

BOOK REVIEWS

The special theory of relativity. By J. Aharoni. New York, Oxford, 1959. 8+285 pp. \$7.20.

This book on the special theory of relativity contains, besides the usual subject matter, a chapter on spinors and a chapter on general field theory. The latter discusses the derivation of conservation laws for linear and angular momentum from a Lorentz invariant action principle, and the relation between the canonical and the symmetric energy—momentum tensors.

Any new book on relativity theory invites a comparison with the well-known classics by Weyl, Pauli, and Eddington, and with the more recent books by Bergmann, Landau and Lifshitz, and Synge. The present book does not do well in such a comparison. On the one hand, it is not exhaustive, leaves many loose ends, contains almost no literature references, and thus does not serve the purpose of a reference work. On the other hand, the book is not organized with sufficient care and contains too many misleading statements to serve as a useful text for the serious student who wishes to learn the subject. Here are some examples:

One and a half chapters are devoted to tensors, but there is no proof that contraction is a tensor operation. The process is used constantly and the proof can be given in a few lines. The electromagnetic 4-vector potential is not discussed in the chapter on Maxwell's theory. Instead it is introduced in three lines in connection with variational principles for fields. This is followed by a statement that gauge conditions are in general necessary, when the variational principle does in fact not require such additional conditions. In the chapter on three-dimensional tensors it is suggested "that whenever $A_e B_e = A_{e'} B_{e'}$ and we know that A_e is a vector, we may conclude that B_e is also a vector." Unless A_e is also arbitrary, the conclusion is false. On page 105, an explicit expression for a hyper-surface integral is justified by subdividing the three-dimensional surface into parallelepipeds whose faces are to be respectively parallel to all four coordinate hyperplanes.

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Algebra. By B. L. van der Waerden. Part 2 (4th ed. of *Moderne Algebra*) (*Grundlehren der mathematischen Wissenschaften*, vol. 34) Berlin-Göttingen-Heidelberg, Springer, 1959. 10+275 pp. DM 29.60.

This is the most extensive revision yet made in the classical alge-