

ber is given as its minimum content. The spelling of lactocrite and Feser, on pages 112 and 113, might be improved, as likewise the grammar in such a phrase as "there is rarely less than 12 pounds," on page 3. These are minor defects which the author will not fail to correct in a second edition, which, from the excellence of the work, will doubtless soon be demanded.

THE CONSTANTS OF NATURE. PART V. A RECALCULATION OF THE ATOMIC WEIGHTS. BY FRANK WIGGELSWORTH CLARKE. New Edition. Revised and enlarged. City of Washington. Published by the Smithsonian Institution. 1897. 8vo. vi + 370 pp.

The first edition of this work was published in 1882. Since then, and partly, no doubt, incited by that publication, a great deal of very excellent work upon atomic weights has been done. The appearance of Professor Morley's classical work on the relative atomic weights of oxygen and hydrogen has, especially, rendered possible a new calculation based on the hydrogen unit which will command universal acceptance among chemists. The present work is carried out on the same lines and with the same painstaking accuracy as the first edition. The exact means by which the final result is obtained is given in each case. While in the selection of the final value for each element due weight is given to chemical as well as mathematical evidence, there is also given for each the result of the purely mathematical combinations obtained by weighting each observer's value in accordance with the probable error. The comparative worthlessness of the probable error as showing the value of an atomic weight determination, and the necessity of considering chemical evidence as well, in spite of the objectionable "personal equation" introduced, is well shown by the fact that the probable error for oxygen as given by Professor Clarke in 1882 was 0.0035, while the present value differs from that then given by more than twenty-four times that amount.

The present work is, undoubtedly, the best available summary of our knowledge of atomic weights. W. A. NOYES.

TABLES FOR IRON ANALYSIS. BY JOHN A. ALLEN. vii + 85 pp. New York: John Wiley and Sons. Price \$3.00.

The author states in his preface that serious discrepancy only exists in the atomic weights of magnesium and silicon, and, in

iron laboratories, these are used only for the determination of constituents which occur in small quantities. The amount of silica in slags and magnesia in slags and dolomitic limestones does not accord with this statement. A difference in the atomic weight of magnesium would also affect the determination of phosphorus as magnesium pyrophosphate. The commas should be omitted from some of the tables, and if they were arranged for one gram of sample and to cover larger percentages, they would be more valuable and much simpler.

More examples should be given to illustrate the manner of using the tables. Table XL should be headed "Factor Weights," and Table XLI "Atomic Weights." The tables are undoubtedly of value, but the arrangement might be much simplified.

EDWARD K. LANDIS.

INORGANIC CHEMICAL PREPARATIONS. BY FRANK HALL THORP, PH.D.
238 pp. Boston: Ginn and Co. Price \$1.60.

In this book are found directions for the preparation of nearly one hundred compounds. Naturally enough, the salts of sodium, potassium, aluminum, ammonium, and iron receive the greater attention, but the remaining preparations are numerous and well selected, although no element is found among them.

The introductory remarks concerning solution, precipitation, filtration, evaporation, etc., are clear, full, and satisfactory, and the directions are, in most instances, all that could be desired. In some cases, however, the methods given would not furnish chemically pure substances.

Nearly all questions, that a student might ask, are anticipated and answered, while the use of equations to explain the chemistry of the methods and the incorporation in the text of numerous tables of solubility and specific gravity add not a little to the usefulness of the book.

In an appendix are placed specific gravity tables of the more common acids and ammonia, and a table showing atomic weights and valence.

The paucity of books of its kind and quality in the English language makes its appearance most welcome. L. B. HALL.

NITRO-EXPLOSIVES. BY P. GERALD SANFORD. 8vo. 270 pp. 54 Illus.
London: Crosby, Lockwood and Son. 1896. Price, 9 shillings.

The sub-title states that this book is a "Practical treatise con-