

hydrogen chloride, ammonia (three ways), hydrogen sulphide, sulphur dioxide, and carbon dioxide. Modes of determining the composition of the oxides, sulphides, halides, nitrates, sulphates, and carbonates of a large number of metals are described. The directions are clear and explicit.

In his preface, the author speaks of "a course which should emphasize the quantitative relations by means of a comparatively large number of determinations," and adds, "this collection of experiments may serve as a laboratory guide for such a course, and also furnish suggestions for the enrichment of the first year's work." Chemists are now unanimous in admitting that quantitative experiments, sufficient adequately to illustrate the quantitative laws, are a necessity. Few feel that time can be spared for the performance of more than the half dozen exercises required for this purpose. There is a real difference of opinion, however, in regard to the epoch in the course at which the quantitative experiments may most fitly be introduced. Professor Stoddard has done a genuine service in working out experiments covering so wide a range. There is hardly a chapter in the text-book in connection with which, with the help of experiments selected from his book, the illustration of the laws might not now be taken up.

ALEXANDER SMITH.

A Text-Book of Physics. By A. WILMER DUFF, KARL E. GUTHE, WILLIAM HALLOCK, E. PERCIVAL LEWIS, ARTHUR W. GODSPEED, ALBERT P. CARMAN, R. K. McCLUNG: Edited by A. WILMER DUFF. Philadelphia: P. Blakiston's Son and Co. 1908. pp. 666. Cloth. Price, \$2.75 net.

This is a novel experiment in text-book writing. Each of the seven sections was written by a single author, but submitted to all the other contributors and to the editor before reaching its final form. This method could not, however, produce complete uniformity either in style or in scientific adequacy. There are several weak places in the work, notably in the paragraphs on electrochemistry, which are vague and sometimes quite erroneous. Nevertheless, on the whole, the work is accurate, well balanced, and practical, and it will doubtless take a place in the first rank of college text-books in physics.

GILBERT N. LEWIS.

Introduction to the Rarer Elements. By PHILIP E. BROWNING, Ph.D., Yale University. 2nd Edition. New York: John Wiley and Sons. Price, \$1.50.

This little volume, covering 206 pages, should be studied by every student of chemistry. Those who carry out conscientiously the isolation of the various elements or derivatives of them, or, let us say one-half dozen of them, will find themselves in the possession of a mass of most interesting facts which can be acquired by no amount of reading or consultation of learned treatises. A respect for inorganic chemistry and an appreciation of its treasures cannot be better obtained than by performing with one's own hand some of the experimental work here offered by Dr. Browning. We may differ with him relative to some of the schemes of