

ists who have glue analyses to make, is the position the author takes that the physical tests must determine the value of the glues and there can be no question but that the author proves his thesis.

Much credit is given the standards of physical tests, known as "Cooper grades," which depend greatly on the viscosity and jelly strength—by the latter is meant the resistance to pressure of a given glue when compared with other glues of known character.

His book should be in the hands of all chemists who have glue work to do and comes nearer to being a hand-book of the subject than anything yet printed, giving as it does all the chemical and physical tests of value and entering also largely into the commercial side of the subject.

JOHN H. YOCUM.

"THE PEABODY ATLAS."—SHIPPING MINES AND COAL RAILROADS OF THE CENTRAL COMMERCIAL DISTRICT OF THE UNITED STATES. Accompanied by Chemical, Geological and Engineering Data. By A. BEAMENT. Price \$5.00. 149 pp., size 16¼ x 18 in. Peabody Coal Co., Chicago. 1906.

This is an exceedingly valuable compilation of coal information and represents a vast amount of labor as well as great expense. Three general maps of the United States are given with especial designations of coal fields. Twenty-five sectional maps 14"x16" give counties, railways, and mines in detail, the latter numbered for ready reference to the lists of coal, localities, coal operators and coal railroads arranged alphabetically under each head. The statistical and geological data are concise and well arranged. Not the least valuable feature is a well illustrated description of the author's theories concerning the combustion of coal under the heading of "Smokeless Furnaces and Smoke Suppression." Few writers are so well qualified to discuss this and related topics where fuel of the bituminous type is involved.

S. W. PARR.

WATER SOFTENING AND TREATMENT. WILLIAM H. BOOTH. 8vo., pp. XVI + 308. Price, \$2.50. D. Van Nostrand & Co., New York, 1906.

The literature in English upon boiler waters is meagre. Real contributions, therefore, to our information on this topic are welcome. Thirty pages are devoted to a discussion of the mineral constituents and reactions of possible reagents. The author is evidently an engineer rather than a chemist, and most of the chemical data are "said to be" as given in the text. This second hand characteristic of the descriptive matter probably accounts for the lack of discrimination in the topics introduced. Magnesium hydrate, for example, may be interesting, but hardly practical, while no mention is made of phosphates as reagents. The discussion of analytical methods covers six pages and is devoted solely to a description of the use of soap solutions. A more pretentious discussion along these lines is contained in Appendix No. 1, covering sixteen pages. This

is a reprint of Dr. Angus Smith's report on the Incrustation in Boilers near Manchester, England, first printed in 1859 and repeated here with the chemical nomenclature in the old style.

Nearly one-half of the book is taken up with a description of condensers, feed heaters and feed pumps, pp. 149-288. Fifty pages are devoted to a description of water softening apparatus common to England and the Continent. No American types are referred to. The book may not be without interest to the engineer, but has little of value for the chemist.

S. W. PARR.

SCIENTIFIC ASPECTS OF WATER PURIFICATION. BY FREELAND HOWE. 8vo, pp. 53. Pittsburgh Filter Mfg. Co., 1906.

In the preface, the author states that "the writer's principal desire is to present to others the ideas which make water purification more comprehensible and simple to him." It is possibly comprehensible that one may dwell so persistently among the ions as to be able to make truthfully such a statement as the one quoted, but to the ordinary individual, the descriptive matter of this little treatise will seem to give the rather simple problems of water purification a most terrific twist to bring them into the "scientific aspect" of the author. One example may be cited as illustrative of the general plan of "simplification." The familiar reaction of Prof. Clark for the softening of water is put thus: "If an increase of a solid phase in contact with the system resulted in the increase in concentration of one of the ions, when the system was already saturated with respect to that ion, there would be a change. The point of saturation would be reached and the solid phase of the least soluble of the components would separate out. This is what happens when lime is added to a system containing the ions, carbanion (CO_3''), hydro-carbanion (HCO_3') and the calcion (Ca'') and magnesium (Mg'')." The author states that "all the salts are in a state of electrolytic dissociation . . . each chemical or group of elements exists as ions or atoms with charges of either positive or negative electricity he discusses as illustrations, hydriion, diferrion, triferrion, etc., but does not say anything about silicon. Any discussion of quantivalent reactions seems to be avoided. This would require distribution of ions in conformity with the every day conceptions of the compounds involved. The nearest approach is in the following paragraph taken from page 32. "Sulphanion can be almost completely removed by supplying barion . . . It is rendered non-scale forming by supplying it with sodium or potassium, but the resulting sulphates of sodium and potassium causes foaming." It is difficult to determine whether the last clause is a lapse or a concession. In general here is another illustration of a fine system put to bad service. If the work is intended as a dissertation on physical chemistry, it would seem that an un-