vania, Ohio, California and Texas crudes, that we might expect. In the section on 'Fermentation' also we find no mention of Buchner's great discovery of zymase in the expressed liquid from comminuted yeast-cells, which is now considered as the greatest advance in our knowledge of the action of the yeast plant since the time of Pasteur.

Part III., written for this edition by Charles D. Demond, S.B., in the space of 54 pages, gives a very excellent survey of metallurgical methods, covering all the technically important methods.

The book is undoubtedly the best book of its kind in the English language, covering in one volume of moderate size an outline of the manufacturing methods of technical chemistry. SAMUEL P. SADTLER.

Inorganic Chemistry, with the Elements of Physical and Theoretical Chemistry. By J. I. D. HINDS, PH.D. Second Edition. New York, John Wiley & Sons. 1905. Large 8vo. Pp. viii + 651.

This work, on its first appearance, was carefully reviewed in this journal; it seems necessary, now, only to show in what respects the present edition differs from the former.

The plan of the book remains essentially the same, but there has been an increase of eighty-five pages, and the text has been revised. Several chapters have been enlarged or rewritten, and new chapters have been added. These changes affect mainly 'Theoretical and Physical Chemistry.' The treatment of these subjects is much better and fuller than in the earlier edition, but unnecessary *rules* and questionable statements may still be noticed. Is it well that a student should write structural formulas of acids by the following rule: 'Connect each hydrogen atom by an oxygen atom to the negative, then connect the remaining oxygen atoms, which are saturating, to the negative by both points'? Is it correct to say that 'the reaction of a salt is neutral'?

Although blemishes like the above are still too numerous, they are noticeably less than they were in the first edition. The excellence of the descriptive portion of the text is unquestioned, and the work in its present form should win new friends. L. B. HALL.

HAVERFORD COLLEGE.

Cements, Limes and Plasters, their materials, manufacture and properties. By EDWIN C. ECKEL, C.E., Associate, American Society of Civil Engineers, etc.; Assistant Geologist, U. S. Geological Survey. New York, John Wiley & Sons. 1905.

This is an exceedingly valuable and well-nigh exhaustive work. It is by far the most valuable work on the several subjects that it treats that we have met, and in our judgment may be rightly considered a masterpiece of compilation. In the orderly and systematic arrangement of sub-subjects in the several parts and chapters the author's mastery of his general subject is exhibited not only to his own credit, but to the great pleasure and profit of his readers; for next to the enlightening information conveyed by an author comes the proper unfolding of a subject through systematic arrangement.

It is, however, as an engineer, of broad attainments outside the field of engineering, that Mr. Eckel addresses engineers. He does not profess to be a chemist, the chemistry of cements, limes and plasters is not mentioned in his title, therefore he may be pardoned if in the small space he devotes to the chemistry of these substances he follows the well worn path made by Mr. S. B. Newberry and Mr. Clifford Richardson's committee, which for some reason not clear to the general reader leads direct to the manufacturers of cement, leaving the interests of the *users* of cement completely uncared for. Nothing else could be expected, as Mr. Richardson's committee has the floor, and that committee recommends a method of chemical analysis that is ultimate and that, so far as chemical analysis is concerned, destroys the differences that exist in very unlike cements. A cement that contained five per cent. of uncombined silica and fifteen per cent. of combined silica would show twenty per cent. of silica on analysis by the method recommended by Mr. Richardson's committee, while a cement containing twenty per cent. of combined silica would on ultimate

analysis appear to be no better than the one first mentioned.

While in our judgment Mr. Richardson's committee is all wrong, and will ultimately be admitted to be so, it is hardly to be expected that Mr. Eckel would do otherwise than he has; nevertheless the book, addressed as it is mainly to those who *use* cements, limes and plasters, while well-nigh complete in other respects, is deficient in respect to furnishing a method of chemical analysis that will give results that enable one to distinguish good cements from bad cements.

We congratulate those seeking information upon this interesting subject that Mr. Eckel has given them such a comprehensive and valuable work.

A Treatise on Concrete, plain and reinforced; materials, construction and design of concrete and reinforced concrete. With chapters by R. FERET, WILLIAM B. FULLER, SPENCER B. NEWBERRY. By FREDERICK W. TAYLOR, M.E., and SANFORD E. THOMPSON, S.B., Assoc. M. Am. Soc. C. E. New York, John Wiley & Sons. 1905.

The preface of this work states: "This treatise is designed for practising engineers and contractors, and also for a text and reference book on concrete for engineering students."

As hydraulic cement is the basis of all concrete structures, this announcement exhibits the book as designed to inform and instruct those who *use* cement. While many of the technical and engineering problems involved in the use of cement in mortar and concrete are of interest to us, we naturally turned to those portions of the book devoted to the chemistry of cements and cement mortars. A careful examination of the book reveals an exceedingly interesting chapter by Mr. Spencer B. Newberry (a very successful manufacturer of Portland cement), on the 'Chemistry of Hydraulic Cements.' We found nothing in this chapter especially designed to instruct the *users* of cement. We looked in vain through the body of the work for anything concerning the analytical examination of cements, cement mortars and concretes. In an appendix we found the 'method suggested for the analysis of limestones, raw mixtures and Portland cements, by the committee on uniformity in technical analysis of the American Chemical Society, with the advice of W. F. Hillebrand.' As a method of ultimate analysis of the substances named the method proposed is well-nigh perfect; but for any purpose associated with the technical composition of cements, cement mortars and concretes, it has no value whatever.

The authors of this book are not chemists, hence they may be excused for any defects in the book involving a purely chemical problem; nevertheless, with all the good qualities the book possesses it is a defect that the book does not contain a scheme of chemical analysis by means of which good cements can be distinguished from bad cements and also by means of which the analyses of cements and cement mortars and concretes may be correlated with one another and with the physical tests of the cements used. We believe the time is not far distant when those who *use* cement will be brought to realize the supreme importance of such a method. S. F. PECKHAM.

Technique de psychologie expérimentale (Examen des sujets). In Toulouse's 'Bibliothèque internationale de psychologie expérimentale.' Toulouse, Vaschide et Piéron. Paris, O. Doin. 1904. Pp. 335.

The scope of this work is much more limited than the first title would indicate; the subtitle indicates more exactly the ground covered; yet the scope is still narrower than this at first suggests. The book does not, of course, attempt to condense into one small volume the whole subject of experimental technique in psychology; it limits itself definitely to the technique of 'tests,' by which the mental traits of individuals are measured. But, further, the book makes no attempt to cover the already rather extensive literature of mental tests; it scarcely refers at all to other authors. Its sole and consistent purpose—a purpose which has guided the authors in several years of experimentation, of which this book presents the outcome—is to formulate a system of mental tests which shall take