

KELLEY, J. L., NAMIOKA, I. AND OTHERS, *Linear Topological Spaces* (University Series in Higher Mathematics, D. van Nostrand Co. Ltd., 1963)

The problems of physics which inspired the originators of functional analysis to remarkable levels of mathematical abstraction found their general setting in the theory of operators in linear spaces. Textbooks on operator theory abound. This is the first comprehensive volume in English dealing with the general linear topological spaces themselves.

Attention is mainly confined to locally convex spaces in which the existence of sufficient continuous linear functionals is guaranteed. Separate chapters are devoted to the basic notions of category, convexity and duality, while the relationship between order and topology is examined in an appendix. The excellent collection of illustrative examples is a feature of the text, but the omission of a comprehensive bibliography is surprising.

The publishers are to be congratulated on their judicious use of variation in typesetting which has made the later volumes in this series such a pleasure to read. This book will form an important addition to any modern analyst's library.

T. T. WEST

CURTIS, CHARLES W. AND REINER, I., *Representation Theory of Finite Groups and Associative Algebras* (John Wiley and Sons) 685 pp., 150s.

This is an important work. In a massive volume the vast topic of representation theory of finite groups and associative algebras has been expounded by algebraists for algebraists. The authors set out to write a book that would be useful both to the expert and to the student. For the latter's benefit they included a generous amount of background material, such as the invariant factor theorem for matrices and an account of classical ideal theory. Yet, the book is hardly intended to make easy reading. The great wealth of material might well daunt any but a fairly experienced reader, although all chapters are preceded by summaries and references to other parts of the book, and some suggestions are made in the Preface to help those readers whose main interest lies in the representations of finite groups. The presentation is lucid and reasonably self-contained; occasionally arguments are based on exercises of earlier sections or even on subsequent results. Some of the exercises are quite difficult and embody substantial parts of theory.

The list of chapter headings indicates the scope of the book: 1. Background from Group Theory; 2. Representations and Modules; 3. Algebraic Number Theory; 4. Semi-simple Rings and Group Algebras; 5. Group Characters; 6. Induced Characters; 7. Induced Representations; 8. Non-semi-simple Rings; 9. Frobenius Algebras; 10. Splitting Fields and Separable Algebras; 11. Integral Representations; 12. Modular Representations.

It need hardly be stressed that the flavour and the general approach is thoroughly modern. Modules and their mappings into one another take precedence over matrices, although the latter are not scorned altogether, and characters, which, of course, give less information than the representation module, are somewhat pushed into the background; they are not defined until page 209.

Even in a volume of this size, it is impossible to give a complete account of all the major results in the field. Some selection had to be made, and it is understandable that the two authors, who have made distinguished original contributions, should have favoured those parts in which they are themselves interested. It was not their intention to concentrate entirely on representation theory and to reduce the preliminaries and accessories to a minimum. For example, as they remark in the Preface, far more