INVESTIGATIONS AND STUDIES IN JADE, 2 vols., folio, 293 and 277 pp. New York, privately printed. 1906.

This work, prepared by the late Heber R. Bishop, of New York, with the assistance of numerous collaborators and printed on American hand made paper, is a most sumptuous piece of artistic book work. Only 100 copies were printed, for private distribution. The basis of the monograph was the collection of Mr. Bishop himself. The plates, in the natural colors of the articles represented, are marvelously fine. Following the preface and introduction to Volume I is a chapter on jade in China, by a Chinese author, in the original and in translation, followed by a series of colored plates showing the modern Chinese methods of manufacturing jade articles. Part 3, on jade as a mineral, comprises sections by several authors, most of them well known Americans, and contains very many analyses made on material from the Bishop collection, accompanied by full chemical discussions; the results of over one thousand specific gravity determinations made on the objects themselves; details of compression, impact, tensile and tenacity tests; the localities and geological occurrences of jade, etc. Part 4, relates to the working of jade, and part 5, to worked jade. The volume closes with a bibliography. Volume II is a descriptive catalog of the Bishop collection.

W. F. HILLEBRAND.

ESSENTIALS OF CRYSTALLOGRAPHY. BY EDWARD HENRY KRAUS, PH. D., Junior Professor of Mineralogy in the University of Michigan. Ann Arbor, Michigan. George Wahr, 1906. 8vo. xi + 162 pp. 427 figures. Price, cloth, $1.60.

Since the time of Mitscherlich, the sciences of chemistry and crystallography have been closely associated. This is as it should be, for, upon the latter depends the important question of physical homogeneity, the neglect or misjudgment of which, may vitiate the laborious determination of any number of physical or chemical constants.

"Essentials of Crystallography" is an elementary book, concerned only with *geometrical* crystallography, omitting entirely the subjects of physical and chemical crystallography, crystal measurement and projection, and the theories of crystal structure, and reducing to a minimum the discussion of the relations of crystalline and amorphous substances. No list is given of the most important natural and artificial substances, classified according to the system in which they crystallize. In short, while the book may be well adapted as a guide to a lecture course on a single phase of the subject, it can hardly be of use to the chemist. The definition of amorphous substances, p. 1, as "those which do not attempt to crystallize", is faulty.

The book is fully illustrated and contains a bibliography of recent works on the subject.

E. T. ALLEN.