

about 0.12 per cent. of phosphorus according to Handy's method. But if the test-tube be then nearly filled with water, stoppered and the contents well mixed, again whirled, and the liquid again poured and drained off, the error is reduced to less than 0.001 per cent. The precipitate is then dissolved in standard alkali, and titrated with standard acid as in Handy's method. The Götz method, on account of its inexactness, seems to find but little use. For the method here described, 1 gram of steel is dissolved in 50 cc. of nitric acid (sp. gr. 1.135), the solution boiled, a little solid permanganate added, again boiled, decolorized with sugar or ferrous sulphate, cooled, 10 cc. of strong ammonia and 50 cc. of molybdate solution added, and the mixture shaken as usual in an Erlenmeyer flask.

GEORGE AUCHY.

NEW BOOKS.

ELEMENTARY CHEMISTRY. BY ROBERT HART BRADBURY, A.M., PH.D.,
Teacher of Chemistry, Central Manual Training School. Phila., etc.
New York: D. Appleton and Company, 1903. Price, \$1.25.

The author offers this volume for the use of students in colleges and secondary schools. It consists of two parts—a descriptive portion of 328 pages, and a second part of 157 pages, devoted to the experimental work.

The book is well written and presents its facts clearly and accurately.

The arrangement is that which this particular teacher has found productive of the best results with the students in his charge.

"The theoretical portion is interwoven with the descriptive matter No generalization is presented until after a particular case of it has been carefully described More stress is laid upon the mechanism of chemical changes . . . than upon particular facts It is far more important that the student should understand the behavior of crystal hydrates in general . . . than that he should memorize the number of molecular weights of water in the formulas of innumerable salts."

The author acknowledges his great indebtedness to Ostwald's publications and to the influence upon him of the school of which this scholar is the leading exponent.

The book is well printed and illustrated, containing portraits of Moissan, Priestley, Davy, Rutherford, Lavoisier, Dalton, Wöhler, Liebig, Bunsen and Mendelejeff. It will prove interesting to every teacher of the science and particularly to those who train beginners.

EDGAR F. SMITH.

A TEXT-BOOK OF ORGANIC CHEMISTRY. BY WILLIAM A. NOYES, Professor of Chemistry in the Rose Polytechnic Institute. New York: Henry Holt & Co. 1903. 534 pp. Price, \$1.50.

Among the short text-books of organic chemistry, this appears as a refreshing innovation. Of the extent of but 534 12mo. pages, it manages to compass the relationships of carbon compounds remarkably well. This is done by masterly grouping, and by a prudent distribution of stimulating reading matter. The style of statement is clear, direct and somewhat less technical than the prevalent language of organic chemistry, but the subject is often carried beyond the range of a beginning student of carbon compounds. Some parts of the book seem best adapted to the understanding of those who have already made things in the organic laboratory or have otherwise found their own way in the labyrinth of carbon combination. The question of its use in lectures not preceded by the student's laboratory work is one to be settled by the teacher in actual trial.

Without doubt the book is made the more clear and simple to any learner in that he is given the full benefit of the latest conclusions of research. Every part is freshly written in the light of the present. As instances may be mentioned, the explanation of alcohol and phenol reactions as those of hydroxides on pages 128, 143 and 283; the definition of acids on page 221; the possible structure of crystallized oxalic acid on page 250; esterification in general on pages 279-282; ethers compared with hydroxyl compounds as to their boiling-points on page 284; isocyanide structure on page 305; compounds of a single carbon atom on page 313; the reactivity of halogen compounds of carbon on page 390; the "strength" of organic bases on page 424.

In the division of subject-matter, the hydrocarbons, both aliphatic and aromatic, are brought first into 65 pages, then alcohols with phenols and their ethers are given 44 pages, the aldehydes, ketones and quinones 48 pages, the acids, aliphatic and aromatic, 52 pages. Nitrogen compounds have their more distinct introduc-