

## BOOK REVIEWS—COMPTES RENDUS CRITIQUES

**Foundations of Mathematics.** xii + 195 pages. Symposium papers commemorating the sixtieth birthday of Kurt Gödel, edited by J. J. Bulloff, T. C. Holyoke, and S. W. Hahn. Springer-Verlag, New York, 1969. U.S. \$9.75.

The title explains the reason for the book. It contains a tribute to Gödel, written in 1951 by John von Neumann, and a complete bibliography of Gödel's work. The contributions include: papers in set theory by R. M. Solovay, G. E. Sacks, G. Takeuti, and A. Lévy; a paper in constructive mathematics (in German) by E. Wette; papers by H. Rubin on the foundations of probability; by H. B. Curry on  $\lambda$ -conversion; by B. Meltzer on theorem proving by machines; by S. F. Barker on the philosophy of mathematics. The paper by Solovay, on the cardinality of sets of reals, would seem to be of particular interest.

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**Fields and/or Particles,** by D. K. Sen. x + 139 pages. Ryerson Press, Toronto; Academic Press, London, 1968. 50s.

This compact book brings together a wealth of information concerning many of the standard and nonstandard approaches to electrodynamics, general relativity, quantum theories of particles and fields and unified field theories. The author manages to make coherent this vast range of theories and speculations by means of a consistent viewpoint. The discussion is based on the role played by the fundamental concepts of fields and particles in dualistic and nondualistic theories. A dualistic theory supposes that the source of the field forms a separate entity apart from the field it generates. A theory is nondualistic if it is based on the concept of a pure field or if it uses only particles as fundamental constituents of matter. A theory is unified nondualistic if it unifies the concepts of fields and particles.

Part I presents a concise development of the well-known dualistic theories; electrodynamics, gravitation and the quantum theory of a particle. Parts II and III deal with nondualistic theories including, besides the standard development of renormalized quantum field theory, a wide range of nonstandard approaches to general relativity (including electrodynamics) and quantum theory. The essential features of Weyl manifolds in classical unified field theory, of Wheeler–Misner geometrodynamics, and of Heisenberg's nonlinear field theory are explained. And this is not by any means a complete list! This is an impressive work of scholarship which makes accessible a variety of significant approaches to the fundamental