

## REVIEW

**Methods and Results of Theoretical Oceanography, Volume I. Dynamics of the Homogeneous and the Quasihomogeneous Ocean.**† By WOLFGANG KRAUSS. Gebrüder Borntraeger, 1973. 302 pp. DM 108.

It is a disappointment that, in spite of the title, the book has little to say about recent theoretical developments and their relation to observations of ocean dynamics. For this reason, it is unlikely to stimulate development in oceanography in the way that other recent books, for example some of the Cambridge Monographs, have done. However, it may be unfair to judge the book by these criteria. Books which are a personal statement of a research worker's own understanding of the state of the art are often a spring-board for further advance. However, as Modern Art requires the solid base of good craftsmanship, so oceanography needs a sound appreciation of fluid mechanics. It is to this last-mentioned aspect that Professor Krauss's work, addressed, he says, primarily to students, is most likely to contribute.

The first of three roughly equal parts deals with the detailed development of the momentum and other conservation equations. Much more space has been devoted to rotating fluids and to vorticity theorems than is usual in hydrodynamics texts at this level. This is to be welcomed because of their significance in oceanography. Other aspects of less significance, such as cyclic velocity potentials, are ignored.

The second section, mainly devoted to gravity waves, follows very much in the tradition of Lamb (and why not?). There is additional discussion of edge waves, which Lamb thought not to have a great future, and of radiation stress. Surface-tension effects are treated in the classical manner. In recent years capillary waves have attracted more attention as significant factors in the structure of the wave spectrum, though this development is not hinted at.

The final section, on currents and planetary waves, brings together the historical development of the geostrophic equations and Ekman layer with the early development Rossby wave theory of the 50's and early 60's on which so much attention has been focused.

On occasions it is helpful to collate the material from which the more intuitive of one's colleagues perturb and scale the way to new understanding in the rich field of research that ocean dynamics has to offer. Professor Krauss makes a useful contribution in this area and his book can be welcomed for this reason.

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† Volume II of this work, on internal waves, appeared in German in 1966 (reviewed in *J. Fluid Mech.* 29, 1967, p. 825. Volume III, on stochastic processes, has yet to appear.