

BOOK REVIEWS

THE ADMIRALTY CHART **British Naval Hydrography in the Nineteenth Century**

by Rear Admiral G. S. RITCHIE, D.S.C.
Hydrographer of the Navy

388 pages; 11 illustrations; 12 maps; 14 × 21 cm
Publishers, Hollis & Carter, 9 Bow Street, London, W.C.2.; Price 84 s.

As the author says in his Foreword, this is firstly a book of history — and it makes most absorbing reading. It covers the surveying activities instigated by the eight Hydrographers of the Navy who held office during the 19th Century.

Admiral RITCHIE recounts with a wealth of detail how the small band of Naval Officers who devoted themselves to the making of charts grew in strength with each generation, and how the teaching and dedication of these hydrographers influenced those who followed them. Their names and exploits are known far outside the circles of the Royal Navy; Vancouver for his surveys in the N-E Pacific, Flinders' circumnavigation of Australia, Owen's African surveys, Parry, Franklin and Ross in the N-W Atlantic, and those many pioneers of Arctic and Arctic explorations — the list is a long one.

He tells too of the lamentably small and underpaid civilian staff at first most grudgingly granted, a staff which even in the second decade of the 19th Century amounted to only six.

Time and again we are given the history of methods and documents instituted by far-sighted Hydrographers. We hear, for instance about the first appearance of Sailing Directions during Parry's term of office; these were based on the Captain's Remark Books, the brain child of an earlier Hydrographer.

The early theodolites, with their 'wires' of real spider's web, and the cumbersome chronometers had both been invented in the 18th Century, and during the 19th Century there was no similar advance in equipment available to the sea surveyor. As Admiral RITCHIE says "it is the stupendous efforts made by surveying officers of the Royal Navy and the magnificent and world-wide results that they obtained with the tools available that makes the hydrographic story of this (the 19th) Century so remarkable."

The "magnificent results" are for all to see, for they were perpetuated in the numberless charts issued, but the world at large does not know very much of the "stupendous efforts", and it is these efforts in all quarters of the globe which Admiral RITCHIE describe so well for us, enlivening the descriptions of sometimes grim and cheerless work with humorous touches, largely taken from contemporary accounts.

Not all the accounts are of surveyings exploits, and not all are afloat; we learn of the 120-mile ride overland in Chile made by Captain Fitzroy of the

Beagle to go to the rescue of the shipwrecked crew of *HMS Challenger*, and also of the physical hardships endured on surveying campaigns in the Arctic wastes.

When we realize that Admiral RITCHIE wrote much of his book in his rare hours of leisure at sea we see why it took him some six years to write. The scholarly approach to his subject, and the well documented accounts of surveying campaigns are the fruits of this labour of love.

We will end by quoting — as does Admiral RITCHIE — the last sentence of the *General Instructions to Hydrographic Surveyors*, issued in 1850 by Admiral Sir Francis Beaufort (of wind force scale fame). "The Hydrographic Surveyor should be alert to take advantage of his opportunities by adding to the general scientific knowledge of the world when working in the lesser known quarters of the Globe". This manual, now in its 11th Edition, is still in use, being constantly brought up-to-date by amendments : it provides a first-rate example of the adage "tradition is still with us".

MANUAL DE HIDROGRAFIA
(Manual on Hydrography)

by J. A. BARAHONA FERNANDES
Commander, Hydrographic Engineer

Published by the Instituto Hidrografico, Ministério da Marinha, Lisboa, 1967;
26 × 18 cm; XXII + 711 pages; many illustrations; 10 tables.

This manual in a single volume sums up a great number of ideas set out in more detail in such specialist works as treatises on geodesy, photogrammetry, tides, etc. It is obvious that in a volume of 700 pages not all the sciences and techniques serving hydrography can be treated at length.

