Working Group.

2. The planned area of the fishery oceanographical survey by means of tuna
longline and trawl etc. in the second cruise of IIOE (October 1963 - March
1964) is shown in the map attached. Participating four boats are i)

"UMITAKA MARU", ii) "KOYO MARU", iii) "KAGOSHIMA MARU" and iv) "OSHORO MARU".

3. Experimental fishing survey by means of tuna long-line.
Number of basket to be used: 100-200 (hooks for one basket, 5-6).
Hook depths planned 60-150 meters.
Beginning of line thrown in 03.00 - 06.00 SAT
Beginning of line haul 08.30 - 15.00 SAT
4 boats participating
4. Experimental fishing survey by means of otter trawl.
On the continental shelf along the north and northwestern coasts of Australian continent.
2 boats participating: "UMITAKA MARU" and "OSHORO MARU".
5. Serial observation at each fishing ground.
Hydrographic cast down to 1,000-3,000 meter depths, daily once or over.
(In case of trawling ground down to the sea bottom.)
6. Current measurement by means of GEK and driftage of long line.
7. Plankton sampling.
Vertical haul (the same way as Biological Group).
8. Biological sampling by means of large-sized larval net.
Operation within the range of capability for each boat
(in the same way as Biological Group).
9. Benthos collection and bottom sampling in the case of experimental trawling.
10. Catch and its biological studies (stomach content of fishes, biometric studies etc.)
11. Investigation of migration and distribution of shark and killer-whale as predators of tunas (by means of eye observation and harvesting).
12. Investigation of larvae and juveniles for tunas (by means of net collection and stomach content studies. In cooperation to Nankai Regional Fisheries Research Laboratory).
13. Tagging experiment for tunas (mainly for fish by trawling for each boat as possible as they can. In cooperation to Nankai Fisheries Research Laboratory).
14. Flock of birds etc., in relation to fishing grounds (eye obs.).
15. Echo traces including DSL by means of supersonic fish finder.
16. Format of report (formats used by "UMITAKA MARU" A, B, C are referred).
17. Concerning the report of the fishery aspect of oceanography surveyed in the preceding year (Oct. 1962-Mar. 1963) the report shall be compiled.

Working Group on Chemistry for IIOE

(Japanese Project for the Winter Survey of 1963 - '64)

The working group agreed to the following plan.

Attendants:

Yasuo Miyake (Tokyo Kyoiku University)
Yoshio Sugiura (Meteorological Research Institute)
Yukio Sugimura (Meteorological Research Institute)
Yoshimi Morita (Tokyo University of Fisheries)
Satoru Kanamori (Nagoya University)
Keiichiro Shazuki (Shimonoseki University of Fisheries)
Hiroyuki Kitamura (Kobe Marine Observatory)
Kaname Saito (Otaru College of Commerce)

Results of the intercalibration tests, international and domestic were discussed on the report made by Rochford (1963) and by Sugiura. Results of check on the variation of standard solutions made at the first observation were reported. From the experience at this observation, the following points were recognized: A 100 mm long cell should be altered to a drum type one. Plastic dispensers are recommendable and ampouled standard solutions as well.

The following points were confirmed on the analytical procedure to be employed in the next observation.

Dissolved oxygen: Ampouled KIO_3 (1/50N) solution is to be used as a standard.

Phosphate: Ampouled standard solutions as shown below are to be prepared: 0.0, 0.2, 0.4, 0.6, 0.8, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, and 4.0 μg at/l for making a calibration curve. The calibration curve is to be checked at every station with four kind of ampouled standard solutions i.e. 0.0, 0.5, 1.0, and 2.0 μg at/l.

Total P: Collected waters are to be analysed after brought in a laboratory on land.

Silicate: Chromate solution is to be used as a standard.

Nitrate: Reduction is to be carried out following the method of Mullin and Rilay and coloration is accomplished with the G.R. Griess - Romijn reagent.

Nitrite: The G.R. reagent is to be used as color developing agent.

pH: An electric pH meter with a pair of glass electrode and calomel reference electrode is to be used and checked with two kind of buffer solutions i.e. pH 7.0 and 9.0.

Preparation of ampouled standard solutions of nutrients and buffer solutions for pH is to be supervised by Yoshio Sugiura.

Working Group on Meteorology for IIOE

(Japanese Project for the Winter Survey of 1963-'64)

The working group agreed to the following plan.

Attendants:

Hitetaka Fuchi (Japan Meteorological Agency)

Michitaka Uda (Tokyo University of Fisheries)

Takero Sato (Shimonoseki University of Fisheries)

Tadao Takahashi (Kagoshima University)

1) Surface observations

Four times a day by the KAGOSHIMA MARU, the KOYO MARU, the UMITAKA MARU, and OSHORO MARU. Time (00, 06, 12, and 18Z)

2) Aerological observations

Will be carried out on board of the KOYO MARU.

a) Radio-sonde observation once a day (12Z)

b) Pilot balloon observation once a day (12Z)

3) Observations on air-sea interaction problems

Will be carried out on board of the KAGOSHIMA MARU.
Four levels at each station, total 30 stations.

4) Meteorological information

The obtained data will be sent to the following coastal radio stations.

