act effectively on a manifold. The last topic is the authors' theorem that a compact effective group on 3-space E^3 is linear (orthogonal) in suitable coordinates, with an interpretation of this result for the axiomatic foundation of Euclidean geometry of E^3.

The first four chapters are essentially self-contained, up to general mathematical education and some references to special topics. But it is true of course, no surprise with a subject as complex as the one under consideration, that actually a good deal of sophistication and preparation (or perseverance) will be required for appreciation of the material.

Usually things are spelled out in detail, in an almost conversational style. The authors have not aimed at maximum elegance or brevity in their presentation; e.g., some theorems carry unnecessarily strong hypotheses. Occasionally, particularly in the last part, the reader is asked to supply a good deal of the argument.

In both of its main parts the book leads close to present day work; it constitutes a rich source of facts, techniques of all kinds, and references, for anybody who is actively interested in the subject; it will be of great value to beginning and mature mathematicians alike, and is therefore a very welcome addition to the mathematical literature.

HANS SAMELSON

Théorie globale des connexions et des groupes d'holonomie. By A. Lichnerowicz. Edizioni Cremonese, Roma, 1955. 15+282 pp. 4000 lire.

This is a very timely book on the modern theory of connections. The classical theory was mainly initiated by Levi-Civita and Schouten and received, partly because of its applications to the general theory of relativity an extensive development. Elie Cartan observed, from his effective applications of the method of moving frames to various geometrical problems, that the group concept is the basic underlying idea. He knew many examples and had on the basis of this knowledge all the important notions of a general theory, but did not have the tools and terminology to express them. In fact, his "tangent space" is a fiber in the modern terminology, and his space of moving frames is what is now called a principal fiber bundle, etc. This is not to minimize the contributions of modern geometers (Ehresmann, Weil, H. Cartan, Chern, Ambrose, Singer, etc.), whose efforts have made what was once a difficult subject into a beautiful theory. It is now the considered opinion that in differential geometry a connection is a concept pertaining to a principal fiber bundle.

The book is divided into five chapters. Chapters I and II give a