on tensors was added. This chapter has been entirely remodeled in the present edition, while the remaining chapters show only minor changes.

T. H. GRONWALL.

Darstellende Geometrie des Geländes. Von RUDOLF ROTHE. Leipzig, Teubner, 1914. Small 8vo. iv + 67 pp.

THIS pamphlet, forming volume 14 of the "Mathematische Bibliothek" edited by W. Lietzmann and A. Witting, gives a very attractive presentation of that part of descriptive geometry known as the method of contour lines and familiar from its application to topographical maps. The treatment is of a quite elementary geometrical nature, and the main topics covered are: determination of distances and angles, lines of equal slope, intersections of curves and surfaces, and computation of areas and volumes. Numerous practical applications, mostly to engineering and geology, are given, and eighty-two diagrams illustrate the clear and concise text.

T. H. GRONWALL.

Le Hasard. Par EMILE BOREL. Paris, Félix Alcan, 1914. 312 pp.

THIS book belongs to the Nouvelle Collection scientifique published by Félix Alcan under the direction of Emile Borel. In it the author has given to the public the most interesting parts of his lectures and researches on the theory of probabilities. His principal aim has been to put in evidence the rôle of chance in various branches of scientific knowledge.

The work is divided into three parts. The first part contains a general exposition, remarkably free of formulas, of the principles of the theory of chance. The second part is concerned with the applications of the laws of chance to several sciences, including sociology, biology, physics and mathematics. Among the physical theories treated are some of the most recent, such as reversibility in thermodynamics and radioactivity. The third part is devoted to the philosophical basis of the laws of chance.

The book is not mathematical in its treatment. Only the most elementary mathematics, usually nothing but simple arithmetic, is needed for its reading. The discussions, however, are often illuminating. One interested in the general problems of science or in the theory of probability will find

profit and pleasure in its perusal. It will furnish excellent collateral reading in connection with a course on the mathematical theory of probability.

R. D. CARMICHAEL.

An Introduction to the Mathematical Theory of Heat Conduction with Engineering and Geological Applications. By L. R. INGERSOLL and O. J. ZOBEL. Boston, Ginn and Company, 1913. vi + 171 pp.

THIS is a text on Fourier's series and heat conduction. The aim of the volume is to make the study of the subject more interesting and profitable by presenting along with the theory a large number of practical applications. These are chosen so as to make the book of direct service to geologists and engineers. Several of the practical problems which thus come in are here treated for the first time. The pulse of the concrete world throbs in every chapter and it has a healthy beat which gives one pleasure.

This book is intended for the student who has neither time nor mathematical preparation to pursue the study at great length. Consequently very little attention is given to such mathematical aspects of the theory as uniqueness, existence and convergence theorems. Hence the book will not be of special value to one interested primarily in mathematics. But its clear treatment of numerous practical applications will render it of distinct service to those for whom it was prepared, namely, students of physics and engineering who desire an elementary and brief treatment of the conduction of heat.

The arrangement of material, from a pedagogic point of view, is most excellent and deserves to be signalized with emphasis. The exposition is clear and interesting.

R. D. CARMICHAEL.

Le Système du Monde. Histoire des Doctrines cosmologiques de Platon à Copernic. Tome premier. Par PIERRE DUHEM. Paris, Hermann, 1913. 512 pp.

THE whole of the present volume is given to an account of the Hellenic cosmology beginning essentially with that of Plato. In order that the reader may understand better the doctrines of Plato and his successors a brief exposition is first given (pages 5–27) of the earlier astronomical teachings of