

certainly during the past three or four years. A prospective chemist reading the author's book should keep this fact in mind.

It would be well for any prospective chemist to examine Mr. Carlisle's book. He has given a more complete description of what a chemist does and what is expected of him than is available in the usual vocational guidance literature.

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ORGANIC CHEMISTRY FOR THE LABORATORY. C. W. Porter and T. W. Stewart, Members of the Faculty of the College of Chemistry in the University of California. Ginn and Company, Boston, 1943. vi + 222 pp. 47 figs. 13.5 × 19.5 cm. \$2.00.

This is a companion laboratory text to the authors' "Organic Chemistry." The purposes of the book as given in the preface are threefold, "the first to acquaint the student with typical laboratory procedures and apparatus. The second is to help him visualize the reactions of which he reads in the textbook, and the third is to encourage the laboratory as a source of information." "The first laboratory directions are explicit," later experiments are properly given in more general terms. "No complicated or unusual equipment is specified."

At first glance the book seems small and brief. However, an adequate number of standard experiments are included, worthwhile general discussions and specific directions are given, and the purposes outlined above seem to be achieved. Approximately the final 50 pages of the text are used to discuss the mechanical operations of organic chemistry.

Two minor points of make-up might be mentioned. The figures used are of two distinct types. The experiments are not numbered. This latter follows the make-up of the authors' text in which there are no chapters numbered as such. Both of these points are noticeable but neither is of great importance.

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ORGANIC CHEMISTRY. C. W. Porter and T. W. Stewart, Members of the Faculty of the College of Chemistry in the University of California. Ginn and Company, Boston, 1943. v + 577 pp. 11 figs. 15 × 22 cm. \$4.00.

While an outgrowth of Porter's well-known "Carbon Compounds," this text is not a revision but an entirely rewritten work. The book provides material for a full year course in organic chemistry. It is used in the University of California . . . for the half-year sophomore course. "More than the usual space is devoted to the chemistry of the hydrocarbons" and "considerable emphasis has been placed upon compounds and processes of biological interest An introduction to mechanisms of reactions has been included, particularly in explanations of catalytic phenomena."

The text opens with an introductory section, giving a rapid preliminary survey of the field in 28 pages. The structural relationships of the main types of compounds are considered, with very few reactions. The following section upon aliphatic hydrocarbons is so written that it may be used as the starting point of study if the preliminary survey is not desired. The chapter on hydrocarbons is more extensive than frequently found in elementary texts. It includes such topics as oxidation, thermal stability and decomposition, structural and geometrical isomerism, hydrogenation and dehydrogenation, isomerization, alkylation, polymerization, and depolymerization. It should provide a good introduction to modern organic chemistry. Very minor criticisms are: (1) the formula for peroxides is not the one most commonly used, and (2) while the "Definitive Report" of the nomenclature committee is referred to, there is no mention of the naming of an unsaturated hydrocarbon by the method suggested by the committee, as a derivative of the longest chain containing the unsaturation.

As stated in the preface, mechanisms of reactions are stressed and excellent treatment is to be found in several cases; for ex-

ample, the discussion of esterification, the pinacol rearrangement, and the Beckmann rearrangement. Another excellent section is that upon optical activity. Considerable modern physico-organic chemistry is included for an elementary text. Without in the least suggesting that there has been any overemphasis upon the physical interpretation, there is a rather apparent influence of the Pacific coast school of physical chemistry upon the general tone of the text. It will perhaps satisfy the organic chemist of theoretical leanings better than the organic chemist largely interested in synthesis. For example, while 33 reactions are listed by name in the index the following are among the relatively well-known reactions which are omitted, at least by name: Knoevenagel, Michael, Thorpe, Bouveault, Hoesch, and Williamson. In a similar vein one does not find 1,4 addition listed as such though it is briefly mentioned under dienes.

A number of very excellent footnotes are given, particularly of review articles. A number of other excellent opportunities for credit are omitted; for example, under the discussion of the diphenyls no mention is given Adams, under polymerization one does not find the names of Carothers or Nieuwland.

The appendix includes tables of bond distances and atomic radii, and a discussion of the determination of molecular weights from the properties of gases, the properties of solutions, vapor pressure, boiling point, and freezing point.

The book is divided into more or less standard sections which are given in the table of contents. The make-up of the book deviates from common practice in that these divisions are not designated as chapters and are not so numbered.

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SEMIMICRO QUANTITATIVE ORGANIC ANALYSIS. E. P. Clark, Senior Chemist, Insecticide Division, Bureau of Entomology and Plant Quarantine, Referee on Microanalysis, Official Association of Agricultural Chemists. Academic Press, Inc., New York, 1943. v + 135 pp. 31 figs. 16 tables. 15.5 × 24 cm. \$2.50.

The deeper insight into the factors determining precision of organic analysis which has resulted from studies primarily aimed at microanalytical technique has revealed many possibilities of improving organic analytical practice when limitations of sample size are not of paramount importance. Such improvements, primarily in convenience, and usually adapted to samples of intermediate size, have resulted in widespread and increasing adoption of methods which have come to be known as semimicro analysis. This book is a valuable contribution to this field. The subjects covered are the determination of carbon and hydrogen, nitrogen (Kjeldahl and Dumas), halogens, sulfur, phosphorus, methoxyl, ethoxyl, and acetyl groups, neutralization equivalent, molecular weights, and volatile fatty acids. "The material presented is largely the author's treatment of the analytical procedures . . . encountered in his work." Although this limitation impairs comprehensiveness—quite obviously in the chapter on phosphorus—it doubtless insures reliability. Several new methods developed by the author are included.

The procedures are clearly described in adequate detail, but the discussions occasionally contain obscure passages. Thus, careful reading of the first paragraph on page 76 is required to avoid the inference that the milligram neutralization equivalent, there defined, is not numerically equal to the ordinary neutralization equivalent. The calculations on pages 90-1 could be simplified by the use of algebra and it is unfortunate that in the illustrative example chosen the same numerical value appears for two different quantities: the original titer of the solution and the distillation constant for isobutyric acid. Typographical errors are few. On page 48 *temporary filling* is used for *permanent filling* and on pages 41, 43, and 65 the term *kjeldahlization* appears sometimes capitalized and sometimes not.

This work will be useful to all who have occasion to use or teach semimicro analysis.

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