



BOOK REVIEWS

Practical Handbook of Marine Science, Second Edition, Michael J. Kennish, 1994. 566p. (HC) ISBN 0-8493-3712-7, \$89.95 (PBK)/\$115.00.

This handbook is presented in 5 sections. The first 4 sections, which are extended from its first edition by the addition of updated information, covers the four basic branches of marine science: Physical Oceanography, Marine Chemistry, Marine Geology, and Marine Biology. A new section, Marine Pollution, is added to discuss some important scientific and societal issues pertaining to the relationship between the human and marine environment. The whole book is well illustrated with 267 figures and 293 tables cited from professional books, journals, and other academic publications. A short, but informative, introduction to the major topic to be addressed is given at the beginning of each section. Tables and figures are then presented to describe the theories, natural phenomena, statistics and up-to-date information.

Section 1 (69 figures and 22 tables) gives the reader a synoptic introduction to the major studies in the field of physical oceanography. Open ocean circulation, thermohaline circulation, waves and coastal and estuarine circulation are emphasized. Properties of important oceanographic and estuarine signatures such as Gulf Stream, water masses, Kelvin waves, tsunamis, and fronts, are succinctly described. Commonly used constants (e.g., sea water properties) are tabulated. Section 2 (16 figures and 50 tables) concentrates on the discussion of elements (major, minor, trace, and nutrient) and organic matter in open oceans, estuaries and atmosphere. This section provides a comprehensive description of the physical and biogeochemical processes of carbon, nitrogen, phosphorus, and trace metals. Section 3 (102 figures and 39 tables) presents several aspects of marine geology focusing on the theory of plate tectonics. It offers a large amount of seismic, magnetic, gravity, and heat-flow data related to the ocean basins, major structural features of the seafloor, and mechanisms of plate tectonics. Instru-

mentation commonly used in deep-sea research is also briefly described. The majority of the emphasis is placed in deep-sea marine geology in this section with some discussions of coastal marine geology and geomorphology at the end of the section. Section 4 (31 figures and 71 tables) deals specifically with marine biology. Spanning from bacteria to fish, it covers the major faunal and floral groups found in estuarine and marine environments. The classification, spatial distribution, biomass and density, feeding strategies of the fauna and flora, as well as their trophic relationships are well illustrated. Section 5 (49 figures and 106 tables) pollutants and the pollutants' fate in the marine environments are discussed very well. In addition, a review of the environmental legislation is provided. The addition of this section will have more appeal toward practitioners, administrators and other management users.

The strength of the book is that it provides the scientist and student a wide spectrum of information covering all of the major disciplines of marine science. The references provided for all the tables and figures will also help the reader when additional research is necessary. A significant weakness, however, is the poor quality of many figures used in the text. The cartographic quality of many figures is nothing short of abysmal and quite inexcusable given this is the second edition. Regardless, this is a comprehensive, practical handbook of marine science. Readers will like its wide scope of information and easy-to-use format.

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Before & After an Oil Spill, J. Burger (ed), 1994. New Brunswick, New Jersey: Rutgers University Press, 305p., ISBN 0-8135-2095-9, \$50.00.

In January 1990, 567,000 gallon of No. 2 fuel oil appeared on the surface of the Arthur Kill, New York Harbor. Since the spill involved more than 10,000 gallons, it was considered by the United States Coast Guard to be a major incident. Because of the concentration of oil-related industries and storage facilities in the region, the authors' note oil pollution is a continuous problem. Approximately 18 billion gallons of oil arrive in the harbor annually via barges and more than 1,700 oil tankers. Consequently, spills are common but they are usually small, contained, and go unnoticed. However, the Arthur Kill incident was the largest single event to affect the Arthur Kill region. Even so, with the large quantity of mineral fluids moving through the area's waterways one would expect all parties responsible for reacting to an oil spill to be prepared. One important point made in this book is that intrastate jurisdiction can cause administration problems that delay the deployment of the people required to respond properly to a spill. As a result, cleanup and damage assessment were hampered initially by the number of state agencies (from New York and New Jersey), federal agencies, and private organizations involved. With time, cooperation did prevail.

This book is a collaborative effort involving 11 contributors (John N. Brzorad, Joanna Burger, Angela Cristini, Keith R. Cooper, Lynne Frink, Michael Gochfeld, Romona Haebler, Paul M. Hauge, Gordon J. Johnson, Alan D. Maccarone, Katharine C. Parsons, Carolyn Summers, and Robert K. Tucker) who worked directly or indirectly on mitigating the Arthur Kill incident. While the volume does contain considerable information on ecosystems and their dynamics, the editor does not overlook public policy, the law, government cooperation, and a number of important people/cultural matters as well. This is refreshing, since socioeconomic considerations are often overlooked.

The book has eighteen chapters divided into three themes (Responses and Cleanup, Biological Effects, and Conclusions). In general, all chapters are well written and organized around general topics before addressing specific points and/or problems. This approach provides the reader with good background information that helps understand the principal topic. Further, each contributor tries to note the important problems and concerns associated with his or her chapter. One of the book's strong points is its bibliography.

There are more than 30 pages devoted to references.

Although the Arthur Kill event serves as the book's focus, many contributors digress. They, in fact, address numerous issues/problems/questions that are more general than specific. Therefore, if a reader intends to purchase this book just to learn about the Arthur Kill oil spill, they may be disappointed. Several chapters deal with important subjects, but they are only marginally related to the Arthur Kill incident. These chapters serve, however, as reminders to significant general concerns and the authors do a good job discussing these non-Arthur-Kill related themes.

An important underlying thesis is that this incident can provide valuable information on how to best organize before and after an oil spill to maximize the cleanup, damage assessment, biological monitoring, and subsequent rehabilitation efforts. As is often the case, in order to accomplish these goals there must be a long-term commitment to the research involved. Follow-up studies are hard to fund. The contributors regard this as a problem that needs to be addressed systematically. Regardless, it is a good book and while one may be a bit disappointed by the extraneous material not related directly to the Arthur Kill incident, it can serve as an important manual for documenting this spill and understanding all of the various elements that surface when one has to respond to a disaster involving oil, water, marsh, birds, mammals, and human kind.

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Physical Models and Laboratory Techniques in Coastal Engineering, S. A. Hughes, 1993. 568p.

This text is the outgrowth of course notes on physical modeling prepared by the author as an instructor for the U.S. Army Engineer Waterways Experiment Station's Graduate Institute. Although written for graduate level instruction, it is enjoyable and informative reading for engineers and scientists with a background in fluid mechanics and wave mechanics.

The book addresses the art and science of laboratory physical modeling applied to real prob-