

the principle of photochemical equivalence; an outline of Baly's fascinating and suggestive researches in the field of photosynthesis; and lastly, the complete revision of the chapter on atomic structure."

There can be little doubt that further changes will have to be made in the near future when the author has considered in fuller detail how far he intends to maintain his hold upon Arrhenius's theory of reversible ionisation and how far he proposes to admit the later theory of complete ionisation, since it is obviously unsatisfactory to devote a large part of one chapter to expounding one view and a considerable part of another chapter to demolishing the foundations on which that view rests. The optical sections of the book will also require revision, in order to conform to the modern physical view that absorption of light of given frequency does not depend on a vibratory oscillation of given frequency in the molecule, but on the possibility of some form of activation in which quanta of energy of suitable magnitude are taken up.

These two points serve to illustrate the difficulty that is experienced by every writer of books on physical chemistry in this transition period, and they are particularly acute when a book of well-established merit falls due for revision. The author has not spared himself in the work of revision, and, if further changes have to be made in the near future, this will only be a further proof of the vitality of the subject which he expounds with no mean skill.

Our Bookshelf.

Allen's Commercial Organic Analysis. Vol. 5: *Tannins, Writing Inks, Stamping, Typing and Marking Inks, Printing Inks, Amines and Ammonium Bases, Analysis of Leather, Colouring Matters of Natural Origin, Colouring Substances in Foods, Benzene and its Homologues, Aniline and its Allies, Naphthylamines, Pyridine, Quinoline, and Acridine Bases*. By the Editors and the following Contributors: M. Nierenstein, C. Ainsworth Mitchell, John B. Tuttle, H. E. Cox, A. E. Caunce, W. M. Gardner, Walter E. Mathewson, J. Bennett Hill, A. B. Davis. Fifth edition, revised and in part rewritten. Editors: Samuel S. Sadtler, Dr. Elbert C. Lathrop, C. Ainsworth Mitchell. Pp. xii+700. (London: J. and A. Churchill, 1927.) 30s. net.

IN the period of sixteen years since the publication of the corresponding volume in the fourth edition of "Allen's Commercial Organic Analysis," there has been a considerable advance in our knowledge of practically all the sections under review. In spite

of the enormous amount of data to be included on a great number of subjects in a limited space, the editors have presented a readable and connected book. They have avoided the temptation of presenting their material in the usual dull dictionary form now so common in many comprehensive treatises on specialised branches of science.

Benzene and its homologues have been introduced as a first step on the road to coal-tar dyes, and are considered before dealing with amines and other dye intermediates. As natural dye colours are used largely as foundation material for the after treatment with coal-tar colours, they are included in this volume. Tannin materials and inks are considered in conjunction with natural colours which are rich in tannin products. Nearly one-third of the whole volume deals with the subject of tannin, and the qualitative and quantitative examination of tannin materials is treated exhaustively. The constitution of acacatechin, as set forth by Nierenstein, is given, and while it is stated that this is not in agreement with the views of Freudenberg, it is left to the reader to look up the original papers, to which references are given, to examine the points of difference.

Much of the material in the sections on amines and ammonium bases, benzene and its homologues aniline, naphthylamine, etc., will be found in general text-books on organic chemistry. If this material was restricted, more place might be given to the more specialised sections on natural colouring matters, inks, and leather analysis.

The volume shows signs of careful editing, and only a small number of errors have been noted. The standard of the previous volumes has been maintained generally, and the subject index has been greatly improved. J. REILLY.

(1) *Manual of British Birds*. By H. Saunders. Third edition, revised and enlarged by Dr. William Eagle Clarke. Pp. viii+834. (London and Edinburgh: Gurney and Jackson, 1927.) 30s. net.

(2) *The Birds of the Island of Bute*. By J. M. McWilliam. Pp. 128+8 plates. (London: H. F. and G. Witherby, 1927.) 8s. 6d. net.

(1) CLOSE field observation and keen discrimination of racial differences have brought the number of British birds from 384 to 500 since the second edition of this famous "Manual" appeared twenty-eight years ago. Fortunately, the bulk of the third edition has not kept pace with the increase, for although all the additions are described and many are illustrated, the editor has properly distinguished between rare visitors and regular British birds by allotting less space to each of the former. The essential plan is as in earlier editions: the occurrence in Britain, characteristic appearance, nesting habits, and migrations of each species are set out in a description which, with an illustration in woodcut or half-tone, occupies roughly two pages.

Great care has evidently been taken in compiling the accounts of occurrences and breeding in the British Isles, one of the most useful features in