

REVIEWS OF BOOKS

PROBLEME DER WASSERWELLEN

(PROBLEMS OF WATER WAVES)

by DR. H. THORADE, Hamburg.

Printed at Hamburg by HENRI GRAND, 1931.

The Bureau has received a copy of the work by Dr. H. THORADE which forms volume XIII - XIV of the collection of "*Probleme der Kosmischen Physik*".

The problem of the formation, the form and the movement of the oscillations of the sea is one of those which have greatly attracted the attention of scientists. The most celebrated mathematicians have attacked it, among whom only such great names as NEWTON, EULER, LAGRANGE, LAPLACE, POISSON, CAUCHY, STOKES, POINCARÉ and LEVI-CIVITA need be cited; yet there are but few who have made less advance. The author humorously remarks that this physical phenomenon, which occurs continually before our very eyes, is not nearly as well known as other phenomena, likewise periodic, which lie outside the field of perception by our senses.

The author gives only the bases of the numerous mathematical theories which have been put forward and the principle formulas derived therefrom; but this is done very completely and, as he proceeds, he gives all references, which form an excellent bibliography very conveniently arranged.

With this sort of reference it is easy to determine what source should be consulted for an exhaustive study of each question dealt with. But the work is not only a book of reference, the exposition of the theories, although brief, brings out both the important points and the divergences. The author then compares theoretical with practical results and shows that the concordance is not always satisfactory; further he concludes most of the chapters with a certain number of problems intended to demonstrate the inadequacy of the theories and the necessity for further work and additional research.

The volume is divided into two parts. The first deals with waves or undulations of the surface (Oberflächenwellen), their form, their movement, their formation under the influence of wind, their propagation, ocean swell (Dünung) and waves due to the passage of ships (Schiffswellen).

In the second part a study is made of the movements which affect the entire liquid body, mass waves and tidal waves (Flutwellen). One chapter deals with the nature of waves: progressive waves and stationary waves in channels; interfering waves, annular waves and confined waves (dead water, land-locked tides); another with the influence of the shape of the basins, and with seiches; a third with the influence of the Earth's rotation, tides in channels, in open seas, in oceans, tidal streams and mathematical theories.

In the fourth chapter the influence of friction, vortices, river tides and tides in shallow seas are examined.

The final chapter is devoted to the study of some particular wave-forms: the SCOTT-RUSSEL wave, breakers (Brandung), bores (Flutbrandung, Bore), the influence of the wind on sea-level (Windtsau, Seebär), LAPLACE waves, shallow water waves and the force of waves.

P. V.
