by applications to specific problems such as the anharmonic oscillator, helium atom, or dispersion. The quantum theory is replete with problems of this type which can be handled only by successive approximations, and it seems unfortunate that no space could be found for their inclusion after such careful development of the general perturbation theory. In fact, not even the appropriate references to the literature are given. The separation of variables, however, is illustrated by the conventional examples of the Stark effect and relativity corrections in hydrogen.

Professor Juvet's book covers a field quite distinct from most other treatises, and is written with characteristic French smoothness of style. The general flavor is mathematical rather than physical, for, to quote from the preface, "The aim is simply to put a mathematical instrument at the disposal of those who are interested in physics, and at the same time to acquaint mathematicians with one of the most elegant applications of analytical mechanics."

J. H. VAN VLECK

The Quantum Theory of the Atom. By George Birtwistle. Cambridge University Press, 1926. 236 pp.

Just what form the quantum theory of the atom will take by the time this review appears in print it is impossible to say; but whatever the quantum theory may become, its original form will always be a matter of interest. This theory assumes a definite model of the atom—the Rutherford atom—and applies to this the laws of classical dynamics. From the continuous manifold of dynamically possible orbits, the quantum theory allows only a discreet manifold.

Mr. Birtwistle has written an excellent account of the quantum theory based on these ideas. He first shows how the quantum theory was introduced by Planck in obtaining his formula for the distribution of radiant energy; he then describes Bohr's original theory of the hydrogen spectrum, Einstein's photo-electric equation and his deduction of Planck's formula. Then follow a number of chapters on the general dynamical theory, which is needed in the applications of the quantum theory that follow: to the fine structure of spectral lines, to the Stark and the Zeeman effects. A brief account is given of spectral series together with Bohr's theory of the building up of atoms and the theory of band spectra. The classical theory of perturbations of dynamical systems is next given, with an application to the anharmonic oscillator. The last chapter contains a sketch of the dispersion theory of Kramers.

This book was published while the quantum mechanics of Heisenberg was in process of development, and this theory is just mentioned at the end of the volume. At the present time the undulatory mechanics of de Broglie and Schrödinger is attracting much attention. But whatever may be the fate of these recent speculations, there can be no question as to the value of the older form of the quantum theory in view of its achievements; and it would be difficult to find a better account of it than in this book.

E. P. ADAMS