

delivered by the author at intervals during the last twenty-eight years. Five of these have been added in the present edition. These are upon: Stanislao Cannizzaro; James Watts; Victor Meyer; On the Progress of Chemistry in Great Britain and Ireland during the Nineteenth Century; and On the Development of Chemical Arts during the Reign of Queen Victoria. The style is very delightful and every chemist, and others as well, will find them very interesting and profitable reading. The individuals selected for discussion have been so well chosen that a perusal of the book will give the reader a very considerable insight into the development of chemistry during the last three hundred years.

The last essay of the list is, perhaps, the least satisfactory. While the work of English chemists during Victoria's reign was far from fulfilling the brilliant promise of the first quarter of the nineteenth century, it would certainly be possible to make a better showing for them than the author has here given. W. A. N.

CHEMISCHES PRACTICUM. I. Teil. Analytische Übungen, mit 25 Figuren im Text. BY DR. A. WOLFRUM. Leipsic. 1902. xvii + 562 pp. Price, 10 marks.

This book may be considered an attempt at a complete epitome of analytical chemistry, prepared especially for students who expect to devote themselves to chemical technology. It is divided almost equally into three parts, respectively: Qualitative Analysis, Quantitative Analysis, and Technical Analysis. One half of the first part and more than one third of each of the other two parts is given to organic analysis. The whole arrangement is systematic and in every way excellent. Most of the reactions involved, especially in the first part, are explained in accordance with the Ionic Theory.

Generally only one method of analysis is given, but with few exceptions the choice of methods is to be commended. In a few cases the book could have been brought a little closer to date. In the part devoted to technical analysis a brief description is given of the preparation of each metal and chemical product, so that this part of the book is also an epitome of chemical technology.

The fulness of the book is remarkable, for hardly an operation of analytical chemistry is omitted; for example, there are included the analysis of monazite sand, molecular weight determinations

by freezing- and boiling-point methods, toxicological analysis, gas analysis, oil analysis, preparation, analysis and testing of the coal-tar dyes.

When one takes into account the wealth of material compressed into a little more than 500 pages, it is obvious that the treatment cannot be critical nor the directions under each analysis sufficiently explicit to be of value to the student. It would be a good book from which to cram for an examination, and to the chemist it will be a useful book as an index, and outline of the principal processes of analytical chemistry and chemical technology. *Et praeterea nihil.*

JAS. LEWIS HOWE.

FIRST BOOK OF QUALITATIVE CHEMISTRY, FOR STUDIES OF WATER SOLUTION AND MASS ACTION. BY ALBERT B. PRESCOTT, PH.D., Director of the Chemical Laboratory, and EUGENE C. SULLIVAN, PH.D., Instructor in Analytical Chemistry, in the University of Michigan. New York: D. Van Nostrand Company. 1902. 148 pp. Price, \$1.50.

The plan of the authors of this, the eleventh edition of Professor Prescott's "First Book of Qualitative Chemistry," is given in the preface as follows:

"To enable the beginner in the qualitative laboratory to deal with chemical change in the light of the present studies of *water solution* and of mass action has been the main purpose in preparing this edition. With this intent the little book has been written anew throughout. It was first published by one of the authors in 1879, and designed then as now for classes taking a short course in qualitative practice."

The introduction gives 12 of its 24 pages to such topics as electrolytic dissociation, chemical equilibrium and hydrolysis. If some of these subjects could have been presented as simply as the other topics in the introduction, the book would have been less open to the criticism that the study of qualitative analysis is rendered unnecessarily difficult by presenting it from the standpoint of the dissociation theory. A number of strong arguments against this method of presentation may be given, but the question is not one that can be settled outside the laboratory. The burden of proof rests with the innovators and the present volume will be welcomed as another contribution toward the solution of the problem.