

REVIEWS

Ocean Engineering Wave Mechanics. By M. E. McCORMICK. Wiley-Interscience, 1973. 179 pp. \$12.50 or £6.25.

The title is somewhat misleading in that the book covers more topics than just waves. With a growing interest in North Sea oil exploration and exploitation, many disciplines of engineering are becoming involved which have never had to deal with waves and wave action. For those who wish to obtain fundamental data on the subject, this book would be a reasonable choice since it attempts to review the whole breadth of the subject in potted form. Without going into great detail, basic information is presented in a reasonably readable form and the author relies almost completely on published work for his source of information.

To quote the author, "The book evolved from the class notes used in a one-semester senior-postgraduate level course entitled 'Ocean Engineering Mechanics'". This is reflected in the fact that each of the four sections of the book contains its own references and problems. The inclusion in the book of some details of Fortran IV and its use in solving rather trivial problems seems superfluous.

The first part of the book is a review of some fundamental hydromechanics starting with hydrostatics and Bernoulli's equation and finishing with the basic concepts of flow around solids.

Part 2 deals with surface wave theory, both linear and nonlinear, again in no real depth but probably sufficiently so as to be useful to those meeting the subject for the first time.

Parts 3 and 4 deal with fixed and floating structures in waves, touching slightly on many topics of interest to the ocean engineer such as wave-induced forces, vibration and motions of the floating bodies. All the treatments are elementary and in one or two cases there are misconceptions of principles. The author's interpretation of the presentation of wave statistics would not stand up to questioning and his presentation of the magnification factor for the motions of pitch and heave could be misinterpreted.

Present day practice in the design of ocean platforms is based upon a statistical approach. This is far superior in terms of realism to the approach used in the book of predicting the behaviour in regular waves. The irregular nature of the sea dictates that the statistical approach is the only one which can be used in predicting the long-term behaviour of both fixed and floating structures. The author does not deal with the statistical properties of the sea surface and the combination of these statistics with platform responses to give the statistics of platform behaviour.

G. J. GOODRICH

Shock Waves and Man. By I. I. GLASS. University of Toronto Institute for Aerospace Studies, 1974. 169 pp. \$8.50.

Designed for general reading by non-specialists and students, this book gives a description of shock waves and their occurrence in nature and in space, and of their importance to man. The text skips along from example to example and abounds in facts and figures, providing a most useful source of information for the teacher. The author is always at pains to put magnitudes into perspective for the reader, which is important in view of the wide range of phenomena covered. The book deals first with such natural events as thunder, earthquakes, volcanic eruptions and meteoric impacts and then with shock waves artificially generated on earth, including that made by the flick of a bull whip and the shock from a nuclear explosion. Shock waves in space follow and then some of the peaceful applications of shock waves, both those already in use and those proposed. A general description of the physical properties of shock waves and of special shock-wave systems is based on excellent laboratory photographs exploiting several experimental techniques and there is a brief description of modern laboratory facilities. The book ends with a short statement of the author's feelings about "shock waves and the human condition" (which also emerge quite clearly from the text) in which he contrasts the small hazard to man from natural causes with the threat to man's existence posed by the availability of nuclear weapons on an increasing scale.

The text throughout is well presented and a student with a good basic knowledge of physics should be able to follow it reasonably easily. The many photographs Professor Glass has assembled form a splendid collection. He has used them, too, in an imaginative way – for example, his first ones, on facing pages, are the representation of a shock wave by a huge breaker, on the wall of which a man is surfing, and a photograph of an early nineteenth-century painting by a Japanese artist of such a breaker, providing a beautiful setting for a distant view of Mount Fuji. It is a pleasure just to turn the pages and browse through the book!

D. C. PACK