

The final chapter is on coordinates in one and two dimensions. It is based on the fundamental theorem that three pairs of corresponding elements fix a one-dimensional projectivity, so that the correspondent of any fourth element is uniquely determined. The idea of cross-ratio is not explicitly introduced. After defining addition and multiplication geometrically, it is shown that the rules of ordinary algebra apply. In passing from homogeneous to nonhomogeneous coordinates, the statements are frequently too inclusive; as given they include division by a vanishing coefficient. After showing that loci represented by linear equations in point coordinates are straight lines, the analytic formulation of projectivity is discussed, and also correlation. The determination of the fixed elements is not taken up except in a few particular cases.

The style is on the whole pleasing; the book is easy to read. The printing is excellent, only two typographical errors having been found. The work is provided with a full index.

VIRGIL SNYDER

*Contributions to the Mechanics of Solids.* (Dedicated to Stephen Timoshenko by his friends on the occasion of his sixtieth birthday anniversary.) New York, Macmillan, 1938. 277 pp.

The preface states that the idea of producing this book to commemorate the sixtieth birthday of Stephen Timoshenko, formerly professor of engineering mechanics at the University of Michigan, was conceived almost simultaneously by several of his present and past associates in colleges and industries. The book consists of a short biography of Professor Timoshenko followed by twenty-eight independent articles on various aspects of "stress and strain," written by prominent men in science and industry on both sides of the Atlantic.

Many of the articles discuss rather particularized engineering phases rather than general principles or analytical mathematics. The average technical reader will find some interesting features in such articles as "Developments in Photoelasticity" (non-mathematical), "Effect of a Flexible First Story in a Building Located on Vibrating Ground," "Dynamic Stability of Railway Trucks," "Use of Orthogonal Functions in Structural Problems," and "Hamilton's Principle and the Principle of Least Action in the Solution of Creep Problems." The above titles illustrate the range and mutual independence of the articles which constitute the book. The reviewer feels that it would have been of more interest and value to have assembled more correlated discussions of topics in the field of the mechanics of solids.

J. K. L. MACDONALD

*Foundations of Logic and Mathematics.* By Rudolf Carnap. (International Encyclopedia of Unified Science, vol. 1, no. 3.) Chicago, University Press, 1939. 8+71 pp.

This monograph presents in condensed form and with a minimum of formal detail the author's views concerning the relation of logistically formalized calculi to language in the ordinary sense, and concerning the application of such calculi in empirical science. It is a noteworthy contribution to philosophy of science and in particular to analysis of the relationship between pure and applied mathematics, the questions involved being made much more precise and intelligible than would otherwise be possible, through use of the methods of modern symbolic logic.

In many respects the author's views are here modified or clarified in such a way as to remove serious objections previously urged against them.