

In view of my reservations I cannot recommend this book for use with specialist mathematics students. Indeed it is not clear that the amount of material presented is suitable for them. But I do recommend it for other disciplines, especially for students of economics and business studies, since the applications are so suitable.

D. W. ARTHUR

CAMERON, P. J., *Combinatorial Surveys* (Proceedings of the Sixth British Combinatorial Conference, Academic Press, 1977.)

This book contains seven of the nine principal lectures given at the 6th British Combinatorial Conference, held at Royal Holloway College, London, during July 1977. The book was in fact on sale at the conference—an excellent idea in my opinion. A wide range of combinatorial topics is covered, with block designs, graphs and projective spaces as the main themes.

The first chapter, by F. Buekenhout (“What is a subspace?”) is concerned with making a definition of a subspace of an incidence structure, which obviously must be consistent with existing notions of subspace for certain known incidence structures. The ideas are very general and the author himself admits that little progress is possible without considerable restrictions on the incidence structure.

Chapter 2 (P. J. Cameron, “Extensions of designs; variations on a theme”) and Chapter 4 (D. K. Ray-Chaudhuri, “Combinatorial characterization theorems for geometric incidence structures”) are good survey articles of the areas mentioned in the titles, presenting many of the known results, giving most of the necessary definitions and indicating some of the proofs. Both articles are relatively easy to read and give the reader a certain amount of feeling for the subject. On the other hand, Chapter 3, (L. Lovász, “Flats in matroids and geometric graphs”) is extremely difficult to understand, mainly because none of the basic definitions are given. The author is concerned with covering problems in graphs, which he looks at from the point of view of flats in matroids.

The longest chapter (which incidentally gave rise to the shortest lecture) is by N. J. A. Sloane (“Binary codes, lattices and sphere packings”), in which he investigates connections between error-correcting codes and sphere packings, especially lattice packings. The article becomes very technical in places, but fortunately there are plenty of examples. Several open (and presumably difficult) problems are posed and there is an extensive bibliography.

Perhaps the best article is Chapter 6 (A. T. White, “Graphs of groups on surfaces”) in which the author extends some of the ideas in his book of (roughly) the same title, using the recently developed theory of voltage graphs. At the end of the chapter there is a very interesting section on an application of imbeddings of graphs to problems in campanology.

The final chapter by D. R. Woodall (“Zeros of chromatic polynomials”) is essentially self-contained and would be an excellent starting point for somebody wishing to study chromatic polynomials.

Overall, I feel that the book has achieved a nice balance; on the one hand, containing a collection of good expository articles on a wide variety of combinatorial topics, whilst on the other, showing clearly some of the overlap between the various subjects. Finally, the book is well presented, with few typographical errors—a reflection, I think, on the editor, Peter Cameron.

MICHAEL J. GANLEY

PITTIE, H. V., *Characteristic classes of foliations* (Research Notes in Mathematics No. 10, Pitman), 107 pp.

In this book, the author attempts a rapid treatment of the theory of primary and secondary characteristic classes of foliations and their relationship to recent work of Gelfand and Fuks on the cohomology of formal vector fields. Much emphasis is put on examples which demonstrate that the characteristic classes described may be non-zero.

I found it hard to judge at what audience the book is aimed. In view of the condensed nature of the arguments, it could hardly serve as a satisfactory introduction to the subject. Nor is it likely to be of great use to the expert in the field (although the reviewer does not count himself among