General topology. By W. Sierpiński. Trans. by C. C. Krieger. (Mathematical Expositions, No. 7.) University of Toronto Press, 1952. 12+290 pp. $6.00.

This book retains many of the characteristics that brought popularity to the author's earlier book, *Introduction to general topology*. However, it has a different axiomatic treatment and is much enlarged so that it could be classified as more than a revision. Readers who have objected to the corruption of the vocabulary and notation of topology by those who have undertaken to rewrite it may find it refreshing to find the way in which such expressions as compact, bicompact, basis, +, $\sum$, $\prod$ are used.

Chapter I treats Fréchet (V) spaces, that is, spaces in which each point is associated with one or more subsets called neighborhoods but these neighborhoods need not satisfy any additional conditions. Topological spaces are studied in Chapter II when it is supposed that the neighborhoods satisfy additional conditions. It is of interest that in the cartesian product of topological spaces, a neighborhood is defined to be the cartesian product of neighborhoods. Topological spaces with a countable basis are considered in Chapter III, while Chapter IV treats Hausdorff spaces with such a basis. Chapter V deals with the properties normality and regularity.

An extended treatment of metric spaces is given in Chapters VI and VII. A large part of the study of topology is devoted to the important metric spaces and Sierpiński devotes over one-half of his book to them. In the study of complete metric spaces in the last chapter, particular attention is given to various kinds of their subsets, such as those that are F_σ, G_δ, Borel, or analytic sets. The treatment is more extensive than that in the corresponding chapter of the *Introduction*. The Appendix is much the same as in the *Introduction*.

It is logically satisfying to give a sequence of axioms and definitions and prove theorems on the basis of these without appealing to the intuition. However, such a sequence of axioms may omit some of the spaces that are of interest to topologists. Nevertheless, this book deals with many of the spaces usually studied. A feature that makes it especially suitable as a text is the collection of problems and theorems left as exercises in each chapter.

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Anfangswertprobleme bei partiellen Differentialgleichungen. By R. Sauer. Berlin, Göttingen, Heidelberg, Springer, 1952. 14+229 pp. 26 DM; bound, 29 DM.

This book is concerned mainly with the initial value problems for