

BOOKS IN REVIEW

GENERAL FISHERIES COUNCIL FOR THE MEDITERRANEAN Proceedings and Technical Papers 5

27.5 × 20 cm, pp. 536; figs., ill. and plates
Food and Agriculture Organization of the United Nations, Rome, 1959

In 1959 the Food and Agriculture Organization of the United Nations published the proceedings of the fifth meeting of the General Fisheries Council for the Mediterranean held at FAO headquarters in Rome from 13 to 18 October 1958.

The volume is divided into two parts.

Part I consists of the report of the actual proceedings and lists the resolutions adopted. These are not concerned with hydrography.

Part II comprises the technical papers presented during the meeting. Owing to the close relationship between marine biology and physical oceanography proper, one of the papers submitted is likely to interest hydrographers since it describes the use of echo sounders in fish detection (*). The author is Sr. Fernando LOZANO CABO, Director of the Laboratory of the Spanish Oceanographic Institute, and his paper is entitled *Critical Study of Echo Sounders Used for Tuna Detection* (in French).

Experiments are described in the detection of tuna with echo sounders during the summer of 1957, while fishery investigations were being carried out in the Strait of Gibraltar. The trawler used was *La Flamenca*, which was equipped with ELAC echo sounders, enabling horizontal or vertical sounding, with graphic recording. Acoustic reception by loudspeaker and headphones was moreover available in the case of horizontal sounding, and visual reception on the fish magnifying screen for vertical sounding.

In a horizontal direction the equipment could either operate in a fixed direction, or automatically sweep the sea surface from right to left over a 45° angle in any direction. If operated manually, the sweep could be extended 170° on the port and starboard sides, with a 20° dead angle forward. The author notes that the automatic sweep was only effective at slow speed or when stopped; hence manual control was mainly used or operation in a fixed direction at various angles according to the course followed.

Careful study of the horizontal and vertical sounding echograms resulted in certain observations which extend beyond the field of fishery research and may assist hydrographers in the investigation of underwater obstacles (shoals, wrecks, etc.).

Tuna, porpoise, shark and other large fish produce a signal on the horizontal-sounding echograms which is translated as a small vertical trace averaging 2 mm, but this length increases according to the extent of the school in the direction of sounding. In the case of a single fish, the echo may reduce to a dot. If the ship

(*) See Use of Horizontal Sounding for Wreck Detection, by Dr. E. AHRENS, *Intern. Hydrog. Rev.*, November 1957.

is stopped or travels along a course parallel to that of the school, the echoes remain at the same range on the reading scale, indicating that the distance from ship to school is unvarying. The entire set of echoes is appreciably in the shape of a crescent formed by successive vertical lines which increase in length from a minimum to a maximum and decrease again. If the courses are not parallel, the set of echoes forms a sort of strip which moves towards or away from the zero of the paper scale, as the ship's distance from the shoal decreases or increases. As the lower edge of the transmitted beam slopes increasingly downwards away from the ship, echoes obtained in shallow water may be reflected from the bottom. To ensure the most favorable results, the author hence recommends sounding in a direction of increasing depth. In selecting range, he gives preference to the 0-1 000-m scale over the 1 000-2 000-m scale, which supplies no indications between 0 and 1 000 m. Additionally, the 0-1 000-m scale facilitated the observation of detected fish when they rose to the surface.

Vertical sounding was only used to ascertain the exact depth of the school when the ship was travelling above it. It was not possible, however, for the ELAC sounder to supply simultaneous indications of the horizontal distance of the schools from the ship and their depth, and loss of contact was thus threatened. The author noted repeatedly that when the ship drew close, schools that had been detected over long distances suddenly disappeared, thus creating the impression that the fish were sensitive to transmission and avoided it. He consequently believes that an instrument should be available for taking simultaneous horizontal and vertical soundings by means of separate recording devices. He also considers that acoustic reception by loudspeaker and headphones is an essential requirement. By this method he was able to determine with great accuracy, without referring to the echogram, the various types of fish (such as tuna and porpoise), the bottom characteristics, the wake of a ship, and even the type of ship propulsion (sail or steam).

MANUAL DEL HIDROGRAFO

(Hydrographer's Manual)

by Lieutenant Commander Vicente GANDARIAS (I. H.)
and Lieutenant Commander Ramon RIBAS (H.)

24 × 17 cm; 237 pages

Instituto Hidrografico de la Marina (Seccion Hidrografica), Cadiz, 1959

This hydrographer's manual, issued by the Hydrographic Section of the Spanish Navy Hydrographic Institute as Special Publication 6, is the work of two naval officers who are hydrographic specialists. Essentially the volume is of a practical nature, to be used as a guide in surveying operations. There are eight chapters: chapter I lists the basic mathematical formulas used in hydrographic surveying; chapters II and III discuss the geodetic knowledge required: instruments, projections, astronomy of position, triangulation, levelling, etc.; chapter IV deals with tides, chapters V and VI with topography and the measurement of magnetic declination on land and at sea; chapter VII describes the various operations at sea required in hydrographic surveying: soundings, sweeping, current measurements, coastal views, running surveys, etc.; and chapter VIII outlines the organization of landing parties and the health precautions these should observe under certain conditions.

A number of appendices indicate the various types of computations that are called for : triangulation, geographical positions, adjustment, levelling, harmonic constants, currents, and magnetic declination.

It is believed the volume will prove of valuable assistance to hydrographers.

