

theoretical chemistry be taken up from the historical standpoint. It is extremely difficult, however, to write a history of chemical theory which is not at the same time and for the larger part a text-book on theoretical chemistry. This would produce something like the rich and comprehensive work of Lothar Meyer. To reverse the relative proportion of theory to history scarcely seems desirable. Thus the detailed account of the rather blind and selfish groping of early alchemists and philosophers into which the author reads a searching for what he styles "the one thing" while exhibiting a wide reading really does little to classify matters and bring any nearer the author's professed goal of a "just judgment." Nor are the terms which the author would substitute for well-known ones always happy or helpful. It takes a good deal of explanation to show how the term *class-marks* is an improvement upon the ancient *principle* or *elements*. The word *element* is later abandoned almost entirely for Boyle's *homogeneous* or *distinct substance*—a more euphonious but not much more satisfactory term than Davy's *undecomposed bodies*. The author divides his book into,

I. The history of the attempts to answer the question, What is a homogeneous substance.

II. The history of the attempts to answer the question, What happens when homogeneous substances interact.

It may be said that the chapter on "Elements which do not react" is scarcely satisfactory from the standpoint of history and is certainly most incomplete from the theoretical point of view. The chapter on the Periodic Law lacks clearness of coordination, the winnowing out of unimportant material and critical discussion or summing up of the material gathered. The discussion of the hypothesis of ionization is well done.

The book shows wide reading of original sources and can be helpfully studied in connection with the more clearly arranged and digested treatise of Lothar Meyer.

F. P. VENABLE.

PHYSICAL CHEMISTRY IN THE SERVICE OF MEDICINE. SEVEN ADDRESSES BY DR. WOLFGANG PAULI. Translated from the German by Dr. Martin H. Fischer. New York; John Wiley & Sons, 1907. VIII + 156 pages. Price \$1.25.

Six of the addresses which are brought together in this very readable translation were delivered before societies of medical men in Vienna and Leipzig, between 1899 and 1905, and were, in part, published later in scientific journals. The seventh essay, Number II as printed, was published some years ago as the first article in the first volume of the *Ergebnisse der Physiologie*, under the title, "The General Physical Chemistry of the Cells and Tissues."

These essays deal largely with the important problems of the chemistry of the colloids and present a resumé of our knowledge on the subject as

far as it has a bearing on questions of physiology. Although they were prepared for medical men they assume on the part of the reader a somewhat greater acquaintance with general and physical chemistry than is usually presented in the medical school courses in this country. To men who have had a proper preliminary training in chemistry the essays will prove interesting and suggestive reading.

J. H. LONG.

SECOND REPORT OF THE WELLCOME RESEARCH LABORATORIES OF THE GORDON MEMORIAL COLLEGE, AT KHARTOUM. ANDREW BALFOUR, DIRECTOR. Published by the Department of Education, Sudan Government, Khartoum. 1906. 255 pages, quarto.

The individual reports in this volume, with one exception, deal with topics of special interest to medical men only. Among them are several researches on mosquitoes and other insect pests, active in the spread of diseases in warm countries and which appear to have been worked out in considerable detail.

There is also a report from the Chemical Laboratory, by William Beam, which contains many analyses of Nile waters, analyses of native milks, gunpowder, gums, arrow poisons and other things of local interest. The book is well printed on good paper.

J. H. LONG.

PORTLAND CEMENT : RICHARD K. MEADE, B. S. —385 pages. Second edition. Price \$3.50. Chemical Publishing Co., Easton, Pa.

This most excellent volume on the chemistry, manufacturing and testing of cement will be highly appreciated by all who are interested in this important engineering material.

Mr. Meade does this volume scant justice in his preface when he says "The present treatise on Portland Cement is really the second edition of a small manual by the writer, published some four years ago called 'The Chemical and Physical Examination of Portland Cement' ". While this first little manual was highly appreciated in its time, it has been left behind by the rapid strides made in this industry in the past few years and bears no resemblance whatsoever to the present volume.

The subject of the book is treated under five headings—The Introduction; Manufacture; Analytical Methods Used on the Raw Materials and the Cement; Physical Testing; and Miscellaneous. In the Introduction the first of the two chapters is devoted to a short history of the cement industry, while the other discusses the composition of Portland Cement, reviewing the various theories as to the hardening and composition of this material. It is to be regretted that this chapter was written before the publication of the excellent work of Day and Shepherd of the Carnegie Institute on the "Lime-Silica Series of Minerals", for they conclu-

¹ This Journal 28, 1089-1114 (1906). Am. J. Sci. (4) 22; 265-302 (1906).