tunately it is now well started with the work of Lotka, Volterra, and Rashevsky, not to mention various lesser but significant and useful workers. Mathematicians should read this book, if for no other reason than to get a first-hand acquaintance with the early steps of the Queen of the Sciences to bring under her dominion another great field of natural knowledge. Biologists should read it for the same reason, and also because a number of the theoretical developments suggest new lines of experimental approach to old and important unsolved problems.

RAYMOND PEARL

The General Field Theory of Schouten and Van Dantzig. By N. G. Shabde. (Lucknow University Studies, no. 10.) 1938. 4+58 pp.

During the 25 years that have elapsed since the appearance of the general relativity theory the subject has attracted the attention of many mathematicians and has been developed in several different directions. The pamphlet under review belongs to the series of rather formal developments which were prompted by the idea, as the author puts it, that "in Riemannian geometry of ordinary general relativity a unification of electromagnetic and gravitational phenomena is impossible"; whether the statement is true or not, this conviction has been the source of a series of brilliant and elegant generalizations connected among others with the names of Weyl, Cartan, Kaluza, Veblen. In particular, Shabde's contribution is more closely related to the work of Schouten and Van Dantzig. It consists of an exposition in somewhat generalized form of projective relativity of Veblen followed by reports on the author's two papers published in periodicals. The pamphlet hardly can be recommended for one who has not already acquired familiarity with the theories presented; for a specialist it may be convenient to have in this form the contents of the author's articles, one of which has appeared in a not easily accessible publication. Misprints are abundant and some may be disturbing for the uninitiated.

G. Y. RAINICH

Topologie der Polyeder und kombinatorische Topologie der Komplexe. By K. Reidemeister. (Mathematik und ihre Anwendungen, vol. 17.) Leipzig, Akademische Verlagsgesellschaft, 1938. 9+196 pp.

This book contains a rigorous and clear treatment of the combinatorial theory of polyhedra. The point of view is strictly combinatorial, there being no attempt to introduce notions involving continuity. A polyhedron is a subset of a linear n-space which is a sum of convex rectilinear pieces, the latter being intersections of a finite number of linear half-spaces and hyperplanes. By definition, two polyhedra are topologically equivalent if they have isomorphic subdivisions. A discussion of the simple transformations of Alexander (cf. Annals of Mathematics, (2), vol. 31 (1930), pp. 292–320) is given as is the theorem of Newman (cf. Proceedings of the Academy of Sciences, Amsterdam, vol. 29 (1926), pp. 611–641) that two polyhedra are equivalent if and only if any of their simplicial subdivisions are related by a sequence of simple transformations. Homology groups are introduced and their invariance under subdivision is proved. There is no discussion of the cohomology groups. The intersection is presented with application to duality on a manifold. The fundamental group is introduced and applied to the theory of covering complexes. The book concludes with an all too brief discussion of the author's own invention: homotopy chains.

The book is well illustrated but contains too few examples. It is clearly intended that the book is to supplement the author's earlier and more elementary book (*Einführung in die kombinatorische Topologie,* Vieweg, Braunschweig, 1932) which does contain many examples and provides the requisite knowledge of group theory. The notation is concise and well organized. This enforces slow reading.

N. E. STEENROD