The Physical Significance of the Quantum Theory. By F. A. Lindemann. Oxford, Clarendon Press, 1932. 148 pp.

Many books have been written recently with the object of describing the mathematical methods and rules for applying the quantum theory to various physical phenomena. But a physicist feels that there is something lacking. He wishes to know why these particular rules are adopted, what physical principles are back of them. To answer by saying that they lead to results confirmed by experiment is not wholly satisfying. This book of Lindemann's is an attempt to meet this need of physicists.

The author's thesis is that the failure of the classical theories lies in the inadequacy of our spatio-temporal descriptions. If we try, for example, to measure the distance between two objects by placing a measuring rod between them, we can never get an exact result, because the very operation of bringing the rod in contact with the bodies deforms them and it. The ideal rigid solid does not exist. And so it is with all measurements in physics; approximate results only can be obtained. So taking Heisenberg's principle of uncertainty as a starting point, Lindemann obtains in a very simple way the characteristic values of the energy for a simple rotator, the harmonic oscillator and the hydrogen atom. Unfortunately, the first two do not give exactly the same results as the wave-mechanics yields. And so it cannot be said that he has got to the real physical significance of the quantum theory. However, he has made an interesting attempt; a physicist will find much of interest in the book even if he cannot accept all the arguments. And such attempts as this, even if they do not reach their goal, are well worth while. The book is well written, but it does seem that a book published at Oxford should spell the name of the discoverer of the electron correctly.

E. P. ADAMS

Aufgabensammlung zu den gewöhnlichen und partiellen Differentialgleichungen. By G. Hoheisel. (Sammlung Göschen, No. 1059.) Berlin, Walter de Gruyter, 1933. 148 pp.

This book, in the convenient pocket size of the Sammlung Göschen, is intended to accompany two other texts in the same collection, *Gewöhnliche Differentialgleichungen*, No. 920, and *Partielle Differentialgleichungen*, No. 1003. References to the earlier volumes are made occasionally to amplify the theory, but this volume is almost complete in itself. For each topic considered the theory is summarized and illustrated by examples, then followed by a brief list of problems. At the end of the treatment of ordinary differential equations there is a collection of 117 miscellaneous problems, making a total of 203 in the first part. The second part is devoted to partial differential equations and contains 33 problems grouped under the different topics.

The author has not intended to include routine drill problems but has made his selection with the idea of helping the student to a better conception of the underlying theory. There is a brief solution of each problem, but it does not immediately follow the statement and the conscientious student may seek his own solution before accepting hints from the writer.

W. R. LONGLEY