DYNAMICS OF THE SEAS

by H. LACOMBE

530 pages, 218 figures, 24 × 28 cm

Service Hydrographique de la Marine, Paris, 1957-1958

The Naval Hydrographic Office of France recently published the course of lectures entitled : *Dynamics of the Seas* given at the Office's Training School by Chief Hydrographic Engineer H. LACOMBE, detached as professor of physical oceanography at the Museum of Natural History. This course was designed primarily for the training of hydrographic engineers who, in addition to directing basic physical oceanographic operations at sea, should have a knowledge of the mechanics of the most important marine phenomena. It deals with the few physical properties indispensable for the study of marine movements, which form the chief subject of the course, i.e. general circulation and waves and swells. The publication is divided more or less equally between these two main divisions.

There are 15 chapters as follows : (1) Introduction; (2) Sea water; (3) Hydrological measurements at sea; (4) General information regarding currents; actuating forces; (5) Equation of hydrodynamics; (6) Permanent currents as affected by internal forces; (7) EKMAN's theory and drift and slope currents; (8) Coastal circulation; (9) True marine currents, their causes, general theories and syntheses; (10) Swell and waves : general; very-short-range swell; capillary waves; (11) STOKES' swell; (12) GERSTNER's swell and R. MICHE's swells; (13) Balance of energy, prediction principles, statistics, propagation of a limited wave train; (14) Wave and swell changes near the coast; (15) Observation and recording of swell.

Each chapter ends with a bibliography.

LE SPIAGGE ITALIANE IN EROSIONE E LE ANTISTANTI VALLI SOTTOMARINE

(The Italian beaches under the influence of erosion and their offshore
submarine valleys)

by Engineer Agatino d'ARRIGO

« Bolletino della Società Geografica Italiana », 1959, No. 6-8

The author of this article, the present Director General of Maritime Installations in the Italian Ministry of Public Works, is a well-known specialist in the study of coastal behaviour and in maritime constructions. Born at Catane in 1899, he obtained his civil-engineering degree in Rome and subsequently worked on

several maritime projects in Italy and abroad. Amongst other appointments he has also been rapporteur of the XVth International Navigation Congress, expert to the Maritime Hydrographic Service of the Italian Public Works Higher Council, and technical adviser on marine physiology to the French Colonial Department. He is a member of a number of scientific academies and associations, a contributor to Italian and foreign reviews and the author of numerous works which frequently combine a technical and historical approach to the study of the evolution of certain phenomena through the centuries. The following should be noted amongst others : *L'antica laguna Tiberina e i porti di Roma imperiale* (The ancient lagoon of the Tiber and the ports of Imperial Rome); *Leonardo da Vinci ed il regime della spiaggia di Cesenatico* (Leonardo da Vinci and the behaviour of the Cesenatico beach); *Natura e tecnica del Mezzogiorno* (The nature and technique of southern Italy); etc.

In the article in question, the author, after a short introduction on the various aspects of sea erosion and on the studies carried out not only abroad but in Italy as well with a view to avoiding its consequences, mentions the presence, off some of the Italian coasts, of submarine canyons which, as the natural passages for water currents and centres of powerful energy, are, in his opinion, the principal causes of the various stages of erosion to be found on the facing beaches. The author enlarges on the different types of rock of which these underwater valleys are formed and on the character and origin of the sediment to be found on the inter-valley terrain and in the emerging areas leading to the facing beaches. Finally, he suggests the systematic observation, periodically brought up to date, of the position of the morpholithological characteristics of the submarine canyons in the coastal shelf in order to be able to provide a more effective defence for the eroded beaches by the construction of suitable protective works.

CINEMATICA NAVALE E RADAR

(Naval kinematics and radar)

by Benedetto PONZA DI SAN MARTINO
Professor of Manoeuvres, Genoa School of Navigation

1 volume, 15.5 × 22 cm, including 146 pages and figures
Published by Edizioni Scientifiche, Genoa

The author of this treatise has been connected for many years with radar and in particular with its use in the prevention of collisions at sea. It was he who organized in Italy the first courses for radar operators and it was in fact while teaching that he realized the need for a small manual containing nothing but the basic information that a radar operator should have.

As the author explains in the preface to his treatise, as far as the instrument itself is concerned, a radar operator only needs to know enough to be able to handle and use it correctly; on the other hand, what he does need to know thoroughly is how to use to the best advantage the data supplied by the instrument. The manual has been designed with precisely this end in view.

The first chapter, after having briefly covered the principles of radar operation, gives, with the help of an accompanying figure of a modern radar instrument panel, a detailed description of the handling of all the instrument controls.

Chapters two, three and four cover radar use : chapter two explains the basic principles of naval kinematics and the method of passing from the relative

to the actual movement of two vessels either with the plot or by means of an Italian instrument called the "Adjutor".

The third chapter is, in the main, a study of the different manoeuvres that can be carried out with a combination of radar and the Adjutor. A description is first given of the disengagement manoeuvre, which is the basic manoeuvre carried out when radar is used as an anti-collision instrument. Then the manoeuvre for joining another vessel and "radar ranging" are described, that is the method of guiding one vessel towards another during conditions of poor visibility, for example, a tug to a vessel in distress. The last part of the chapter deals with the use of radar in coastal navigation.

The fourth chapter is short and gives certain practical hints for the use of radar.

The fifth and last chapter is a collection of 100 practical exercises which are very useful for anyone who, having mastered the theory of the question, wishes to put his knowledge of plotting into practice.

It should be mentioned, in conclusion, that the book has been very well produced: the subject has been clearly and simply presented and the different parts are excellently balanced. The publication fulfils completely the purposes for which it was designed and can be used equally well as a text book for radar operation courses and as a shipboard guide for the bridge officer.
