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

this kind, unless it is taken in lieu of the regular course in physics. This book raises an interesting question; namely, is it desirable to have the principles of physics given with a special view to the study of chemistry? There might seem to be some advantages in this from the standpoint of the teaching of chemistry. On the other hand, if the student is held strictly accountable for everything he has had in physics, rather than attempting to give it to him in a somewhat different way, he would frequently need to get out his physics and do some independent thinking in applying the principles to the new things presented to him. This would be a gain in many ways: it would emphasize the importance of thorough work for future use, it would give more time for things more strictly chemical and good students would not be bored with an elementary presentation of things with which they were already familiar. Wherever this method is possible it certainly would tend to develop more thinking by the student in chemistry, a point that is of first importance.

G. A. HULETT.

The First Principles of Chemical Theory. By C. H. MATHEWSON. John Wiley & Sons. pp. 123. Price, $1.00.

This book of 123 pages is used by the author as a supplementary text to a short course of lectures which follow the first four months' work in general chemistry. The purpose is to introduce the student to the principles of chemistry very early in his course with the idea of continually repeating and illustrating these principles as the student accumulates facts in his subsequent work. Besides the subjects generally touched upon in a course in general chemistry, the student is introduced to the subject of osmotic pressure and related phenomena, electrolytic dissociation theory, heterogeneous equilibrium, thermochemistry and the many terms and conceptions accompanying these subjects. When the student once gains a working knowledge of these things his work will become mentally interesting and very much more intelligible and profitable, so it is desirable to have these things as early in the course as possible. On the other hand, any real conception of these principles should be based on an intimate (laboratory) knowledge of some facts. Without this the principles are merely so many words and when introduced again the student remembers having heard about them, while on repetition he may come to dislike the subject and so lose the mental training and pleasure that should go with a study of chemistry. This unfortunate result is altogether too frequently encountered in third- and fourth-year students, and it emphasizes the importance of determining just what basis of fact is necessary to afford a working conception of a given principle. The increasing favor of quantitative experiments in general chemistry laboratory work is an expression of this need, and it would seem that the rational development of the instruction in chemistry must give considerable