
An Outline of Atomic Spectra

Physical science is a field of shifting interests. Ten years ago the attention of a majority of physicists was fastened on the problems connected with the outer structure of the atom. The solutions to these problems were found by the study of x-rays and line spectra. We have since entered another era in which attention is being directed at the atomic nucleus. This leaves the spectroscopists to themselves to consider more carefully their child, now out of the growing-pains age.

It is surprising that more books on spectroscopy have not been written. Condon and Shortley have written an adequate treatise intended for those who already have a thorough knowledge of the subject. White has written a complicated compendium on the subject. Herzberg, in the book which is the subject of this review, has written an outline. All three books fail to meet the most urgent need of young men entering research in those fields of physics which require a knowledge of spectroscopy.

A careful examination of Herzberg's book convinces the reviewer that it cannot by itself give the student a feeling for the subject. This is primarily the result of the fact that the author has reduced his description of the physical phenomena to a minimum, concentrating his attention on their interpretations. In a condensed outline such as this, the result is a heavy super-structure on an inadequate foundation.

The criticism that must be made of this book is that it misses the greatest need. It is, in fact, a splendid outline clearly written and well organized.

—C. E. HESTHAL.

Atomic Spectra and Atomic Structure, by Gerhard Herzberg. xiv+257 pp. New York, Prentice-Hall, Inc., 1937. $4.25.

The Theory of Metals by A. H. Wilson is a book setting forth a rather critical survey of this field of ever increasing importance. The first chapter devotes itself to an historical introduction to the subject giving a brief review of the classical theories of Drude and Lorentz and the first quantum mechanical attempts at solving the problem by Sommerfeld. The second chapter introduces the idea of the Hartree "self consistent field" and the Foch modification to include exchange forces, but concentrates itself especially about the theory concerning the motion of electrons in a perfect lattice. In subsequent chapters these ideas are made use of in discussion of such problems as the optical properties, the conductivity, the resistance and the super-conductivity of metals. Two appendices are devoted to a brief discussion of the Fermi-Dirac statistics and to a sketch of surface phenomena.

This book presents the theory of metals in such a readable and consolidated form that it is to be regarded as a most useful source for the student of physics from which to acquaint himself with this rapidly increasing field.—H. H. NIELSEN.

The Theory of Metals, by A. H. Wilson. 271 pp. Cambridge University Press, New York, the Macmillan Co. 1936. $5.00.