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

of Metals as Oxides and as Compounds, Determination of Acids, Analysis of Alloys, Analysis of Minerals, Electrolytic Methods, Volumetric Analysis, Oxidation and Reduction Methods, Precipitation Methods, Technical Analysis (*a*) Iron, Steel, Coal, (*b*) Water Analysis, (*c*) Oils and Fats, (*d*) Gas Analysis, Stoichiometry, Appendix.

In this book the theory and practice of quantitative analysis are well and completely presented—the practical side by seventy-two laboratory exercises which begin with work with the balance and lead up through simple determinations in pure salts to the more difficult separations and determinations met with in the analysis of alloys, minerals, etc.

Teachers of quantitative analysis will find the work well adapted to the needs of either beginning or advanced students and will appreciate the care with which details are given and the reasons for the various manipulations explained. Students who follow the suggestions of the author should make rapid advancement in speed and accuracy of work. Technical chemists, who lack proper training in stoichiometry, will find the presentation of this subject extremely clear and complete. They will also find that the choice of technical methods of analysis is excellent and includes those most commonly used.

The notes on the purity of reagents and the preparation of solutions of reagents according to the normal system are to be commended.

The text covers so wide a field that it will take the place, for ordinary reference, of a considerable number of standard works on the various departments of quantitative analysis. It is by far the best book on this subject that the reviewer has seen.

We would suggest a change in method of analysis of dolomite to conform more nearly to the method for the analysis of limestones, etc., suggested by the Committee on Uniformity in the analysis of Materials for the Portland Cement Industry; the use of α-naphthylamine acetate instead of naphthylamine hydrochloride in the determination of nitrites in potable water, and the introduction of a method for the determination of dissolved oxygen in the chapter on water analysis. Such directions as the following are open to serious objection—"press the platinum crucible between the thumb and finger to loosen the fused mass" and "while still red-hot the crucible is seized with a pair of forceps and placed in a desiccator." B. S. CUSHMAN.