

misprint made it appear that cadmium deviates widely from the modified law of Dulong and Petit while it really has exactly the normal atomic heat.

GILBERT N. LEWIS.

Dr. Lewis's paper has been of especial interest to me for the reason that I reached the conclusion some years ago that the real basis for the law of Dulong and Petit is the same as that for the law of Avogadro and this conclusion was presented in some of my classes. The point of view which led to this conclusion was as follows:

In accordance with the kinetic theory the law of Avogadro, depending as it does, on the law that all gases expand equally for equal increases of temperature, is based on the fact that molecules of different weight when in collision exchange energies as elastic bodies so that the value mv^2 is a constant, independent of the mass of the molecule. In other words, the velocity of a molecule varies inversely as the square of its mass, and the average energy of translation for a molecule is independent of its mass. This is exactly parallel with the law of Dulong and Petit, which is, that the energy required to raise the temperature of an atom one degree is constant and is independent of its mass.

W. A. NOYES.

NEW BOOKS.

ELEMENTARY PRACTICAL CHEMISTRY. PART I—GENERAL CHEMISTRY BY FRANK CLOWES, D. SC., AND J. BERNARD COLEMAN, A. R. C. SC. LONDON—J. AND A. CHURCHILL. Price \$1.00.

The writer found on reading here and there in this little volume, designed for beginners, that it gives most excellent and explicit directions for practical, elementary work in chemistry, and that the chosen experiments beautifully illustrate the principles under discussion. It is difficult to comprehend how any earnest student, using this book to acquaint himself with the fundamentals of chemistry, could fail to develop a deep interest in the science, or fail to arm himself with an abundance of necessary facts with which to proceed to more advanced work in the subject. There are, at the present time, so many admirable introductions to chemistry that it is difficult for the student to make his selection. Each book aims to set forth the views which its author considers most essential, when introducing the neophyte to the mysteries of chemistry. The present volume has its distinct ear marks in this direction, and to the writer's mind they seem to indicate a very proper course, which he hereby sympathetically endorses.

EDGAR F. SMITH.

DENATURED OR INDUSTRIAL ALCOHOL. BY RUFUS FROST HERRICK. New York, John Wiley & Sons, 1907. 516 pages. Price \$4.00

The recent passage of bills through congress making the long hoped-for sale of tax-free alcohol a possibility in the United States has created a need for a work giving practical details on many subjects connected with the manufacture, sale and application of denatured alcohol. The present compilation by Mr. Herrick seems to satisfy the requirements in

such a book very satisfactorily, as it covers just such points as the manufacturer and user are most likely to be interested in.

The book deals not only with the chemical questions involved in the manufacture of common alcohol and the various denaturing agents, but includes also various other matters such as the uses of alcohol in lamps, stoves, and engines, with numerous illustrations of types of these appliances employed in this country and in Europe, the relative efficiency with respect to cost, of various fuels and illuminants, the cost of alcohol from different sources in different countries, the laws of this and other countries governing the preparation and sale of different grades of alcohol etc., etc. A book of this character is necessarily a compilation from a great number of sources, and in consequence is somewhat fragmentary. Different sections of such a book are unequally important and reliable, and this is true of the present work. While the real value of much that is presented here may be doubtful, the book as a whole must be pronounced a valuable contribution to our technical literature and will doubtless prove of value to many manufacturers who are ready to embark in new enterprises depending on the use of free alcohol.

J. H. LONG.

BEET-SUGAR MANUFACTURING AND REFINING. VOL. II, EVAPORATION, GRAINING AND FACTORY CONTROL. BY LEWIS S. WARE. First Edition. New York, John Wiley & Sons. London: Chapman & Hall, Limited. 1907, pages VI + 647. Cloth \$5.00 (21/-net).

Until recently the beet-sugar technician of the United States has had to depend entirely upon German and French treatises for instruction in the science and art of sugar production. The university man has not, in general, been attracted to this line of work, while the student from the public schools has found the whole subject a sealed book, from the fact that he was unable to read a foreign language.

For a matter of ten years the translation of some one of these texts has been eagerly looked for and some private translations exist, but have been withheld from publication.

The want is filled by the present volume, which brings the wealth of information and the pith of the knowledge contained in the leading foreign treatises, built up about the author's evident own large knowledge and experience.

The subject is one of purely physical operations, and while the writer has apparently assumed that the reader has a good general education, the style is marked by extreme simplicity and thoroughness. Credit is unhesitatingly given to the original authority, when the statement is not a matter of general knowledge, and the very numerous original references are commendable. The author frequently refers to the standard work