But this manual is written by a specialist who has spent around 30 years in the service of hydrography and in teaching this discipline : he has known how to extract the essential needs of a hydrographer both in the field and in the office from these sciences. Many hydrographers, even highly qualified ones, could refer to it to refresh their memory on matters forgotten, or else to learn the essentials of methods of which they have not yet had experience.

The work is extremely well presented, and is divided into 19 chapters as follows :

- I. — General.
- II. — Basic geodetic networks.
- III. — Geodetic computations on the ellipsoid.
- IV. — Cartographic projections.
- V. — Angle measurements.
- VI. — Distance measurements.
- VII. — Control triangulation.
- VIII. — Classical topography — planimetry.
- IX. — Altimetry.
- X. — Photogrammetric surveys.
- XI. — Astronomic observations.
- XII. — Localization of soundings by classical methods.

- XIII. — Localization of soundings by radioelectric methods.
- XIV. — Depth measurement.
- XV. — Sounding.
- XVI. — Tides.
- XVII. — Magnetic observations.
- XVIII. — Current observations.
- XIX. — Cartography and printing processes.

The simple enumeration of these chapter headings shows that the author has omitted nothing in the difficult art of hydrography. Certain chapters, for instance those on radiopositioning of soundings and on depth measurements, are notably complete and, what is even rarer, up to date.

This first edition is therefore a noteworthy success. It is to be hoped that the work will have a large circulation. Written in Portuguese, and therefore fairly easily read by latin peoples, it deserves to be translated into other languages, for it constitutes a quite exceptionally useful tool for the hydrographic community.

ILLUSTRATED GLOSSARY OF SNOW AND ICE

by Terence ARMSTRONG, Brian ROBERTS
and Charles SWITHINBANK

60 pages; 79 illustrations; 23.5 × 16 cm.
Printed for the Scott Polar Research Institute
Cambridge, England, 1966.

This slim volume is Special Publication Number 4 of the Scott Polar Research Institute. It is published with the support of UNESCO, and came to be written as a result of the practical necessity for international agreement on equivalent terms and their definition.

The work contains a classified summary of terms, a section devoted to definitions and linguistic equivalents in eight other languages (Danish, Finnish, French, German, Icelandic, Norwegian, Russian and Spanish), and a series of 79 splendid illustrations of snow and ice forms. It ends with indexes in the eight languages.

The authors have thus brought up-to-date their earlier work published in *Polar Record* for, with the present day need for coding of messages and facsimile radio transmission of ice charts, internationally agreed concepts have become an urgent necessity. The present work makes an important contribution to the literature on the polar environment which, in view of sub-marine navigation possibilities, is taking on an ever increasing importance.

METHODEN UND ERGEBNISSE DER THEORETISCHEN OZEANOGRAPHIE
Theoretic Oceanography — Methods and Results

II. — Interne Wellen

II. — Internal Waves

by Wolfgang KRAUSS

VIII + 248 pages; numerous tables and figures;
Gebrüder Bornträger, Berlin-Nikolassee; DM 110

Written in German, but containing summaries of each section in the English language, this is Volume II of a series of three books on theoretic oceanography.

The volume is divided into two parts and into the following sections.

Part I : Theory of internal perturbations.

- 1.1. Basic equations.
- 1.2. Solutions of the homogeneous wave equation for harmonic waves by the method of separation.
- 1.3. The energy of internal waves.
- 1.4. Solutions of the homogenous wave equation by means of general wave functions.
- 1.5. Internal waves in waters of variable depth.
- 1.6. Origins of internal waves.
- 1.7. Secondary effects on internal waves.
- 1.8. Description of non-periodic processes by the eigenfunctions $W_n(z)$.

Part II : Observation and analysis methods for internal waves.

- 2.1. Observation methods.
- 2.2. Preparation of observation material.
- 2.3. Methods of analysis.
- 2.4. Statistical reliability of the results.
- 2.5. Interpretation of the spectra by means of internal waves.

There is a glossary of the principal symbols and also a very full bibliography.