

ago but seem less significant to-day, are mentioned rather too briefly for either type of reader to make much of them. In short, this is a comprehensive and authoritative book which students could profitably use under tutorial guidance, but which would be difficult reading on its own.

Also intended for the post-intermediate student, Dr. Curry's book is a detailed and critical examination of the principles of wave-optics. It is written for only one type of reader, whose mental attitude and difficulties have been very carefully considered by the author. This is the good student who has mastered the usual Advanced-level work on interference and diffraction (with its deceptive appearance of completeness), and is rather appalled when he finds in his honours course that the real depth of the subject is so much greater than the apparent depth as he knew it. This book bridges the gap between the two stages, and does so excellently. The diagrams are good, and except in the sections on the wave theory of aberrations and on the Fresnel integrals, the mathematical work is relatively simple, or is so well explained that it seems so. University teachers often complain that their students arrive with a store of factual knowledge, but with the ability to think as a physicist quite undeveloped; and the reviewer always replies that the schoolmaster does his best, but that this development can only be expected at the university. Dr. Curry would surely concur. Needless to say, this is a book that should be made available to sixth-form boys at school in their last year, so that the proper outlook can begin to penetrate; and, as the author has assessed the needs of the younger university student accurately, and met them uncompromisingly, it should prove very valuable for its intended purpose.

G. R. NOAKES

## THE THEORY OF ELECTRICAL NETWORKS

The Theory of Networks in Electrical Communication and Other Fields

By F. E. Rogers. Pp. 560. (London: Macdonald and Co. (Publishers), Ltd., 1957.) 65s. net.

FOR some time now university electrical engineering departments have been aware of the dangers of dichotomy between heavy- and light-current engineering, the fundamentals of which are essentially the same. The author of this book on networks is fully aware of the problem, and he has set himself the task of treating the subject from a fundamental viewpoint applicable to heavy-current as well as light-current engineering. Though there is a reference in the second chapter to the Heaviside transient solution, the book is essentially concerned with the sinusoidal approach. The general theory of circulating currents and the solution of mesh equations (Chapter 3) is followed by a statement and explanation of the four important network theorems (Chapter 4) and a discussion of ladder, T and  $\pi$  structures in Chapter 5. The next section, on equivalent networks, is of considerable interest to power engineering students, who will be disappointed that it is not illustrated by examples drawn from complicated power distribution networks. The same opportunity is lost in Chapter 8 on transmission along uniform lines and cables. The value of Foster's reactance theorem is well illustrated under two-terminal networks. The last four chapters on four-terminal networks, insertion loss, filters and

measurements are mainly of interest to the light-current engineer.

There are a number of American and English books on networks, and comparison with these is inevitable. In this respect the author is not helped by his publishers, whose ideas of presentation are old-fashioned. The diagrams look amateurish, the lettering often being far too big, and many of the diagrams insufficiently reduced and sometimes not placed in the best position. Typical examples of these faults are found on pages 36 and 236. The author is not entirely blameless for he is not consistent in the captions of the figures, and on page 281 this inconsistency accompanied by a footnote causes confusion; the value of heavy type to denote the so-called vector quantities of current and voltage is doubtful, adding to the cost of production and making a page look untidy.

So far as the material and the manner of using it is concerned, the author has produced a useful contribution to the teaching of fundamental network theory, and the many worked-out examples taken from internal and external examination papers of the University of London will commend it to teachers and undergraduates alike. To get full value from the book the undergraduate needs an understanding of Heaviside's operational calculus, complex quantities, determinants and Fourier analysis; a selected list of references at the end of each chapter contains the names of books which will help the student in furthering his knowledge of the subject. K. R. STURLEY

## ADVANCED ORGANIC CHEMISTRY

### Organic Chemistry

By Dr. I. L. Finar. Vol. 2: Stereochemistry and the Chemistry of Natural Products. Pp. xi+733. (London and New York: Longmans, Green and Co., Ltd., 1956.) 40s. net.

THIS text-book is written primarily for students who are reading for Part II of a special honours degree in chemistry. It is divided into two main sections; the first part, 177 pages, is concerned with stereochemistry, and the rest, 571 pages, is devoted to the chemistry of the more important types of natural products.

The discussion of stereochemistry is not up to the high standard of the rest of the book. It begins with a chapter devoted to the relationship between physical properties and chemical constitution, but some of the statements in this chapter are not well based. For example, in the section dealing with ultra-violet spectra (p. 16), it is stated that "By this means the main structural features (if not all) may be obtained, and thereby lead to a structure being assigned to a compound under investigation. Thus having obtained a tentative structure, the final proof is obtained by synthesis". This is, of course, quite incorrect and is certainly not good advice for chemists during the final year of their undergraduate training.

There are other chapters dealing with optical isomerism, Walden inversion, geometrical isomerism, the stereochemistry of diphenyl compounds, and the stereochemistry of elements other than carbon. The definitions given (p. 23) for stereoisomerism, optical isomerism and geometrical isomerism are not satisfactory; in fact, absolutely identical descriptions of optical and geometrical isomerism are given. The section dealing with the resolution of racemates is very interesting, but it is unfortunate that a detailed