(not all of it quite accurate) within the rather narrow limits of the volume and it must be admitted that if the medical student should actually learn all that is there presented he would know much more than the average student carries away with him. But it seems to the present writer that the best selection of matter has not always been made, and that in his effort to be brief the author has very often sacrificed accuracy and clearness. Thus, we find as the definition of an alcohol the following, p. 144: "An alcohol is generally regarded as the hydrate of a hydrocarbon radical, since its formula always has a hydrocarbon radical at its positive end, and the radical HO at the negative end."

It is true that medical students can not devote a large portion of their time to the study of chemistry, but in the time they do spend in elementary chemistry their instruction should be as accurate and systematic as that given to students in the freshman or sophomore years of general colleges. It is a mistake to suppose that there is one kind of elementary chemistry for the clergyman, another for the lawyer, and a third (and the briefest of all) for the doctor. It is the present writer's opinion that the book before him does *not* contain the essentials which a medical man should know. J. H. LONG.

AN OUTLINE OF THE THEORY OF THERMODYNAMICS. By EDGAR BUCKINGHAM, Associate Professor of Physics and Physical Chemistry in Bryn Mawr College, Bryn Mawr, Pa. xi + 205 pp. New York: The Macmillan Company, 1900. Cloth. Price, $1.90.

This book is intended to bridge over the gap that exists between the ordinary text-books on thermodynamics and the modern memoirs on the subject. As the title indicates, special stress is laid on the theory, applications being introduced solely for the purpose of illustration. The subject is treated in 13 chapters, the topics considered being: Thermometry, Calorimetry, Material Systems in Thermodynamics, First Law, Principles of Thermochemistry, Calorimetric Properties of Fluids, Second Law, General Equations, Conditions of Thermodynamic Equilibrium, Thermodynamic Potentials, and Free Energy. One chapter is devoted to recapitulation and two to applications, while an appendix contains a list of useful books. The book is also provided with an index.

In treating his subject, the author begins with the explanation of simple fundamental concepts and gradually leads on to the more difficult relations involved; so that the book (though intended to bridge over a gap, as above stated) is yet complete in itself. The presentation is clear; and the student of thermodynamics will find the book a real aid in mastering the subject. The growing importance of thermodynamics in chemistry will insure for this volume a welcome on the part of chemists.

The work of the publishers is excellent.

LOUIS KAHLENBERG.

THE OIL CHEMISTS' HANDBOOK. By ERASTUS HOPKINS, Chemist in charge of the U. S. Laboratories at Boston, Mass. New York: John Wiley & Sons. 8vo. Price, $3.00.

This book gives, in a clear and concise form, the principal methods of testing the animal and vegetable fats, waxes, and oils, the mineral oils being considered only so far as they occur as adulterants.

A peculiar feature of the work is the tables of the properties and analytical constants of the oils; these have been selected with the greatest care from the original sources, the maximum, minimum, and mean values being given. Their arrangement is numerical; *i. e.*, in the table of the iodine value, the oil having the highest comes first, so with the other constants. These are especially valuable and convenient, as information is obtained at a glance which would take some time to find were it in the body of the book. It is, however, not exclusively a compilation but includes the results of years of practical experience. It seems to the reviewer that in some cases the original method has been adhered to, to the exclusion of the experience of others in the subject. For example the method of Livache is given, as detailed by him in 1886, without stating the experience of Weger and Lippert in 1898 and 1899. So too with regard to the Bechi test, the early procedure employing colza oil (which has since been shown to be unnecessary) is described without giving all the precautions shown to be needful to obtain reliable results; no results of later work are given. Regarding the determination of viscosity it would seem that the statement should have been made that for technical work the Saybolt,