

graphical references to plants occurring in areas outside North America have been omitted, though admittedly they are now available in other standard works. The information that such references contain has, of course, been incorporated where it affects classification and nomenclature, though the author has exercised commendable caution where facts remain so far unconfirmed. The volume is beautifully produced and the excellent plates, mostly by Dr. Chin-Chih Jao, have been reproduced with some modification to the captions. Prof. Taylor is to be congratulated on the material and presentation of this new edition, which makes his extensive and detailed knowledge of the algae of the area available to workers throughout the world. I would like to suggest that when he gives us a third edition, a map might be included either on the end-papers or as a frontispiece.

LILY NEWTON

Physical Chemistry for Students of Pharmacy and Biology

By Dr. S. C. Wallwork. Pp. xi+307. (London and New York: Longmans, Green and Co., Ltd., 1956.) 25s. net.

IN his selection of those portions of physical chemistry which are particularly the concern of the biological sciences, the author states that he follows the recommendations, and covers the syllabus, of the Pharmaceutical Society of Great Britain, and that he fulfils the requirements of students of pharmacy and biology taking recognized courses in those subjects in technical colleges and universities. The book's eleven chapters deal with: mathematical preparation, the properties and constitution of matter, the structure of atoms, the structure of molecules, chemical reaction, properties of solutions, electrolytic dissociation, electrochemical cells, acids and bases, surface chemistry, and colloids. The book has a bibliography, a table of logarithms, and sets of problems. Dispersed through the text are ten representative instructional experiments with the requisite practical directions. Dr. Wallwork's explanations, clear, well expressed, and given from the point of view of the modern electronic theory, should conduce to an understanding of the subject. He uses mathematics—but not beyond simple calculus—when by doing so he attains the best presentation of the subject in question; and in Chapter 1 he revises and expounds the elements of the mathematics required.

G. FOWLES

The Reactive Intermediates of Organic Chemistry
By John E. Leffler. Pp. x+275. (New York: Interscience Publishers, Inc.; London: Interscience Publishers, Ltd., 1956.) 6 dollars.

THE objectives of the present book are to provide some of the background of information about stable radicals and ions needed by those interested in organic reaction mechanisms, to point out some of the pitfalls awaiting the unwary, and to show some of the criteria for preferring one type of intermediate over another. These aims, set out by the author in his preface, have been fully achieved, and the result is a book which can be recommended to undergraduate and postgraduate students and working research chemists as presenting an accurate, stimulating and eminently readable account of the role of radicals and ions in organic reactions in solution.

The first chapter begins with a section on the physical properties of free radicals leading to a summary of the preparation, stability and reactions of the triarylmethyl and some analogous radicals. Chapter 2 gives an account of the formation and behaviour of unstable carbon radicals. Biradicals are described in Chapter 3, while Chapter 4 gives an excellent account of the heteroradicals, those radicals in which the unpaired electron is associated with an atom other than carbon. The treatment of free radicals throughout is very good.

The next three chapters are devoted to carbonium ions, being divided according to their formation by reversible or irreversible dissociation or by addition reactions. These are followed by an interesting chapter on analogues of carbonium ions, the common feature being the possession of low-energy orbitals in excess of the electrons available to fill them. Chapters 9 and 10 describe the formation and reactions of carbanions. An account of base-catalysed reactions in Chapter 11 is followed in Chapter 12 by a most useful comparison of radical and polar reactions.

The book is well produced and there are very few misprints. The apt quotations from Mark Twain and other authors are a delight in themselves.

H. S. TURNER

Optics

By Prof. Bruno Rossi. (Principles of Physics Series.) Pp. xii+510. (Reading, Mass.: Addison-Wesley Publishing Company, Inc., 1957.) 8.50 dollars.

THIS is a text-book for university honours and pass degree students. The main emphasis is on the wave theory of light including the electromagnetic theory, and this subject is treated up to the standard of an honours physics degree in Great Britain. Other aspects of optics are briefly reviewed. The optics of lenses and of instruments occupies forty pages, but a good deal of this is used in an exposition of elementary lens theory which would be included in a school course in Britain. Quantum phenomena are discussed in fifteen pages and relativistic optics is just mentioned. The account of wave-theory is theoretical: there is very little description of experimental methods.

Some parts of the book appear to be written for readers who are intelligent and possessed of the mathematical knowledge and ability normally possessed by students who reach the final year of an honours physics course. These parts are incisive, clear and interesting. Not only students but also many lecturers could derive benefit from them. In other parts of the book, and particularly in the earlier chapters, the author attempts to expound difficult mathematical concepts to students with a weak mathematical background. These sections appear to be much less successful.

The author has provided a large number of examples from which a teacher could select those appropriate to his own students.

Relaxation Spectrometry

By Prof. E. G. Richardson. Pp. viii+140. (Series in Physics.) (Amsterdam: North-Holland Publishing Company.) 20 guilders. 40s.

THE present book is essentially an exposition of modern experimental methods available for studying stress relaxation in solids, liquids and gases.