strict irreducibility. Special results for *-algebras with minimal ideals are obtained; this discussion ends with a development of the basic properties of H^*-algebras.

Appendix. Examples and applications. Most of the details are omitted (with ample reference to the literature). This allows the author to pack considerable meat into these 56 pages. The examples are chosen from algebras of operators and algebras of functions; almost all of them are non-trivial and interesting in their own right. An extensive outline of the theory of group algebras, with emphasis on the non-abelian case, follows. Discussed more briefly are convolution algebras of measures and almost periodic functions on groups.

A lengthy (49 pages) bibliography follows. Throughout the text, notes at the ends of the sections provide the appropriate references to the literature.

As prerequisites for this book, the author assumes a knowledge of the basic facts from the theory of Banach and Hilbert spaces and of the rudiments of modern algebra. By careful organization and exposition he successfully leads the reader to the frontier of knowledge in the topics of Chapters II, III and IV, in less than 300 pages. In view of the amount of material involved and the close integration necessary, this is a remarkable achievement. It is a well written book and makes pleasant reading. Comparison with original sources shows that the proofs and organization have been thoroughly re-worked and amplified.

As may be expected there are some minor flaws. On page 260 the reference R. B. Smith [1] occurs. But there is no such entry in the bibliography even though R. B. Smith is credited in the preface for his assistance with the bibliography! The reviewer was disconcerted to find the reference to Yood [13]on page 248 in view of the fact that the bibliography lists but 10 items for him. The appropriate reference here is to the Pacific Journal of Mathematics vol. 10 (1960) pp. 345–362. This phenomenon occurs only in a few other spots; presumably the text was in a state of constant revision up to the final deadline for the printers.

Naturally there is some overlap with Naimark's *Normed rings*, but each book contains more material outside than inside this intersection. Serious students of the subject should read both.

BERTRAM YOOD

Vorlesungen über Differential- und Integralrechnung. Vol. 1, *Funktionen einer Variablen.* Zweite, neubearbeitete Auflage. By A. Ostrowski. Basel, Birkhäuser, 1960. 330 pp. + 47 fig. 35 s. fr.

The first edition of this book appeared in 1945, and was reviewed by the present reviewer (Bull. Amer. Math. Soc. vol. 52 (1946) pp. 798–799). Volumes 2 and 3 of the original edition appeared in 1951 and 1954, respectively, and were duly reviewed. Now we have the first volume of the revised edition. The biggest change is that all the exercises have been omitted. The author says that a separate publication of exercises and their solutions is intended.

The general arrangement of the book has not been changed very much, but there has been extensive rewriting in places all through this first volume, with greater clarity and simplicity as the aim.

We mention some of the more significant changes.

In the discussion of the real numbers, Dedekind's axiom has been replaced by the following "Trennungsaxiom." Let A and B be two classes of real numbers such that $a \leqq b$ if $a \in A$ and $b \in B$. Then there exists at least one number s such that $a \leqq s \leqq b$ if $a \in A$ and $b \in B$. As a criticism, I note that it should be specified that A and B are nonempty classes.

All of the diagrams in the new edition have been redrawn. The level of excellence in the diagrams is higher and more uniform than before.

Some material on infinite series and on the study of curves has been moved into volume 1 from volume 2.

The idea of an operator is introduced (a transformation of one function into another). The notion of a distributive operator is also discussed; the integral with variable upper limit is cited as an example.

Other concepts which are new in this edition are: (1) the concept of a majorant in infinite series and (2) the Lipschitz condition.

There is more about inequalities: Specifically, Jensen's inequality, and the inequalities of Hölder and Minkowski are included.

Purists of modernism in mathematics may note that the function concept is not stated in terms of a set of ordered pairs. Nor does the author write f instead of $f(x)$ for a function.

The book is a fine example of exposition. It has the stamp of the author's personality and distinction in its style and in the historical footnotes.

ANGUS E. TAYLOR

Mathematical aspects of subsonic and transonic gas dynamics. By Lipman Bers. Surveys in applied mathematics, no. 3, John Wiley and Sons, Inc., 1958. $7.75.

The theory of compressible fluids leads to problems which evoke great interest among mathematicians, especially among those investigating various chapters in the theory of linear and nonlinear partial differential equations. During the last twenty years a great amount of material accumulated and there was a definite need for a survey of