Because of the breadth of field treated and the general good quality of the treatment, the book is one of the best on the subject. W. R. WHITNEY.

PHYSICS. TEXT-BOOK FOR SECONDARY SCHOOLS. BY FREDERICK SLATE, Professor of Physics, University of California. New York: The Macmillian Co. 1902. xxi + 1414 pp. Price, $2.00.

The seventeen-page preface convinces the reader that the author is preparing a book from a mind trained for teaching natural science. He has clear views as to the pedagogic functions of such a work, and is consistent even to his unwillingness to confuse the mind by pictures of things which can be actually seen in the laboratory. The preface will be instructive to the many teachers who are to read it.

About 100 pages are devoted to the properties of matter; approximately an equal quantity to heat; and the subjects of sound, light, and electricity are also quite fully treated. Besides the index, there is a list of references for collateral reading, an outline of 180 experiments, and a compilation of over 100 interesting questions. The experiments are also especially carefully selected and worded,—there are no cook-book directions. The book is a readable Physics, and is not replete with definitions for the anxious student to commit to memory. He is forced by the arrangement to think for himself. In fact, there is hardly a direct definition in the book. The author's plan is to give the necessary information upon a subject through the discussion of phenomena or of experimental facts, and he usually concludes with a statement that "such a phenomenon is known as diffusion," for example, or "this is called the latent heat". The matter chosen for discussion is well fitted for use with classes of students who are being encouraged to think independently, and is made interesting by the method of presentation. On the other hand, the depth to which each topic has been sounded will prevent even the most advanced of its students from feeling superiority to the treatment. It has evidently been prepared by one who has given the entire subject most careful attention and it should prove to be a very useful book. W. R. WHITNEY.

ESSAYS IN HISTORICAL CHEMISTRY. BY T. E. THORPE. The Macmillan Co.: London and New York. xii + 582 pp. Price, $4.00.

In this book are gathered sixteen addresses which have been

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 Cannizaro; 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