

*La Méthode du Champ Self-Consistent.* By L. Brillouin. (Actualités Scientifiques et Industrielles, No. 71.) Paris, Hermann, 1933. 46 pp.

This monograph explains a method of approximating a solution of the many body problem in wave mechanics which was given first by Hartree. The problem is to find the wave function appropriate for a system of electrons under the influence of several fixed nuclei and of one another; the method is to represent the desired wave function as a product of separate wave functions, each of which depends only on one of the electrons. Each of these factor wave functions is found by supposing the corresponding electron to move under the influence of the fixed nuclei and a field obtained by averaging the fields of all the other electrons. An account of the modifications due to the "spin" of the electrons and of Pauli's exclusion principle is given.

The treatment is authoritative, and, despite the little space at his disposal, the author does not shirk the essential and obvious difficulties of the problem.

F. D. MURNAGHAN

*Fundamentals of Hydro- and Aeromechanics, based on Lectures by L. Prandtl.*

By O. G. Tietjens (translated by L. Rosenhead). New York, McGraw-Hill, 1934. xvi+270 pp.

This and a companion volume which is reviewed below form the first of a series of monographs known as Engineering Societies Monographs to be published under the auspices of several of the American Engineering Societies. The purpose of the book is to give an account of the theory of hydrodynamics which is as simple and as closely related to experience as possible. No attempt is made to treat the advanced mathematical theory, for which reference is made to Lamb's classical treatise. Part I, pages 1-65, treats hydrostatics and discusses such matters as the equilibrium of gas-filled balloons, temperature effects, surface tension. Part 2, pages 69-104, describes the Lagrangian and Eulerian methods of treatment and gives a brief and intuitive account of the necessary vector analysis. Part 3, pages 107-265, treats the dynamics of non-viscous fluids ending with a brief chapter descriptive of Stokes' treatment of a viscous fluid and referring to Oseen's improvement. Two-dimensional problems and the theory of vortices are treated quite fully and there is a welcome discussion of the effect of compressibility.

The whole book breathes the spirit of the engineer and numerical calculations are frequently given; whenever a formula yields results not in accord with experimental facts the fallacy in the assumptions made is clearly pointed out. It is our opinion that the book fulfills its purpose admirably and it can be highly recommended as a complement to Lamb's work.

F. D. MURNAGHAN

*Applied Hydro- and Aeromechanics, based on Lectures by L. Prandtl.* By O. G.

Tietjens (translated by J. P. Den Hartog). New York, McGraw-Hill, 1934. xvi+311 pp.

This book together with its companion volume, reviewed above, is one of the new series of Engineering Societies Monographs. After a very brief recapitulation of the fundamental laws and a chapter on the laws of similarity, an ex-