

appropriate for mathematicians but hardly for engineers. Further, there are no examples drawn from science or technology, and no exercises.

Finally, although the author's applications of functional analysis to the solution of infinite dimensional linear equations, Fredholm integral equations and Sturm-Liouville systems of differential equations are quite attractively handled, they could well be lost on engineering and science undergraduates.

However, since some of the lucidity of the original text still shines through the mists of translation, the book, in the reviewer's opinion, is not a total loss. In particular, it could be successfully used as remedial reading for mathematics graduate students whose knowledge of functional analysis is deficient.

The subjects covered are: Finite and infinite dimensional Euclidean spaces, Normed spaces, Hilbert spaces,  $L^2$ -spaces (a prior knowledge of the Lebesgue integral is not assumed), Linear operators and functionals, Adjoint and self-adjoint operators, Completely continuous operators, Approximate solutions of functional equations, and Partially ordered normed spaces. There is a short index and a short but well chosen bibliography.

B. Brainerd, University of Toronto

Fundamentals of Banach Algebras, by Kenneth Hoffman.  
Instituto de Matematica da Universidade do Parana, Curitiba, 1962.  
116 pages.

This little volume is developed from the author's lecture notes on the subject.

The fundamental concepts of Banach algebras are developed, with main emphasis on the analytic aspects of the theory. This emphasis is reflected in the fact that the bulk of the work is devoted to commutative Banach algebras and  $B^*$  Banach algebras since these branches contain most of the important examples arising in analysis.

On the other hand very little attention is given to the algebraic or structural aspects of the theory.

Important ideas are well motivated and illustrated by numerous examples and applications.

The style is clear and lucid and the development concise. There are many allusions to results which are important in the

development of the theory and to many of the theorems are ascribed names. The effectiveness of this is impaired by the absence of a bibliography.

Charles G. Costley, McGill University

Functions of a Complex Variable, by Thomas M. MacRobert (Fifth edition). Macmillan, London, New York, 1962. viii + 425 pages.

Elements of Complex Variables, by Louis L. Pennisi (with the collaboration of Louis I. Gordon and Sim Lasher). Holt, Rinehart and Winston, New York-Chicago-San Francisco-Toronto-London, 1963. vi + 459 pages.

Functions of a Complex Variable, by Gino Moretti, Prentice-Hall, Englewood Cliffs, N. J. , 1964. vi + 456 pages.

Theory of functions of a complex variable - one of the glories of the nineteenth century - continues to cling to the traditions and mathematical spirit of that century as far as most text-books are concerned. The books under review reflect this tenacity, which is both admirable and disturbing, in several ways and degrees.

MacRobert's book was first published in 1916 and represents at its best the formulist (as opposed to the formalist) point of view. The book is a minor version of the Whittaker and Watson classic (first published in 1902) "Modern Analysis" - a performance of two analytic virtuosi. MacRobert's book contains basic reference material on standard topics (power series, integration, residues, infinite products) as well as chapters on gamma, elliptic and hyper-geometric functions. Geometric aspects, such as conformal mapping, are absent. Five editions testify to the continuing tradition and taste for such kind of material and presentation.

Pennisi's book is the most up-to-date of the three. It gives a good introductory treatment of complex numbers, sequences, conformal mapping, elementary functions. However, the last century echoes in the "multiple-valued functions" and avoidance of certain topological concepts (index of a closed curve) which makes some chapters less than perfect. [Since the appearance of Dieudonne's Foundations of Modern Analysis there should be no excuses for mis-treatment of these notions.] For those who will not consider such flaws fatal, the book will appear as a useful undergraduate text with enough problems, answers and hints for solutions.

The credo behind Moretti's book is summed up by the author's own words in the preface (page v): "Therefore, I naturally regard