

the definition of hydrolysis, p. 296, of acids, p. 343, and of combining number, p. 352, and the statement of Faraday's law, p. 332. Experiments like No. 102 do not give molecular weights, and there are a number of problems based upon it, p. 371. Among the examples of reduction pp. 341-2, under (4), only the action of copper upon nitric acid is commonly classed as reduction; and under (5) and (6) the reactions are simply dissociations. Experiment 168 does not give the amount of salt dissolved in 10 cc. of *water*, but the amount present in 10 cc. of the *solution*.

Simplified spelling is used in the case of a few words, as "tho" and "thru," without any attempt to carry out all of the recommendations of the Simplified Spelling Board. "Hight" occurs throughout instead of the more usual form "height."

The typography of the book is good, and the proof-reading was carefully done except on p. 324. The main divisions of the text on pp. 183, 219, and 265 are not well indicated.

O. F. TOWER.

Anleitung zum Experimentieren in der Vorlesung über organische Chemie. Zum Gebrauche an Universitäten, technischen Hochschulen und höhere Lehranstalten, sowie zum Selbstunterricht für Studierende. DR. HANS RUPE, a. o. Professor an der Universität Basel. Vieweg und Sohn: Braunschweig, 1909. pp. 130. Geheftet, Mk. 4.50; Lnwd, Mk. 5.40.

This is a collection of lecture experiments for those giving courses in elementary organic chemistry and, as indicated in the supplementary title, may also be used advantageously by the student as a laboratory guide in the preparation and study of organic compounds.

The experiments include the determination of carbon and hydrogen, of nitrogen and of molecular weights; the preparation and properties of a large number of typical carbon compounds illustrative of the more important groups and reactions, together with such other topics as the distillation of petroleum and of wood, illuminating and water gas, fermentation soap, candles, equilibrium in esterification, bread-baking, collodion and guncotton, and the like.

The selection of experiments is, on the whole, quite satisfactory, the material is well classified and arranged, and the descriptions generally clear and explicit. The preparation of such substances as mercury fulminate, nitroglycerol, zinc ethyl, and the like, is, however, fraught with too much danger to be commended for lecture room demonstration or for inclusion in a book to be used as a laboratory guide for beginners.

As every organic chemist well knows, the great handicap encountered in lecture demonstration in his chosen field is the length of time needed to carry out many of the most important reactions. Where this difficulty cannot readily be avoided, the author meets it either by showing in the lecture room only the final step in the reaction or by continuing the reaction through successive lecture periods. In reading over the de-

scription of the experiments, the inorganic chemist cannot fail to be impressed with the laborious and time-consuming character of many of them as compared with the numerous relatively simple and rapid ones available in his own field.

The book should prove useful to all teachers of organic chemistry.

MARSTON TAYLOR BOGERT.

Calculations of General Chemistry. WILLIAM J. HALE. New York: D. Van Nostrand Company. pp. 174. Price, \$1.00.

This book is designed for use during the first year of the student's progress in the study of chemistry. It comprises the units of measure, and the calculations based on density and specific gravity; effect of pressure and temperature on gases; Avogadro's hypothesis; law of definite proportions; derivation of formulas; chemical equations; normal solutions; combination of gases by volume and closes with an appendix giving a table of logarithms. The treatment is clear and concise and the volume will be of service to students.

In the calculations of density the author uses oxygen as the standard. He says: "Formerly hydrogen, as the lightest substance served this purpose, and consequently the close relationship between densities and molecular weights was apparent. In recent times oxygen, with the value of 32, has been adopted as the basis of molecular weights by reason of the great importance of this element in its numerous combinations with other elements and for reasons that will be made clear after further considerations."

The reasons for making oxygen the standard for densities are no clearer than those for making it the standard for atomic weights. Hydrogen is the only standard that is rational and scientific and the use of oxygen as a standard leads the student to confusion only. It is unfortunate that, even among scientists, a fad or fancy promulgated by some man of prominence so often finds many eager followers. WM. L. DUDLEY.

An Introduction to Physical Science. By FREDERICK H. GETMAN. John Wiley & Sons, New York. 1909. Price, \$1.50.

The author has written this little book to meet the difficulties of beginners in chemistry by giving, in logical order, the physical principles which are most important for an intelligent study of chemistry. Seventy-eight pages are devoted to mechanics, 35 of which are concerned with gases and liquids. Sixty pages are devoted to heat and thermodynamics, while light electricity and magnetism are considered in the remainder of the 250 pages. Each chapter is concluded with a number of good problems and questions. If a student were acquainted with the contents of this book he would be well prepared to take up a study of chemistry, but it is not plain just when there will be time to devote to a course of