

an induced law of parallelism. There is not a unique induced affine connection in a sub-space of an affinely connected space."

The book ends with a bibliography of the books and articles to which reference is made in the text. Eisenhart's previous books have been conspicuous, among other things, for their carefully prepared and useful indexes. The omission of such an index from the present work is to be regretted. With the growth of mathematical literature, it is becoming more and more inconvenient to be forced to leaf through a whole book to locate a desired bit of information.

Those wishing an introduction to the subject will find *Non-Riemannian Geometry* a useful book. A familiarity with the methods of tensor analysis is, of course, presupposed on the part of the reader. The subject matter is carefully presented and the manipulations are easy to follow. The theorems are clearly stated and are proved in a straightforward manner, a number of the proofs being original with the author. The chief defect in the book—and this seems serious in a set of colloquium lectures—is the absence of any attempt to comment upon the significance of the results or to point out possible lines for future development.

J. M. THOMAS

THREE BOOKS ON DIFFERENTIAL EQUATIONS

An Elementary Treatise on Differential Equations and their Applications.

New edition, revised and enlarged. By H. T. H. Piaggio. London, G. Bell and Sons, 1928. 18+256+27 pp.

Gewöhnliche Differentialgleichungen. By J. Horn. Zweite, völlig umgearbeitete Auflage. (Göschens Lehrbücherei.) Berlin, Walter de Gruyter, 1927. 8+197 pp.

Ordinary Differential Equations. By E. L. Ince. London and New York, Longmans, Green, 1927. 8+558 pp.

Professor Piaggio's *Differential Equations* was first published in May, 1920, and was reprinted four times during the next six years. "The object of this book is to give an account of the central parts of the subject in as simple a form as possible, suitable for those with no previous knowledge of it, and yet at the same time to point out the different directions in which it may be developed." The only previous knowledge assumed is that of the differential and integral calculus. The style is admirably adapted to a text for beginners and the large number of examples with answers furnishes adequate drill material.

The usual standard forms of ordinary and partial differential equations occupy the greater part of the book: one chapter is devoted to numerical approximations and another to existence theorems. In the revised edition more examples have been included and a new chapter "Miscellaneous Methods" has been added, dealing with a number of disconnected topics, which may be regarded as in the nature of supplementary reading. The author calls particular attention to some difficulties in the theory of singular solutions, for which he is indebted to some unpublished work by Mr. H. B. Mitchell, formerly Professor at Columbia University.