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[1] "Lime-Silica Series of Minerals", for they conclu-

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

sively show that the most popular theory of the composition of Portland Cement must be abandoned, as they have been unable to find a trace of any such compound as tricalcium silicate in Portland Cement or, in any of the samples of the supposed tricalcium silicate prepared by investigators engaged upon Portland Cement problems. In all cases they found no other substances present than orthosilicate of lime, with free lime in excess. It would appear that the assumption of Mr. Meade in this chapter and in other portions of the book, that free or uncombined lime is the cause of the unsoundness of cement, was made on insufficient proof, even before the work of Day and Shepherd.

Under the second heading, Manufacture, the author takes up most systematically the description of the various raw materials used for the manufacture of cement, the proportioning of the same, the methods of quarrying or excavating, and the drying and so on through the entire process to the cooling, grinding and storing of the finished cement. This portion of the book is exceptionally well written, as by a happy combination of the author's lucid descriptive power, along with well chosen illustrations, he condenses into somewhat less than 150 pages, a most comprehensive description of the several processes of manufacturing Portland Cement, and of all of the important types of appliances that have been used and are used at the present day. The chapters on the crushing and grinding of raw materials and cement are instructive to any interested in the subject. In the closing chapter of this part, the author gives a table showing the mechanical equipment of eight representative cement plants, and also diagrams illustrating the equipment of two plants, one using the wet process and the other the dry process. He also gives references to where descriptions can be found of a number of the most important plants throughout the country.

Under the third heading, Analytical Methods Used on the Raw Materials and the Cement, is given a description of the methods of sampling the various materials and analytical methods that have proven most satisfactory in the hands of those familiar with such work. It also includes several rapid methods in use at different cement plants for the determinations of ingredients for the control of the manufacture of the product. Full notes and comments by the author on many of the methods, and illustrations of apparatus, add greatly to the value of these chapters.

The fourth heading, Physical Testing, describes methods of inspection and of making the standard physical test to determine whether a Portland Cement has the requisite qualities. While special prominence is given to the uniform methods of testing, adopted by the American Society of Civil Engineers, and to the standard specifications of the American Society for Testing Materials, other methods that appear of some

merit are described. The comments by the author, after the description of tests for each physical property, are both interesting and instructive.

The two chapters composing the last heading, Miscellaneous, are devoted respectively, to descriptions of methods for detecting adulterants in cement, and trial burnings of cement mixtures in the laboratory.

This book is written in so lucid a matter that it can be readily understood, by even those not familiar with the subject treated; while at the same time it is so up-to-date and full of personal notes and comments, that even those who have specialized on the subject, will find it of interest and value. A. W. Dow.

THE MANUFACTURE OF METALLIC ARTICLES ELECTROLYTICALLY.—ELECTRO-ENGRAVING. By DR. O. PFANHAUSER, MANUFACTURER, VIENNA. Translated by Joseph W. Richards, Professor of Metallurgy, Lehigh University The Chemical Publishing Co., Easton, Pa, 1906. pp. viii + 162. Price $1.25.

This book is a digest of the literature, and particularly of that part of it relating to the patents, upon the electro-deposition of metals. The deposition of copper naturally receives the greatest attention. The various chapters treat of Baths for Copper Galvanoplasty, Physical Properties of the Copper Deposit, Behavior of Copper Anodes, Constants of the Bath and Calculation of the Amount of the Deposit, Industrial Plants, Particular Devices, Manufacture of Metallic Powders and Foil, Production of Wire, Manufacture of Large Bodies, of Mirrors, of Tubes, Electrolytic Etching and Engraving. This book will be useful alone to the manufacturer working along this line, and in very many cases the incompleteness of statement will be exasperating to anyone trying to follow any particular procedure.

HENRY FAY.

RECENT PUBLICATIONS

BROWN, GEORGE B. FERRIC AND HELIOGRAPHIC PROCESSES. A Handbook for Photographers, Draughtsmen and Sun Printers. London: Dawbarn & Ward Ltd. 1906. 8 vo. 126 pgs. 2 s.

BUSCHMANN, J. O. V. DAS SALS, DESSEN VORKOMMEN U. VERWERTUNG IN SÄMTLICHEN STAATEN DER ERDE. (2 Bände). Band I: Asien, Afrika, Amerika, u. Australien mit Ozeanien. Leipzig: 1906. XIV + 506 ss. M. 18.

CHRISTIE, W. WALLACE. BOILER-WATERS: SCALE, CORROSION, FOAMING. New York: D. Van Nostrand Co. 1907. 7 + 235 p. $3.00.

ERDMANN-KÖNIG. GRUNDRISS DER ALLGEMEINEN WARENKUNDE UNTER BERÜCKSICHTIGUNG DER MIKROSKOPIE UND TECHNOLOGIE. 14., vollständig neubearbeitete Auflage von E. Hanausek. Leipzig: 1906. gr. 8. XVI und 930 ss. mit 416 Figuren. M. 13,50.

ÉTARD, A. LA BIOCHIMIE ET LES CHLOROPHYLLES. Paris: 1906. 223 pg. avec figures. M. 3.