The difficulties above can be easily overcome by an alert lecturer, especially with the aid of all the references given to van der Waerden's big, young cousin, Bourbaki.

DANIEL ZELINSKY

Real analysis. By E. J. McShane and T. A. Botts. Princeton, Van Nostrand, 1959. 9+272 pp. $6.60.

As stated in the Preface, "The aim of this book is to present, in a form accessible to the mature senior or beginning graduate student, some widely useful parts of real function theory, of general topology, and of functional analysis." If a mature student, in this context, is understood to be one who has already enjoyed and profited from a substantial introduction to real variables—preferably including some topology and Lebesgue theory—the authors have achieved their objective well. Although material of considerable generality is handled in a style that is frequently quite compact, the proofs and discussion are sufficiently clear and carefully presented to enable the interested reader to follow the argument and to complete any gaps that have been left for him to fill. In the compass of 250 pages the authors lead their audience through the impressive totality of material outlined below.

The book contains eight chapters—numbered 0 through VII—and three appendices. Chapter 0—Preliminaries—sets the stage, with a brief and informal presentation of some of the notation and languages of sets, functions, integers, and the principle of inductive proof. Chapter I—Real Numbers—characterizes the real number system as a complete ordered field (completeness by means of suprema), and introduces partially ordered sets and the maximality principle (a more extended discussion of which is given in Appendix II). Chapter II—Convergence—develops a highly comprehensive limit theory based entirely on the concept of a "direction," that is, a nonempty family of nonempty sets any two of which contain a third, inspired by Moore-Smith generalized convergence. Topological spaces are studied, with uniqueness of limits established for Hausdorff spaces. Compact sets receive special attention. Order-convergence for lattice-valued functions is defined in terms of upper and lower limits (limits superior and inferior). The real number system R and the extended real number system R^* lead to the product spaces R^n and $(R^*)^n$. The Cauchy criterion for convergence of a function from any domain with a direction to a range in R^n is proved. In Chapter III—Continuity—the directions under consideration are specialized either to the family of all relative neighborhoods of a point or (for a nonisolated point) the family of all deleted relative neighborhoods