mination of fundamental systems of covariants. Finally, there is a discussion of the concomitants of ternary forms in symbolic notation.

R. D. CARMICHAEL.

Leçons sur la Théorie des Fonctions. Par EMILE BOREL. Deuxième édition. Paris, Gauthier-Villars, 1914. xi+259 pp.

FOR purposes of review the second edition of this valuable book by Borel may be divided into three parts: the body of the text exclusive of the extensive notes at the end (Chapters I to VI, pages 1–101); notes contained in the first edition (pages 102–134); notes added in the second edition (pages 135–256). The first two parts are reprinted without modification except for a single change in a matter of terminology in the theory of point sets. Since these parts have been before the mathematical public for many years (having been originally published in 1898), they call for no further review now. The third part consists of three notes numbered IV, V, VI; it makes up about half of the present volume.

Note IV (pages 135–181) is devoted to polemics concerning the transfinite and the demonstration of Zermelo. It contains a reprint of seven articles, principally by Borel, published from time to time during the years 1899 to 1914. These discussions are perhaps of more interest to philosophers than to mathematicians. A perusal of this note in comparison with earlier statements by Borel shows that his thought on some of the matters in consideration has undergone a marked evolution.

Note V (pages 182–216) is devoted to denumerable probabilities and their arithmetic applications.

Finally, Note VI (pages 217–256) is given to a development of the theory of measure and of integration from the point of view adopted by Borel in his definition of measurable sets. It contains the most important matter added in this new edition of the work. The subject is approached in a very elementary and simple way and the treatment is carried through to results of considerable generality both in the theory of measure and in the theory of integration. The treatment will serve conveniently as an introduction to the fundamental researches of Lebesgue in the theory of integration.

R. D. CARMICHAEL.