

ample evidence to prove this sore fact, from Peru through the Indus valley of Pakistan where land is rotated through the vicious circle of reclamation-irrigation-salinization-etc. (K. Ahmad), and even to "the Central Valley of California, the most intensively irrigated area of the United States, where areas such as the Tulare Sub-basin have no natural outlet or drainage, leading to an alarming increase in salinity" (p. 160). One can only stress the validity of the author's concluding statement: "Sustainable development over the long term is not a choice but an imperative for society." (p. 313).

This is a fitting conclusion of an excellent book on a critical subject humanity has to face.

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MARINE MINERAL RESOURCES by F.C.E. Earney. London: Rutledge, 1990.

Like many *terrae incognitae*, the deep sea is expected by many to contain fabulous riches, natural treasures waiting to be picked up. Finds of metallic mineral deposits in the deep ocean and petroleum reservoirs in the open seas enhanced that image, which, although bearing a minute grain of truth, is not correct. Consequent to these finds, the interest of many countries in the marine natural resources of their adjacent marine environment, as well as the high seas, had risen to a level where international ground rules were required to arbitrate existing conflicting claims and to settle expected future disputes. Earney's book on *Marine Mineral Resources* is an important contribution to the clarification of the verifiable natural resources of the deep sea and the continental margin, and the technologies of their exploitation, as well as a comprehensive review of the means set by the international community to divide these resources among sea-dwelling and land-locked nations.

Earney's book is divided into two parts, the first discusses the politics and the resources of the deep sea, and the second deals with the continental margins. The book attempts to cover comprehensively all the variable aspects of marine mineral resources, and discusses a wide and varied spectrum of topics, such as plate tectonics, the Law of the Sea, and the geology, technology and geopolitics of offshore petroleum. That comprehensiveness leads to the presentation of a considerable series of facts and interpretations, which is the significant contribution of the book.

The opening chapters are dedicated to the Law of the Sea, the history of the efforts to negotiate the legislation and the essence of that international legal Convention. Earney unfolds the need for international legislation on the exploitation of the mineral resources of the deep sea in a lucid manner. He describes the conflicting interests of the pioneer investors and the devel-

oped countries versus the countries that lack the technologies and the financial support to participate in oceanographic exploration. The incompatible views of the United States, the Soviet Union, of the land-locked states, of the sea-dwelling countries, and of the industry, are also presented, thus the prolonged deliberations on the legal and economic aspects of the Law of the Sea are explained and accounted for.

Following the legal section of the book, Earney describes the principal marine mineral deposits, their structural setting, as well as the technology and the economy of their exploitation. Brief descriptions of the renowned manganese nodules deposits, scattered in places on the ocean basins floor, as well as the Mid-Ocean Ridge polymetallic sulphide deposits is presented. The innovative technologies required to explore and exploit these deposits are described. A realistic assessment of the probable value of the mineral deposits versus the estimated costs of their exploitation is also presented. Earney rightly observes that the legal complications are not the main reason for the delay in the exploitation of the ocean floor metallic mineral deposits. It seems that the principal cause of the deceleration of the projects to mine the ocean floor has probably been the difficulty and complexity of the technological developments and the shortage of inexpensive financing.

The second part of the book discusses the mineral deposits of the continental margins. Unlike the oceanic deposits, exploitation of earth resources located along the margins is well underway. Most of the exploration and production are carried out along the continental shelves and the upper continental slopes, in areas where the sovereignty is largely undisputed, and the legal rights and obligations of the commercial users are clear. Earney rightly remarks that although petroleum is considered to be the premier mineral resource of the continental margins, hard minerals have long been mined from the sea, and their economic significance is likely to rise in the future. Indeed, dredging for tin-bearing minerals off southeast Asia, and for diamonds off the mouth of the Orange River in southern Africa have been carried out successfully for many years. Even non-precious and nonmetallic minerals, such as construction aggregates and mineral sands are being dredged from the continental margins of many industrialized countries. The book gives brief descriptions of the mining methods and the specific earth-moving equipment used for these operations, and presents some production data.

Earney dedicates a chapter to the interesting topic of "sea-water as ore," discussing not only desalinization, but the production of sodium chloride, bromine, magnesium, uranium and deuterium as well. A brief review of technologies, costs and some present production rates delineate the present and future significance of the commercial use of seawater.

Three chapters discuss various aspects of offshore petroleum production. Earney describes the basics of the technologies used in drilling and produc-

tion of offshore petroleum reservoirs. Short descriptions of artificial islands, production platforms and drilling jack-ups, semi-submersible and drilling vessels underline the complexity of offshore oil production. Assessment of the frontiers of exploration and production in deeper water and in higher latitudes indicates the challenges facing the oil industry, and presents the reader with a rough estimate of the huge costs involved in offshore industrial development. A chapter is dedicated to the petroleum reservoirs of the North Sea, discussing the policies of Britain and Norway in licensing and taxation of their petroleum industry. Earney then discusses the geopolitics of offshore oil, briefly reviewing the conflicting petroleum claims of the People Republic of China and its neighbors in the Yellow and South China Sea, the disputes between Greece and Turkey on the offshore petroleum reservoirs of the Aegean Sea, and the Malvinas-Falkland conflict between Argentina and Britain.

The book contains several scientific apparati that help the reader in further exploring the various aspects of marine mineral resources. Detailed notes follow each chapter, the index is very detailed, and the extensive bibliography at the end of the book gives the reader a useful tool for further reading.

Unfortunately, in spite of the wealth of multidisciplinary information, the principal weakness of the book cannot be ignored. The book covers various scientific disciplines that range from tectonics to engineering, and from manganese mineralogy to the legal definition of the Exclusive Economic Zone. It contains large amounts of economic and technical data as well. However, that wide scope is accompanied by a narrative that seems to be superficial in places. It might be expected that a book bearing the title of *Marine Mineral Resources* would include chapters on the geological aspects of the tectonics of the sea floor, on the mineralogy of the economically important minerals, and on the geological principles of petroleum exploration. Some of that information is included in the book, but it is scattered over several chapters and not presented in an organized manner.

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JERUSALEM NEIGHBORHOODS, PLANNING AND BY-LAWS 1855-1930 by Ruth Kark, Mount Scopus Publications, The Hebrew University, Jerusalem: Magnes Press, 1991.

There is a traditional belief that planning, building and design is not a Jewish profession, that towns and neighborhoods were never built by Jews, and that their attitude to land and territory was always more spiritual than practical. As a people that lived in exile for more than 2000 years, without