

The presentation commences with primitive hunting systems of providing food, progresses through simple types of agricultural systems to deal finally with modern ways in which food eventually reaches the dining table and the support energy costs of the many separate processes involved. Such a descriptive account should lead to ideas about strategies to deal with impending future problems. As have others, the Pimentels point to the necessity of stabilising population to stabilise food demand and to the desirability of replacing

animal products by plant products in the human diet so to avoid the trophic axe associated with secondary production systems. These vegetable food products can certainly not be American canned corn for they show that to produce a can containing 455 g corn with an energy value for man of 1.6 MJ entails the expenditure of 12.6 MJ support energy as fossil fuel to process, package, transport, distribute, store and cook the corn. No doubt they had less sophisticated systems for the distribution of primary agricultural

products in mind. It is a great pity that a book designed for undergraduates terminates on the pessimistic theme: "Although man's scientific expertise will help alleviate some of the world shortages, science cannot solve the problems the world faces today". It would have been better, having pointed out the problem, to have emphasised the challenge that that problem poses. □

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Marine biology

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Marine Biology. By J. Reseck. Pp.257. (Prentice-Hall International: Englewood Cliffs, New Jersey, and Hemel Hempstead, UK, 1979.) £10.75.

JOHN Reseck's book reflects his ideas on how marine biology should be taught to senior classes in schools and introductory classes in universities. The first part deals with physical and biological processes important to the understanding of life in the sea, the second with environments and ecological niches, and the third with taxonomy and characteristics of marine

animals. He places equal importance on interesting and instructing students. The style is direct with short sentences and clear explanations, though word usage and sentence construction will often irritate grammatical purists. Each chapter begins with definitions of technical terms which might be unfamiliar to the reader, and ends with review questions to check his understanding of the material presented. The book is generously illustrated, with more black-and-white photographs than line diagrams. There is a selected reading list at the end and a good index.

The scope of the book is impressive: topics range from primary production to man's use and misuse of the sea, from polar seas to tropical mangrove swamps, and from protozoa to sea-birds and mammals. Most attention is given to North American environments and fauna; the algae deserve fuller treatment. Unfortunately there are many shortcomings in presentation of the

material that could easily have been corrected before publication. Some figures are misplaced in relation to the text. The labelling of several important diagrams is inadequate or inaccurate. Many of the photographs are inappropriate; some of them would puzzle a specialist because the unusual viewpoint, poor contrast and lack of scale make them difficult to interpret. There are careless errors in the text.

The author states that the book is designed for the student to buy and read through, to be complemented by reference books from the library. I would certainly encourage teachers to buy it, but suggest that they make their own decision about recommending it to students in its present form. A carefully revised edition would be very useful. □

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Oceans of literature

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Oceanography. By J.J. Bhatt. Pp.322. (Van Nostrand, Reinhold: Wokingham, UK, 1979.) £12.10. *Ocean Science*. By K.S. Stowe. Pp.610. (Wiley: Chichester, UK, and New York, 1979.) £9.50. *Exploration of the Oceans*. By J.G. Weihaupt. Pp.589. (Collier-Macmillan: London, 1979.) £12.75. *Descriptive Physical Oceanography*. By G.L. Pickard. Third edition. Pp.233. (Pergamon: Oxford and New York, 1979.) Hardback \$25, £12.50; paperback \$9.95, £5. *Introduction to Physical Oceanography*. By J.A. Knauss. Pp.338. (Prentice-Hall: Englewood Cliffs, New Jersey and Hemel Hempstead, UK, 1979.) £19.45. *Oceanography: Units 1-16*. The Open University Course Team, (Open University Press: Milton Keynes, 1979.) From £3.25 to £7.50 for each of 7 volumes.

To those involved in the teaching of oceanography at University, the choice of suitable text books poses many problems. For introductory courses the range of books available can be divided into two categories: (1) those which attempt to cover all aspects of oceanography; and (2) those which specialise in only one of the related disciplines. The latter group is primarily intended for students wishing to study a particular branch of oceanography or perhaps those who, while specialising in one oceanographic discipline, require a background in another. As courses at University level are usually devoted to one or two disciplines only, category 2 texts are the prime requirement. Books in group 1, on the other hand, normally fall under the heading of "background reading" only. There is an abundance of such books on the market. They are usually lavishly produced, with photographs and diagrams

of the highest quality; a valuable source of visual aids to the teacher but, because of their somewhat superficial treatment of any particular topic, of limited use to the serious student. They do, however, play an important role in popularising the subject and as such they constitute a valuable part of the oceanographic literature.

The group of books reviewed here is divided between these two categories. *Oceanography* by J.J. Bhatt, *Ocean Science* by K.S. Stowe and *Exploration of the Oceans* by J.G. Weihaupt are all good examples of category 1. *Descriptive Physical Oceanography* by G.L. Pickard and *Introduction to Physical Oceanography* by Knauss fall into category 2. The last volume to be discussed, the Open University course *Oceanography, Units 1-16*, although belonging to the first grouping, has a different format: it is basically a students' work book and as such