to go and look in any other sources to understand and follow the definitions and theorems explained in the book.

The book is clear and elegant, and it represents a very valuable addition to the literature. It is ideal for graduate students in both physics and mathematics, or for those professionals who are interested in understanding some of the mathematical intricacies of string theory.

CERN LUIS ALVAREZ-GAUME

THE BOOK OF INVOLUTIONS
(American Mathematical Society Colloquium Publications 44)

By MAX-ALBERT KNUS, ALEXANDER MERKURJEV, MARKUS ROST and JEAN-PIERRE TIGNOL: 593 pp., US$69.00, ISBN 0 8218 0904 0 (American Mathematical Society, 1998).

An involution is an anti-automorphism of order two of an algebra. For example, let K be a field, and let $b: V \times V \to K$ be a non-singular symmetric or skew-symmetric K-bilinear form. Then such an involution, $\sigma_b: \mathrm{End}_K(V) \to \mathrm{End}_K(V)$, is given by sending f to its adjoint with respect to b.

This volume is a compendious study of algebras with involution, a subject with many facets which becomes particularly interesting for central simple algebras. In the 1930s, A. A. Albert began the systematic study of involutions on central simple algebras in order to classify Riemann algebras, which are subalgebras of $M_{2g}(\mathbf{Q})$ associated to the study of correspondences on a Riemann surface of genus g. *Inter alia*, the authors give a new proof of Albert's classification.

Throughout the book, the relation between algebras and groups recurs continually in various manifestations. For example, as observed by A. Weil, the connected components of automorphism groups of central simple algebras with involution are generally classical algebraic simple adjoint groups. In fact, in their final chapter, the authors complete Weil's classification programme for outer forms of D_4 by means of their notion of a trialitarian algebra. Recall that triality is a topic of super-gravitas for physicists working in the super-space of things like super-gravity, and the final chapter ought to prove very interesting to the super-readers who make it that far!

This is not meant to imply that the volume is hard-going; far from it. Despite the authors' protestations to the contrary, the book is excellently written, and the chapters on algebraic groups and Galois cohomology alone would make the book an ideal read for aspiring postgraduate students of an algebraic persuasion. In addition, there is plenty of material to enlighten even those of us who already know something about the subject. For example, the authors study trace forms on algebras without the use of Galois descent in a manner which was new to me. Also, they do not discount the case when the characteristic is equal to two until the last possible moment, which makes this volume almost unique among books on hermitian forms.

All in all, this book recommends itself to anyone who wants a thorough reference source, complete with an ample selection of enlightening exercises and historical notes, which deals with exceptional Jordan algebras, Clifford algebras and modules, Tits' algebras and algebraic groups in a modern manner. The authors derive

considerable inspiration from the classical papers of Jacques Tits and, in recompense, Tits has donated a very complimentary preface.

University of Southampton VICTOR SNAITH

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