BOOK REVIEW

M. A. Lawrentjew und B. W. Schabat: Methoden der komplexen Funktionenthe-
orie, VEB Verlag der Wissenschaften, Berlin 1967, German translation
from the Russian, X + 846 pp., 231 fig., price 84,- MDN.

   This book is intended to fill the gap between at one side, textbooks on
the theory of functions of a purely mathematical character and, at the other
side, a class of books that could be characterized by a title like "Theory
of functions for engineers", in which the applications are of major im-
portance. It can be said that the authors have been very successful at
trying for this aim. The result is a book in which a satisfactory treat-
ment is given of the theory of complex functions and which at the same
time contains a great number of applications of physical and technical
interest.
   The value of the book is increased by the fact that the fundamental
equations of the physical and technical fields, for which the theory of
functions plays an important role (such as hydrodynamics, elasticity a.o.),
are derived shortly, so that the physical background of all applications can
be understood with the information given in the book itself. For those
readers who want to go deeper into the applications, the book provides an
extensive list of literature. There are applications of theory of functions
to elasticity, airfoil theory, gravity waves, groundwater theory, control
theory, heat conduction, electric circuits and others.
   The book contains seven chapters of which the first gives the fundamental
theory and the six remaining are devoted to those modern methods of the
theory of functions that are of importance for the applications. The chap-
ters are as follows:
I   Fundamental theory
II   Conformal Mapping
III   Boundary Value Problems of Theory of Functions and their Applications
IV   Variational Principles of Conformal Mapping
V   Applications of Theory of Functions in Analysis
VI   Operational Methods and Applications
VII   Special Functions.
   This book can be recommended to every technical student and engineering
scientist because of its self-consistency, which makes it very suitable for
self-study and because it provides a fundamental insight into the use of
similar mathematical methods to problems emerging from different branches
of physics and engineering science.

H. W. Hoogstraten.

BOOKREVIEW

L. Rédei: "Algebra", Volume I, Pergamon Press, Oxford, 1967, XIII + 823 p., price: £ 7/-. ($ 21.50).

This book is a translation of the original Hungarian book of the same name. Since the well-known German translation in 1959 again many modifications and perfections have been carried out. This book covers many subjects and is pleasant to read. The contents of the chapters is as follows:

I   Sets, Zorn's lemma, semiordering, well-ordering.

II   Structures, semigroups, groups, modules, rings, skew fields, homomorphisms, quotient structures, Schreier group extensions, Everett ring extensions, Jordan-Hölder theorem.

III   Operator structures, Krull-Schmidt-Remak theorem, cross products, matrix rings, alternating rings, quaternion rings.

IV   Divisibility in rings, left and right principal ideal and Euclidean rings, Szendrei's theorem.

V   Finite Abelian groups, cyclic groups, Hajós's theorem, zeta functions.

VI   Operator modules, elementary divisors, vector spaces over skew fields, Schur's lemma, theorems of Chevalley-Jacobson and Wedderburn-Artin.

VII   Polynomial rings, resultants, Eisenstein's theorem, Hilbert basis theorem, Tschirnhaus transformation of ideals.

VIII Fields, field extensions, Wedderburn's theorem, theorems of Steinitz.

IX   Ordered structures, Archimedean ordering.

X   Fields with valuation, perfect hull, p-adic valuations, theorems of Ostrowski, Hensel's lemma.

XI   Galois theory, geometrical aspects, normal bases.

XII   Finite one-step non-commutative structures, i.e. structures in which the proper substructures are all commutative. The cases where the structures are groups, rings and semigroups are investigated.

Some papers of the author are worked out in this volume. Although this book is in the first place a text-book on algebra, it includes so many topics which cannot easily be found in other books, that also for algebraists it is a standard work. The author proceeds from the general to the especial, however, the definitions are not too general. All the 185 paragraphs are followed by examples and exercises. The book is completed by an extensive index, in which every algebraic notion occurring in a paper may easily be found. The fact that many algebraists are looking forward to volume 2 is perhaps the best recommendation for non-algebraists who require knowledge of modern algebra.

Th. H. M. Smits.