Funzioni Analitiche. Chapter 1. Complex numbers, functions, Cauchy-Riemann equations, harmonic functions, conformal mapping, irrotational fluid motion. Chapter 2. Cauchy's integral theorem, residues, Cauchy's integral formula, Dirichlet's problem, mean value theorems. Chapter 3. Infinite series, the Taylor and Laurent expansions, poles and isolated essential singular points. Chapter 4. Analytic continuation, Riemann surfaces, the elementary transcendental functions, Mittag-Leffler's theorem, Weierstrass's theorem.

Funzioni Ellittiche. Chapter 1. Historical introduction, periodicity, the Weierstrass π, ζ, and σ functions. Chapter 2. Elliptic integrals. (This is a particularly good treatment of the subject.) Chapter 3. The sn, cn, and dn functions of Jacobi, Jacobi's theta functions. Chapter 4. The π functions related algebraically, transformations of elliptic functions, automorphic functions, Landen's transformation. Chapter 5. Applications: rectification of the ellipse and hyperbola, geodesics on an ellipsoid of revolution, loaded elastic columns, simple pendulum, a problem in conformal mapping arising in aerodynamics. Table of principal formulas.

G. E. RAYNOR

Random Variables and Probability Distributions. By Harald Cramer. (Cambridge Tracts in Mathematics and Mathematical Physics, no. 36.) London, Cambridge University Press; New York, Macmillan, 1937. 8+121 pp.

The two customary and time-honored approaches to the theory of probability start from the a priori definition of probability in terms of equally possible cases (Laplace) on the one hand, and from an empirical formulation of probability in terms of relative frequencies (von Mises) on the other. The former approach, while lending itself readily to a discussion of games of chance, fails inevitably to justify the application of the theory to physical science; the latter runs into analytical troubles in connection with the existence of certain limits essential to the theory. The present treatise, following chiefly the work of Kolmogoroff, avoids the difficulties of the two extreme attitudes by placing the meaning of probability on an axiomatic footing, regarding it merely as a given number, subject to certain limitations, associated with an event. The question as to the legitimacy of this association, which looms alarmingly in other treatments, is simply decided by a pragmatic appeal to its success. Thus the theory of probability becomes a branch of the theory of completely additive set functions.

The method of analysis used throughout the book is that of Fourier-Stieltjes transforms, which renders the work elegant and concise. The treatment is limited in so far as the author restricts himself to probability distributions in spaces of a finite number of dimensions, and foregoes practically all applications of interest to physical science. Clear and lucid in style and arrangement of material, Cramer's book is destined to prove of value not only for the mathematician who seeks a brief authoritative exposition of the fundamentals of probability theory, but also for the student of applied science who wishes to inform himself of the basic ideas of so useful a calculus.

HENRY MARGENAU

Structure of Atomic Nuclei and Nuclear Transformations. By G. Gamow. Oxford, Clarendon Press, 1937. 12+270 pp.

This book is a second edition of the book *Constitution of Atomic Nuclei and Radioactivity* which was reviewed in this Bulletin, vol. 39, p. 487 (1933). Unlike most second editions, the book is completely new, since the neutron was discovered after the writ-