

AN INTRODUCTION TO MARINE BIOGEOCHEMISTRY

By **Susan Libes**, ISBN 0-471-50946-9; John Willey and Sons, Inc; 1715 p., 30 chp., 13 app., glossary.

Review by Christopher G. Kendall

This book is intended for use as a textbook by advanced undergraduates and master's students studying in Marine Sciences. By anyones standards it is a massive text and I don't envy the average Marine Science undergraduate who might be faced with it. At the same time one might wonder what interest a geophysicist might have in reading such a tome. However this book may come in handy to you in this new age of the Renaissance geoscientist who is forced to be an expert in many more subjects than one speciality. This is particularly true of the acoustic geophysicist who concentrates on the sedimentary record and its response to marine processes. Clearly a better understanding of the marine environment leads to a better understanding of the sedimentary section and this leads to better predictions within the oil industry.

This is a well illustrated and well written text book. Its first half concentrates on the basic chemistry of sea water. Here there are sections on the physical chemistry of sea water, its redox chemistry and the chemistry of marine sediments. Chapters include discussions on the relationship between the earths crust and the ocean, how one can trace water type across the globe, how gases can be dissolved and exchanged across the air water interface, the importance of oxygen, how organic matter is produced and destroyed, trace elements in sea water, the effects of diagenesis in sea water, what is the relationship between sediments and the chemistry of sea water, the development of biogenic silica, evaporates, manganese nodules, etc, etc including hydro-thermal deposits. The second half of the book focuses on organic geochemistry, isotope geochemistry, and the effects of marine pollution.

All topics touched upon in the book are in some way or the other considered by many geoscientists, particularly if they are employed by the oil industry and the search for hydrocarbons. For this reason this text is a useful reference and possibly even a useful text for the shelves of your personal library, particularly since it covers such a range of topics including the radiometric dating of sediments, the use of stable isotopes to study paleoceanography, how organic compounds are produced and destroyed in the sea, the marine nitrogen cycle, the marine carbon cycle and the production of carbon dioxide, the origin of petroleum, etc. If you are interested in black smokers, there is something for you; if you are interested in micro tektites, there is a small section on those; there is even a discussion of submarine canyons and fans and how they modify the sea floor, etc, etc.

Susan Libes should be congratulated on a really excellent and complete text. She is a widely read marine scientist and has produced a well organized and extremely easy to read book. While I don't see the geophysical community rushing out to buy this book I feel certain it will not be a loss to have it on the shelves of your local or company library. For instance should you just want to look up the Green House effect and its relationship to carbon dioxide, or how pollution in sea water can be recognized and measured, and what the effects of these pollution might be on the marine environment, you have something on hand. This is an interesting book and I am really glad to have it on my shelves. I recommend it to you if you have a need for understanding anything of the biogeochemistry of the ocean and its relationship to the sedimentary record.