

in view of the scarcity of Phelps' excellent introductory "Lectures on Choquet's Theorem" (van Nostrand, 1966).

The switch in direction did not cause neglect. The last decade has produced the extension of the theory to complex function spaces, the proof of the uniqueness and universality of the Poulsen simplex, the geometric characterisation of state spaces of operator algebras, and connections between the Radon-Nikodym and Krein-Milman properties in Banach spaces. Of these four topics only the last had been expounded in a monograph until the appearance of the book under review. After two chapters of general theory, the authors have devoted one chapter to each of the other three topics as outstanding examples of the subject ("Applications" in the title does not ring true).

So it would be expected that this book would be welcomed, but it comes as a great disappointment. The beauty of the subject has been obliterated by a canopy of unintuitive abstraction. Definitions and results are introduced in the greatest possible generality, and remarkable geometrical properties are stated starkly without attention being drawn to their true nature. The same faults affect the mathematical details; many simple facts are deduced from the "Gauge Lemma", an elaborate version of the Uniform Boundedness Principle; the authors' fascination for duality leads to the exclusion of the extension version of the Hahn-Banach Theorem, even though this is more natural than the Bipolar Theorem as a tool for Choquet's Theorem. The reader is also frustrated that the book falls narrowly short of being self-contained. It is understandable that the lengthy proofs of Alfsen-Shultz theory should be omitted, but the absence of Lazar's Selection Theorem seriously devalues the proof of uniqueness of the Poulsen simplex. Neither is the book suitable for reference, since the results as stated often depend on assumptions and notational conventions which are buried in the text. There are also signs of carelessness in checking the completeness of the arguments, and eliminating misprints and ambiguities. The symbol "=" is used in juxtaposition with different logical meanings.

In his enlightening survey article "The Choquet representation in the complex case", Bull. Amer. Math. Soc. **83** (1977), Phelps referred to a new expanded edition of his book, but this has not yet materialised. One's eagerness for such a republication is not removed by the work under review. In the meantime, a novice can still be advised to introduce himself to the subject via the original edition if available, and then Choquet's "Lectures on Analysis II" (Benjamin, 1969) and Alfsen's book. Asimov and Ellis have an advantage only in being able to include more recent work on simplex spaces and complex function spaces.

C. J. K. BATTY

COLLINS, MICHAEL J. (ed) *Finite Simple Groups II* (Academic Press, London, 1980), xvi + 346 pp. £25.

This book is officially the proceedings of London Mathematical Society's 1978 Durham Symposium on Finite Simple Groups but its contents have been revised up to the date of publication in order to include some recently-proved results.

The first part of the book is devoted to an exposition by various authors of the problem of classifying the finite simple groups, the methods used and the results obtained. The quality of the exposition is very high in general. The best contributions are those of Gluberman and Goldschmidt, which have a notable clarity. On the other hand, I feel that Gorenstein, Lyons and Griess have not motivated their work enough with the result that their contributions tend to deteriorate into a catalogue of an increasing complexity of definitions and notation. An introductory chapter to the book was desirable in order to link the various contributions together into a cohesive and comprehensive account of the classification project. The editor took upon himself the task of providing this and has greatly expanded an introductory lecture given at the symposium by Gorenstein into a very satisfactory survey article.

The second part of the book is concerned with the representation theory of the groups of Lie type. There are good "surveys for group theorists" of the current knowledge of both ordinary and modular representations together with a somewhat more specialised article on the structure of Weyl modules.

The final part of the book is entitled *Geometry and the Sporadic Groups*. It consists of (a) an interesting article by Tits on ways of looking at Leech's Lattice, (b) a brief (actually, rather too brief) survey by Tits of geometries associated with sporadic groups, (c) some thought-provoking remarks by Sims on the problems of trying to construct the large sporadic groups by computer and (d) an article by Thompson on fixed-point-free involutions and projective planes. It is not clear why Thompson contributed this particular piece of work which is rather tentative in nature and not really in keeping with the theme of the symposium.

The criticisms I have are all essentially minor. There is no doubt that every mathematician working in the area of finite simple groups will want to have a copy of this book on his bookshelves.

N. K. DICKSON

BOOKS RECEIVED

The following books have been received. Reviews of some of the books listed below will appear in future issues.

H. AMANN, N. BAZLEY, and K. KIRCHGÄSSNER (eds.), *Applications of nonlinear analysis in the physical sciences* (Pitman), pp. 325, £30

R. J. KNOPS (ed.), *Trends in applications of pure mathematics to mechanics, Vol. III* (Pitman), pp. 234, £25

J. R. SILVESTER, *Introduction to algebraic K-theory* (Chapman & Hall), pp. 255

J. K. BEEM and P. E. EHRLICH, *Global Lorentzian geometry* (Marcel Dekker), pp. 460, SFr. 126

N. WOODHOUSE, *Geometric quantization* (Clarendon Press, Oxford), pp. 316, £27.50

D. N. BURGHES and A. D. WOOD, *Mathematical models in the social, management and life sciences* (Ellis Horwood), pp. 287, £13.50

F. STUMMEL and K. HAINER, *Introduction to numerical analysis* (Scottish Academic Press), pp. 282, £9.50

T. E. HALL, P. R. JONES and G. B. PRESTON (eds.), *Semigroups* (Academic Press), pp. 255, \$18

J. D. LIPSON, *Elements of algebra and algebraic computing* (Addison-Wesley), pp. 342, \$34.50

M. ATTEIA, D. BANCEL and I. GUMOWSKI (eds.), *Nonlinear problems of analysis in geometry and mechanics* (Pitman), pp. 208, £8.50

W. A. GRUVER and E. SACHS, *Algorithmic methods in optimal control* (Pitman), pp. 233, £8.50

W. H. RUCKLE, *Sequence spaces* (Pitman), pp. 198, £8.50

H. BERESTYCKI and H. BREZIS (eds.), *Recent contributions to nonlinear partial differential equations* (Pitman), pp. 226, £9.95

H. BREZIS and J. L. LIONS (eds.), *Nonlinear partial differential equations and their applications: Collège de France Seminar* (Pitman), Vol. I, pp. 388, £10.50

S. V. STRATILA, *Modular theory in operator algebras* (Abacus Press), £33

P. A. FUHRMANN, *Linear systems and operators in Hilbert space* (McGraw-Hill), pp. 350, £19.25

C. PLUMPTON and P. S. W. MACILWAINE, *New tertiary mathematics: Vol. 1, Pt. 1, Pure Mathematics*, Vol. 1, Pt. 2, *Basic applied mathematics* (Pergamon), pp. 405 & 232, each \$16.75

C. PLUMPTON and P. S. W. MACILWAINE, *New tertiary mathematics: Vol. 2, Pt. 1, Further pure mathematics*, Vol. 2, Pt. 2, *Further applied mathematics* (Pergamon), pp. 402 & 222, each \$16.75