BOOK REVIEWS

FREMLIN, D. H., *Topological Riesz Spaces and Measure Theory* (Cambridge, 1974), xiv+266 pp., £5·90.

Using the theory of Riesz spaces and methods of functional analysis, the author develops an abstract version of measure theory in which he is able to interpret all the more conventional ideas of the subject. The level of abstraction is justified not only by the generality of the results obtained but also because the development appears natural from a functional analytic point of view; indeed the author states in his preface: " This book is addressed to functional analysts who would like to understand better the application of their subject to the older discipline of measure theory ".

The basic ideas of this subject are developed in Chapters 4, 5 and 6. Starting with a Boolean ring and its Stone representation, the author constructs a linear space S which is effectively a space of " simple functions ". This is completed in the uniform norm to give L^∞ and $L^\#$ is defined as the Riesz space dual $L^{\infty\times}$. Measure rings are then considered and L^1 is represented as the closure of an embedding of a certain subspace of S in $L^\#$. Finally the ordinary measure space appears. It has an associated measure algebra and most of the subsequent development consists of carrying over to the measure space the abstract material established for the measure algebra.

Chapters 1, 2 and 3 discuss Riesz spaces, the types of topologies which are encountered and certain natural classes of linear mappings and functionals on such spaces. These chapters occupy more than a third of the text and, although the material has been selected with a view to its subsequent application to measure theory, they provide a good introduction to the general theory of topological Riesz spaces.

Chapter 7 deals with the representation of sequentially smooth and smooth linear functionals on function spaces. Radon measures and quasi-Radon measures are considered and the Riesz theorem is obtained. Weak compactness is the topic of Chapter 8. This is considered in the Riesz space duals $E^\sim$ and $E^\times$ of a Riesz space E. The results are then applied and extended to give criteria for weak compactness in the various special spaces considered in the previous chapters.

The book has been most carefully written. The proofs of theorems, although often intricate, have been well set out, the individual stages being separated by clear statements of the hypotheses or problems at each stage. Each section also has three useful features: an initial statement of its overall aim, a number of exercises and a concluding subsection of notes and comments. Each chapter ends with a series of examples to illustrate the results and definitions. There are a few minor misprints, none of which should seriously upset the reader's comprehension. The text appears to be mathematically sound.

As well as presenting his material, the author seems to be arguing a case for his approach to measure theory. His book is not for the beginner, but how far he succeeds otherwise must be left to the individual reader to judge. Certainly the reviewer enjoyed reading it and was not unimpressed by his arguments.

I. TWEDDLE

WALKER, P. L., *An Introduction to Complex Analysis* (Adam Hilger, London, 1974), viii+141 pp., £4·50.

This book deals with what the author in his preface calls " the elementary part of complex analysis "; that is, " those concepts which are necessary to comprehend,