One final comment relates to an aspect of the organization of the text. The author has tried to keep the first five chapters parallel to those in his earlier book, *Advanced real calculus* (Harper and Brothers, 1957), and there are numerous references to that volume in the present one. This reviewer found disquieting the necessity for frequent consultation of other works that will be needed by a student to fill the gaps in *Advanced complex calculus.*

ERNEST C. SCHLESINGER

Individual choice behavior, a theoretical analysis. By R. Duncan Luce. New York, Wiley, 1959. 12+153 pp. $5.95.

This book belongs to that small but increasing set of teatises in which competent mathematicians apply their skill to problems in the behavioral sciences. Luce's basic concept is the probability that a subject chooses an alternative belonging to a specified subset of the set of alternatives presented. His primary interest is in the consequences of an axiom concerning these probabilities. Results are applied to psycho-physics, learning theory, and utility theory.

Excellent features of the book are the careful statement of assumptions, derivations, and results, the plentiful and good examples, the attention to interpretation, the candid accounts of the history and significance of problems, the mention of unsolved problems, and the attention to testing the theory. As an example of the last named, Luce is not satisfied to note that his utility model is capable of experimental verification "in principle." He points out that the indicated experimental study would be impractical and then derives a result that can be tested.

The book has significant implications for the mathematics curriculum. The reader is faced with only the most modest demands on his algebraic and computational skill. On the other hand, he is required to have considerable sophistication and appreciation of axiomatics and the ability to keep in mind various assumptions and their interrelations. Indeed the skills required are most similar to those that are developed in undergraduate courses in foundations of mathematics or in elementary courses of the so-called "modern" type. Classical analysis plays almost no role.

There are a few very minor blemishes to the generally excellent exposition. Quantification in the mathematical sections is rather clumsy. For example, Luce writes, in the statement of his major axioms and in many other places, the hypothesis "if $P(x, y) \neq 0, 1$, for all $x, y \in T$." This formulation is unfortunate on two counts:

First, there is a simple verbal synonym that he himself uses later ("if all discriminations are imperfect") and second, the placement of the quantifier after the sentence leads to possible ambiguity. Indeed, the careless reader may well think that this is the negation of the claim that for every x and y belonging to T, $P(x, y)$ equals 0 or 1. Occasionally the steps and reasons in a proof are so arranged that the reader is misled as to the correspondence. There are a few violations of the rule of exposition that an item should be explained if it is less obvious than other items that have been explained.

KENNETH O. MAY

Rachunek Operatorów (*Operational calculus*). By Jan Mikusiński. 2d Polish edition. Monografie Matematyczne, vol. 30. Warsaw, 1957, 374 pp.

In several papers the author has published a theory containing a direct justification of the Heaviside Calculus as opposed to the various well known indirect methods using functional transforms. The purpose of the book under review is to present this theory and its applications both to engineers primarily interested in the use of efficient computational procedures and to readers desiring to understand why these procedures work. To reach such a heterogeneous readership, the author uses the text-book approach and leads the reader gently and with great skill from a completely elementary level to rather abstract concepts. There is a profusion of problems (solutions to them fill 28 pages) and an abundance of applications.

It was not the mandate of the reviewer to describe the details of the book. Its fundamental idea is as follows: The class of all continuous real or complex-valued functions defined on the real positive semi-axis forms a ring under the operations of pointwise addition and convolution. Since this ring has no divisors of 0 (theorem of Titchmarsh), it can be extended to a quotient field, whose elements are called "operators." The author shows that in this field (which comprises all Heaviside operators) an algebra and an analysis can be constructed in which operators play the same role as numbers in classical analysis. In particular, various problems often worked by Laplace transforms can be solved by this method in a simpler way and under less stringent assumptions.

While this review was being written, an English translation of the book was published as Volume 8 of the International Series of Monographs on Pure and Applied Mathematics, Pergamon Press, New York, 1959. (Enlarged by an appendix of 112 pages for the use of readers with theoretical interests.) It is very commendable that thus