theoretical physics who wished to pick up some more of the mathematics presently needed in their subject. Different parts of the book can largely be read independently and with its clarity of presentation it could very readily act as a reference volume.

Inevitably in a book which covers such a wide range of topics one may expect to have minor quibbles in areas where one feels particularly competent. Also, some may view the absence of bundles and forms as a notable omission. Nevertheless this seems to me a very valuable book, well written at a good mathematical level; I recommend it highly to anyone who needs a clear introduction to any of the topics it covers.

D. J. WALLACE

BEINEKE, L. W. and WILSON, R. J. (eds.), *Selected topics in graph theory* (Academic Press, 1979), pp. 451, £34·40.

Books with two editors and a title as vague as this tend to be collections of invited (or uninvited) conference lectures hastily gathered together in book form. The result is often disappointing for one of the following reasons: it is unreadable except for the person who knows it all already, each chapter uses different conventions of notation and terminology, and the topics are of such specialised interest that few will want to read about them anyway. Happily, this present volume is from a different stable. The editors have got together a group of well-known expositors who together survey some of the most important areas in modern "pure" graph theory. The result is a beautifully produced volume which deserves a place in every mathematics library, although most of the material can, of course, be found elsewhere. Topics covered include the four colour theorem, topological graph theory, hamiltonian graphs, tournaments, the reconstruction problem, minimax theorems, strongly regular graphs, enumeration and Ramsey theory, line graphs and edge colourings and contributors include P. J. Cameron, C. St. J. A. Nash-Williams, A. T. White and D. R. Woodall among others, as well as the two editors. A final chapter by Ronald Reid considers the impact computers have made and can make on graph theory research.

For those more interested in applications of graph theory, a companion volume entitled *Applications of Graph Theory* has also appeared. Finally, for those interested not so much in existence theorems but more in how to actually find a Hamiltonian cycle, for instance, the recent book *Graphs and Networks* by B. Carré (O.U.P. 1979) is recommended

I. ANDERSON

BILLINGSLEY, P., *Probability and measure* (Wiley, 1979), pp. 532, £28·95.

First and foremost the game-plan is excellent. Probabilistic intuition and measure-theoretic competence are developed side by side. For example, in the first chapter coin-tossing is used to show the need for events more complicated than finite unions of intervals and to lead rather quickly to Lebesgue measure. The calculus of infinite sequences of events (Borel-Cantelli lemmas, Zero-One Law etc.) is developed without recourse to integration. That was probability—but quite a deal of measure-theoretic intuition was picked up on the way. The second chapter takes up general measures in earnest, develops integration, Fubini's theorem, etc. That's measure theory—so we go on to random variables, expected values....

All of this is admirable and there's a healthy redundancy about it too. For example the treatment of differentiation lingers long enough on the line to make the power and efficiency of the abstract formulation of absolute continuity entirely convincing; then conditional probability, conditional expectation are introduced with great care and with many worked examples. In fact these topics and the most basic facts about martingales occupy a solid chapter of 176 pages.

That means I strongly approve the treatment and the book itself. Of course there are problems. There are many students for whom the main motivation of Lebesgue integration should be that it offers efficient no-nonsense convergence theorems which are simple to apply. The present treatment is not well-adapted to their needs, nor will they find the ideas surrounding the Riesz representation theorem and the links between measure and topology. (Rudin's "Real and Complex Analysis" and Hewitt and Stromberg's "Real and Abstract Analysis" are favourites of mine which cover some of that ground.)