

his guard against abandoning Cartesian analysis for a complete symbolic calculus, and his treatment should appeal to the physicist.

In the later chapters modern work has been described in considerable detail, though the treatment of recent theories of magnetism is somewhat slight. The chapter on electric oscillations is of great interest, and we find here scientific accounts of the triode as generator, detector, and amplifier, and also a description of its use for the production of short waves having a wave-length of only 30 or 40 cm. In the chapter on electricity in gases we have an account of the nuclear theory of the atom, and the results of Aston on the composite nature of the chemical elements obtained by means of his mass spectrograph. A separate chapter has been assigned to Röntgen rays, in which is given a compact but readable summary of the diffraction of the rays by crystals and of the nature and origin of the X-ray spectra of the elements. The last chapter deals with the electrical theory of matter, including Bohr's theory of the origin of spectra, the experiments of Gerlach and Stern showing definite orientation of electron orbits in a magnetic field, and the theories of the Zeeman and the Stark effect. In its revised form this treatise should prove of great assistance to the student of advanced physics.

The Dynamical Theory of Sound. By Dr. Horace Lamb. Second edition. Pp. viii + 307. (London: Edward Arnold and Co., 1925.) 18s. net.

THE lucidity which characterises all Prof. Lamb's writings is exemplified in a marked degree in his treatise on the dynamical theory of sound. In this respect he follows in the footsteps of his master, Lord Rayleigh, to whom he acknowledges his indebtedness. For the second edition a thorough revision has been carried out, and a number of errors have been corrected. In its new form, the book should be of the greatest value to a student beginning the serious study of the subject. It is, however, to be regretted that the accounts given of recent applications are somewhat slight. Many readers would have welcomed more detailed descriptions of the hot-wire microphone, the methods employed in sound-ranging, and the problems of physiological acoustics.

Colloid Chemistry.

The Effects of Ions in Colloidal Systems. By Prof. Leonor Michaelis. Pp. 108. (Baltimore, Md.: Williams and Wilkins Co.; London: Baillière, Tindall and Cox, 1925.) 12s. 6d. net.

THE author of this volume, who is a professor of biochemistry in Japan, was invited to lecture in the United States during April and May 1924. The material of these lectures is now presented as a brief monograph. In the introductory lecture, a defence is made of the pursuit by a biochemist of a line of research in pure physical chemistry. Such a defence is scarcely necessary, since it is a well-known phenomenon that a biologist with a genius for work in physical science, having a different range of interests and of relevant data from the professional physicist or chemist, can often make a contribution of exceptional value to the progress of pure science.

In the present instance the subject selected has been "The Effects of Ions in Colloidal Systems," and in a series of eight short lectures the author has presented in a most effective manner some of the principal problems that are encountered in this field of work, although he does not find himself able, in every case, to offer a complete solution. His chief interest appears to consist in the detection and study of "electric double layers," but one of the most interesting lectures deals with the properties of charcoal as an absorbent. This familiar material, instead of being a typical absorbent, as is generally supposed, appears to be unique amongst inanimate systems, since "experience has shown that *any* substance dissolved in an excess of water is adsorbed by charcoal," which "possesses a prominent faculty for adsorbing . . . non-ionised electro-indifferent substances."

The author introduces the term "acidoid" to describe substances such as mastic which have the properties of insoluble acids, whilst insoluble amino-acids are described as "ampholytoids." Fortunately, he has not yet begun to describe silver iodide as an "electrolytoid" in order to emphasise the fact that it is almost insoluble in water, but this will doubtless follow in due course.

English readers will be interested in the book, but will regard its price as excessive.

Introduction à l'étude des colloïdes : état colloïdal et ses applications. Par Prof. W. Kopaczewski. Pp. vii + 226 + 2 planches. (Paris: Gauthier-Villars et Cie, 1925.) 16 francs.

THE first 64 pages of this small work profess to give the principal facts about the colloidal state, "all hypotheses and theories . . . being passed over in silence," while the remainder is divided into two parts, dealing with its industrial applications and with the colloidal state and life. This ratio of space, which is to be found in some other recent publications and appears to be becoming specific to the subject, seems a little difficult to justify; if it is granted, the author may be said to have done his work well. Although the industrial applications cover an immense field—cellulose and its esters, artificial silk, glue and gelatin, soil, beer, are among the sub-headings—he succeeds remarkably well, on the whole, in showing how the progress of colloid chemistry has thrown light on empirical procedure, or has led directly to the invention of new processes.

In the part devoted to the phenomena of life, inordinate space is given to the work of Leduc, which, fascinating as some of the experimental results are, can scarcely be considered seriously as throwing light on what goes on in organisms. The author is a medical man, and this explains the somewhat extended treatment of subjects for which the general reader is not prepared, like anaphylactic shock; whether a book of the present kind is the place for a somewhat surprising and emphatic condemnation of blood transfusion may also seem doubtful.

The book will no doubt give a number of readers the impression that 'there is something' in colloid chemistry, and may induce a few of them to seek something more than a mere bowing acquaintance with the discipline.