Elements of the Theory of Integers. Second Edition. By Joseph Bowden. Published by the author, Garden City, New York, 1931. 268 pp.

The changes from the first (1903) edition consist mainly in the correction of errors and a revision of the chapter on congruences. The author gives an axiomatic treatment of the theory of rational integers as far as the theorem of unique decomposition into prime factors. The final chapter on congruences ends with the theorem of Fermat for a prime modulus. The extremely limited subject matter makes the book hardly acceptable for a student of the theory of numbers. For a student interested in the axiomatics of arithmetic the book is open to several criticisms. A general treatise on the axiomatic structure of algebraic systems would be certainly more fascinating and scarcely more difficult. No discussion of the independence and consistency of the system of axioms is given. The author uses simplified spelling and an original symbolism.

H. T. ENGSTROM

The Law of Gravitation in Relativity. By H. C. Levinson and E. B. Zeisler. University of Chicago Press, 1931. 127 pp.

This book, in addition to being an exposition of tensor analysis, attempts to formulate all possible laws of gravitation which are obtained from a set of linear differential equations of the second order, in which the dependent variables are the components of the metrical tensor. In addition to Einstein's assumption the authors consider the case where space time is conformal to a flat space (vanishing of the Weyl tensor) and carry out the details of the calculation of a centro-symmetric field under this hypothesis. Another possibility where the vanishing tensor carries six labels (two from the metrical tensor and four from the Weyl tensor) is mentioned, but the details are not worked out nor is the geometrical significance of this tensor obtained. The authors have quite evidently worked through the whole theory independently, and the book makes interesting reading, provided one is already somewhat familiar with the methods of tensor analysis.

F. D. MURNAGHAN

Critique of Physics. By L. L. Whyte. New York, W. W. Norton, 1931. xi+196 pp.

This book is more philosophical than mathematical and is mainly an analysis and criticism of the postulates and concepts underlying relativity theory and quantum mechanics. The author believes that the fundamental role of Planck's constant h is to furnish in combination with other atomic constants a natural unit of length in terms of which sizes of atoms and of crystal lattice structures, etc., may be expressed. The book is more a program for research than an exposition of a new theory, and it is the hope of the writer that the publication of such a program may stimulate the development of a new theory. The book is not at all like the multitude of popular controversial books dealing with the theory of relativity, and the writer has evidently thought seriously about the topics he discusses. There are two short and interesting historical appendices dealing with the theory of relativity and with the quantum theory.

F. D. MURNAGHAN