Singapore (or Penang)

Colombo

Djakarta

Sydney (or Perth)

Rangoon

Working Group on Bathymetry for IIOE

(Japanese Project for the Winter Survey of 1963-'64)

The working group agreed to the following plan.

Attendants:

Kazuo Taguchi (Kagoshima University)

Shiro Minami (Shimonoseki University of Fisheries)

Fumikichi Imayoshi (Japan Hydrographic Office)

Noriyasu Sasaki (Tokyo University of Fisheries)

1) Data form

Data form for submission is determined after the consultation between Japan Hydrographic Office and the captain of the UMITAKA MARU. Samples will be sent to the KOYO MARU and the KAGOSHIMA MARU in August.

2) Sound velocity correction table

Tables will be prepared at the Japan Hydrographic Office after H.O. 282 and will be sent to each participating ship.

3) Obtained data

The obtained data will be sent to the International Hydrographic Bureau.

Working Group on Geophysics for IIOE

(Japanese Project for the Winter Survey of 1963-'64)

1. Observations are carried out only on board of the UMITAKA MARU.

2. Disciplines

a) Gravity all course

b) Terrestrial magnetism all course

c) Seismic observation (natural earthquake) 27 points

3. Scientists

Y. Tomoda: Ocean Res. Inst., Tokyo University

J. Segawa: Tokyo University

Working Group on Geology for IIOE

(Japanese Project for the Winter Season of 1963-'64)

Bottom sampling plan

	Piston Core	Dredge	Number of Sampling point	Remarks
	Position	Position		
Umitaka-maru	9°S 113°E	23°S 113°E	6	At special point such as gyot, dredge is recommended
	9°S 106°E	21°S 106°E		
	15°S 106°E			
	25°S 106°E			
Kagoshima-maru	3°S 86°E		3	Dredge is recommended if possible.
	9°S 75°E			
	25°S 78°E (Gravity Core)			
Total	7	2	9	

Working group on Biology for IIOE

(Japanese Project for the Winter Season of 1963-'64)

The working group agreed to the following plan and procedures.

1. Deep divided vertical haul with a small closing net (mouth area 0.5m², 0.1 mm mesh aperture) for microplankton is made at 13 sts. by Koyo Maru and 17 sts. by Kagoshima Maru in 5 divided layers upper than 2,000 or 3,000 m depth.
2. 0-200m vertical haul with Indian Ocean Standard Net for medium sized zooplankton is made at 27 sts. (10 sts. of these in the fishing ground) by Umitaka Maru, at 22 sts. (twice at each st.)
3. Oblique haul with 160cm net for macroplankton, fish larvae and small nekton is made at 27 sts. (10 sts. of these in the fishing ground) by Umitaka Maru, at 13 sts. by Koyo Maru and at 22 sts. by Kagoshima Maru. 0-800m oblique trawling with Isaacs Kidd Midwater Trawl is made 9 sts. by Koyo Maru.
4. High speed sampling is made 27 sts. by Umitaka Maru, at 27 sts. by Koyo Maru and at 40 sts. by Kagoshima Maru.

5. Sample water for measurement of primary production is taken from 7 layers, 0, 10, 25, 50, 75, 100 and 125m layers. In situ method is used at 12 sts. by Koyo Maru and at 8 sts. by Kagoshima Maru. Simulated in situ method is used at 12 sts. by Koyo Maru. Tank method is used at 12 sts. by Koyo Maru and at 46 sts. by Kagoshima Maru (undecided for Umitaka Maru). Sample water for chlorophyll content measurement is taken from 9 layers, 0, 10, 25, 50, 75, 100, 125, 150 and 200m layers.

* * * * *

Meeting of the board of editors

Meeting of the board of editors, IIOE Newsletter of Japan was held at the Japan Meteorological Agency on Dec. 4, 1963.

Dr. H. Futi (Japan Meteorological Agency)

Dr. M. Hanzawa (Japan Meteorological Agency)

Dr. R. Marumo (Ocean Research Institute, Tokyo University)

Dr. Y. Sugiura (Meteorological Research Institute)

Mr. S. Yoshida (Japan Hydrographic Office)

Meeting of Marine Science Experts on the Kuroshio Region

The said meeting was held at the Ministry of Foreign Affairs of Japan, Oct. 29-31, 1963.

Representatives from China, Hong Kong, Japan, Korea, Philippines, U.S.A., U.S.S.R., and Viet Nam and observers from various international organizations such as WMO, FAO, etc. were participated.

Oceanographic discussions on the nature of the Kuroshio and observation plan of the Kuroshio waters were discussed.

We hear that

Dr. Kazuhiko Terada, the former editor-in-chief of the IIOE Newsletter of Japan left Japan for his new assigned post in Rome on Nov. 4, 1963. His present address is

Dr. Kazuhiko Terada, Fisheries Oceanographer
Fisheries Biology Branch
Food and Agriculture Organization
of the United Nations
Delle Terme di Caracalla
Rome, Italy

IIOE OBSERVATION LINES
KAGOSHIMA-MARU
KAGOSHIMA UNIVERSITY
8/11/'63 - 15/2/'64

