An Introduction to the Practice of Organic Chemistry in the Laboratory

By Prof. Homer Adkins, Prof. S. M. McElwain and Prof. M. W. Klein. (International Chemical Series.) Third Edition. Pp. ix+294. (New York and London : McGraw-Hill Book Co., Inc., 1940.) 17s. 6d.

IN this introduction to the study of organic chemistry, an attempt is made to interest the student in the general principles underlying the experimental work involved in the preparation of fifty carefully chosen compounds by devoting the greater part of the work to the discussion of such general reactions as oxidations and reductions, esterifications and hydrolysis, halogenation, nitration and sulphonation, diazotization, intra-molecular re-arrangements and special reactions including some modern work, and inserting cross-references to the relevant paragraphs to these discussions in the directions for procedure. Relatively little attention is given to qualitative and quantitative analysis, but a few physico-chemical topics such as those involved in the distillation of azeotropic and other mixtures and in extractions with solvents are discussed.

Rules are given for the proper use of note-books, and, since equations and formulæ are deliberately omitted from the experimental directions, the student is expected to make a careful study of each experiment by reference to text-books and to the discussions before beginning the work. At a later stage he is expected to undertake problems involving the use of the library, and a very welcome feature of the book is a chapter devoted to the use of the literature. Some experiments suitable for senior students are included, with references to original memoirs and to standard works of reference. One or two misprints have been noticed and also several mistakes in structural formulæ, but apart from these minor defects the book is likely to stimulate the interest of the novice in organic chemistry.

The Scientific Photographer

By Dr. A. S. C. Lawrence. Pp. x+180+5 plates. (Cambridge : At the University Press, 1941.) 18s. net.

IN the preface the author puts in a plea for the more frequent use of photography in the laboratory for the making of permanent records of apparatus and experiments, and for the more extensive use of the lantern slide and cine film for teaching and demonstration purposes. This book is written primarily for the scientific worker who wishes to make use of photography either to augment his own research records or to illustrate his published work ; but it is also directed to the serious amateur photographer who, however skilled he may have become by experience, can only benefit by a knowledge of the fundamental principles of photography.

The physicist may find some sections elementary, and in one or two places statements may be found that will scarcely satisfy him. For example, one finds it recorded that the brightness range obtainable in a transparency is greater than that in a print because "the amount of light passing through the high-lights [of the transparency] may be increased at will by increasing the power of the light source".

The book is easy to read and well illustrated, and a great deal has been condensed into its pages. In attempting to cover such a wide field some subjects have inevitably received brief treatment, but the book provides a good groundwork for the thoughtful reader and should give the scientific worker all the information he requires to carry out any normal photographic operations.

Differential and Integral Calculus

By Prof. Ross R. Middlemiss. Pp. x+416. (New York and London : McGraw-Hill Book Co., Inc., 1940.) 17s. 6d.

THE author of this useful volume touches a vital spot when he says that "while in a first course many students acquire some facility in manipulating calculus symbols, very few obtain a real understanding of the fundamental ideas of the subject". The text has therefore been prepared in order to present the principles and processes of the calculus with special clarity and simplicity without sacrificing accuracy, and there is no doubt that the author has carried out his aim with skill and thoroughness.

Of the twenty-eight chapters, the first thirteen are devoted to functions and their graphs, limits and derivatives. Integration, as the inverse problem of differentiation, then follows and covers the standard forms with many well-chosen practical illustrative examples. The succeeding chapters deal with Duhamel's principle, mean value theorems, centroids, moments of inertia, centres of pressure, partial derivatives, multiple integrals, series, expansion and elementary differential equations. At the end of the text, a handy table of integrals is provided, for reference, together with tables of logarithms, common and Napierian, trigonometric functions, powers, roots, exponential and hyperbolic functions. Large numbers of exercises, with answers, are supplied, which are both interesting and instructive. The text is excellently printed and well illustrated by clear diagrams and isometric drawings. No student who conscientiously works through the course should have any difficulty in reaching a full understanding of the basic principles of the calculus.

Les Chaleurs spécifiques

Par Prof. Edmond Brun. (Collection Armand Colin : Section de physique, No. 224.) Pp. 224. (Paris : Armand Colin, 1940.) 15 francs.

SOME of the books of this series on physical subjects have justly attained an importance out of all proportion to their size. The present volume definitely belongs to this category, for it gives a most admirable survey of the whole field, experimental and theoretical, of specific heat measurements. It is very clearly written, and, as an example, one may mention that a chapter of some twenty-five pages on specific heat anomalies in solids is remarkable for a concise non-mathematical account of order–disorder transformations in metals and alloys. Most students will find it an excellent guide to the study of specific heats.　　　　　　　　　　　　　　L. F. B.