

Les applications de la mécanique ondulatoire à l'étude de la structure des molécules

Réunions d'études et de mises au point, tenues sous la présidence de Louis de Broglie. Pp. 224 + 2 plates. (Paris: Éditions de la Revue d'Optique théorique et instrumentale, 1953.) 1600 francs.

THIS volume contains the text of the eleven lectures and introductory address delivered at the eighth in the series of annual conferences on physical topics which have been held since 1944 under the general presidency of Prof. Louis de Broglie. Applications of wave-mechanics to the study of the structure of molecules was the topic chosen for the 1951 conference, and the lectures were delivered on various dates during April-June of that year. Both experimental and theoretical applications are featured. J. Lecomte gives an interesting and informative review of progress in the technique of infra-red spectrometry during 1940-50, and J. Wyart discusses the determination of interatomic distances by X-ray and electron diffraction, while O. Chalvet and C. Vroelant deal briefly with the theoretical calculation of interatomic distances.

On the more chemical side there is an excellent description by P. Ramart-Lucas of the influence of the steric effect on the electronic structure of carbon and nitrogen, and this is supplemented by a discussion by C. Sandorfy of the theories of the electronic spectra of organic molecules. In the sequence of three papers by N.-Q. Trinh, H. Lumbroso and A. Laforque, respectively, considerable detail is given, together with numerous references, of the work on electrical polarization and dipolar moments, and A. Pacault, N. Lumbroso and J. Hoarau in a short article briefly refer to the evidence concerning the structure of molecules to be gained from measurements of magnetic anisotropy.

The two remaining articles in the volume are of a more general nature. The first, by R. Daudel, is of an introductory character and outlines the part played by the de Broglie wave in the study of the structure of molecules, pointing out that there is no difficulty in principle but solely in the numerical solution of the wave-equation applicable to the particular case. The second article, by P. Chanson, describes the various methods used to obtain visual pictures of the atoms and molecules.

Though the lectures were delivered in 1951 and published towards the end of 1953, a useful attempt has been made by several of the authors to bring their material up to the date of publication by the addition in footnotes of brief references to recent important contributions. S. WEINTROUB

Rotgrünblindheit als Erlebnis

Führer durch die Farbwelt für Rotgrünblinde. Von Dr. Heinz Ahlenstiel. Pp. viii + 47. (Göttingen: "Musterschmidt", Wissenschaftlicher Verlag, 1951.) n.p.

THIS little book, which first appeared in 1951 but which has since been translated by Mr. R. W. Burnham and printed privately by the Eastman Kodak Co., is an intriguing attempt by the author to describe the world of colour as seen by the colour-defective, the author himself being a protanope (the type of defective frequently described as red-blind).

Certain aspects of the treatment may seem a little naïve, but there are some thought-provoking references both to the difficulties which face the colour-

defective and also to effects which the intelligent and observant colour-defective can use to help him. This is well illustrated, for example, in the case of red object colours, which are, of course, a frequent source of confusion to persons with poor colour discrimination. In the first place, as the author points out, red objects possess an abnormally high purity to the colour-defective, even though their basic (defective) hue is yellow; and secondly, many red dyes and pigments are dichroic. This dichroism is such that, in thick layers, the appearance will, to the red-defective, be dark yellow, but in thin or diluted layers a light greyish-blue. Hence, a red surface of paint or fabric is likely to possess, on account of inevitable variations in density of the dye or pigment, a characteristic texture of yellow and blue which will enable the observer to identify the surface as red!

Effects such as these are not readily anticipated by a person with normal colour vision, and this book will prove stimulating reading not only to those interested in colour vision, but also to anyone of a philosophical turn of mind concerned with visual experience. W. D. WRIGHT

The Physics of Viruses

By Ernest C. Pollard. Pp. xi + 230. (New York: Academic Press, Inc.; London: Academic Books, Ltd., 1953.) 5.50 dollars.

THERE is need for a book which catalogues and describes the many different techniques which the physicist has brought to the aid of the biologist, and especially the virus worker, during the past twenty years. However, it is never quite clear what the intentions of the author of this little book were, and to whom it is really directed. The treatment is too patchy and incomplete to make the work of value as a laboratory manual for the biophysicist, and the numerous erroneous statements about viruses will scarcely commend the book to the pathologist seeking a brief and reliable survey of the physical methods open to him.

The opening sentence consists of a definition of a virus that is so unrestrictive as to include ionizing radiations and many inorganic ions; such carelessness is regrettably only too common in many parts of the book. In Chapter 2, for example, Dr. E. C. Pollard mentions the use of the electron microscope for particle counting, but does not say that special techniques are necessary for the purpose, let alone describe them. Later in the same chapter, the description of, and references to, the techniques for cutting the very thin sections essential for electron microscopy are so incomplete as to be altogether misleading to anyone not already acquainted with the subject, and too many of the few electron micrographs included are of indifferent technical quality. The combined result gives no indication whatever of the range, scope and limitations of the instrument in virus research.

These deficiencies, serious though they are, should not be allowed to obscure the fact that the book does contain what is probably the only short account of the very large amount of work done since 1946 using ionizing radiation as a tool in virus research. Here the author, a nuclear physicist, is on his home ground, and this is easily the best part of the book. There are author and subject indexes, and the book is produced to the high standards one has come to expect of the Academic Press. It is a great pity that the care and obvious ability of the publishers are not matched in the text. H. L. NIXON