NEW BOOKS.

THE SCHOOL CHEMISTRY. BY ELROY M. AVERY. New York: The American Book Co. 1904. 423 pp.

This book resembles most text-books of chemistry in giving an account of the elementary principles and a selection of the facts of the science all arranged more or less from the point of view of the chemist. It is a question whether this prevailing fashion is a good one and whether it is pedagogically the best method of presenting the subject to a pupil who is not yet conversant with the scientific method. If, however, this is assumed to be the most appropriate form for a high-school text-book, the present work fulfils its purpose on the whole very well. The facts and principles are given clearly and are copiously illustrated by well-chosen experiments. The book is commendably free from errors. On page 10 the statement that gravitation is a form of energy, when it is really only one of the factors of certain kinds of energy, will confuse pupils who have already been led, with difficulty, to grasp the difference between force and energy in their study of physics. The author seems to suffer from an obsession, which used to be epidemic among writers of text-books, to the effect that the description of molecules and atoms must precede that of the facts which led to their invention. In one or two instances he even speaks as if facts were ascertained by reasoning based on these conceptions. Thus (page 17) he deduces the law of conservation of mass from the premises that every atom has a definite weight and that in chemical change the atoms are simply rearranged, instead of reasoning conversely. Again (page 77) the law of multiple proportions is stated to result from the definition of an atom. To use this book successfully, the teacher should realize more clearly than does the author that chemistry is an inductive science. A. S.

THE NEW REQUIREMENTS IN CHEMISTRY FOR JUNIOR MATRICULATION AND FOR THE DEPARTMENTAL EXAMINATIONS OF THE PROVINCE OF ONTARIO. BY W. LASH MILLER, Associate Professor of Physical Chemistry in the University of Toronto. Issued by the authority of the University. Boards, 68 pp. Price, 25 cts., from the Librarian of the University of Toronto.

In his preface the author states that "In the new 'Regulations of the Education Department of the Province of Ontario' the

work formerly prescribed under 'Chemistry of the Lower School' has been changed by the omission of 'The Atomic Theory and Molecular Theory' and the insertion of 'Mixtures, solutions, chemical compounds, elements, combining weights, chemical formulae and equations, with easy numerical examples,' while to the 'Chemistry of the Upper School' there has been added 'Chemical and physical reactions, rates of reactions, reversible reactions and chemical equilibrium.'" The book is intended for use in connection with some standard text-book of chemistry. It is a fairly consistent attempt to present the fundamental conceptions of chemical science without the aid of the atomic theory. Such an attempt is certainly very useful in counteracting the too common tendency to attach an undue value to theories. It is questionable, however, if the author does not go too far when, in defending the point of view that no "explanation" of the phenomena of nature is required, he says, "When a stone falls to the ground, no one wonders." In the opinion of the reviewer many scientific men *do* wonder at the phenomena of gravitation and consider that there is here a still unsolved problem, nor do they despair of its final solution. Again, when he says, "The atomic hypothesis has not been so fruitful as was expected in opening up new fields of research," one can not help wondering if the writer really believes that chemistry could have attained its present position without the aid of the atomic hypothesis to guide the workers of the past century. It is noticeable that the subject of valence is not discussed. It would be interesing to see an attempt to teach organic chemistry from the standpoint of the book.

But while, in the opinion of the reviewer, the method of the writer is extreme and fails to use the only means by which it is now possible to present all of the facts of chemistry in their logical relationships, the little book is well worth careful reading by teachers of chemistry. W. A. N.

QUANTITATIVE CHEMICAL ANALYSIS. By J. C. OLSEN, A.M., PH.D., Professor of Analytical Chemistry in the Polytechnic Institute of Brooklyn. New York: D. VanNostrand Co. Illustrated. 513 pp. Price, $4.00 net.

Beyond the introduction in which the author discusses quantitative analysis and the personal qualities essential to the analytical chemist, the book is made up as follows: The Balance, General Determinations, Determination of Water, Determination