For students taking a rigorous course the book discusses series in the setting of complex numbers and develops the exponential and trigonometric functions as sums of complex power series. Use of certain ideas (e.g. the number π) is scrupulously avoided until they have been formally presented in the text. The theory of metric spaces is treated in considerable detail in Chapter 3 with discussions of uniform convergence and the Stone-Weierstrass and Ascoli theorems. A novel idea is the introduction in Chapter 6 of the Lebesgue integral as a first integral on the real line.

For the mathematically mature the book contains a host of interesting results, historical references and exercises. The author says in his preface that he spent at least three times as much effort in preparing the exercises as he did on the main text. As a result there are hundreds of eye-catching exercises, many with subdivisions and hints. Some are routine, some lead up to a main result (e.g. that the number e is transcendental), some bear twentieth century surnames, some offer alternative methods, some introduce and illustrate concepts not dealt with in the main text (e.g. Fourier transforms, Lagrange multipliers, Bernoulli numbers, Lambert series). The exercises of the last three chapters on Integration, Infinite series and products and Trigonometric series are particularly impressive.

The production, printing and layout of the book are all pleasant and misprints seem to be few. Spare a thought though for F. Mertens (J. Reine Angew. Math. **79** (1875)), who is in danger of losing his s: in referring to his result on multiplication of series this book is common with at least three others sets the apostrophe after the n and before the s.

Students of Analysis will find the book inspiring but may also find it somewhat inhospitable in places: a case in point is the definition of continuity, another is the treatment of radius of convergence and the examples on it. Nevertheless the overall impression is of a fine achievement which will have appeal for analysts everywhere.

IAN S. MURPHY

ATIYAH, M. F. et al, *Representation Theory of Lie Groups* (L.M.S. Lecture Note Series No. 34, C.U.P., 1980). £10.95.

A research symposium was held in Oxford in 1977 and this book consists of the notes of eleven of the lectures given there. There are two parts. The first contains general and introductory lectures and the second more specialised lectures.

Although there are now many excellent texts on Lie groups, the general lectures in the present book are very valuable. They give brief accounts of several aspects of the theory. Someone who wants to find out about a particular aspect of the theory may well prefer to look here first rather than in one of the voluminous texts on the subject.

The lectures in the second part are somewhat more advanced but nevertheless they are quite accessible to non-specialists. Indeed someone who wants to see how Lie groups are used in a particular application may well find what he wants in one of these 'more specialised' lectures.

Undoubtedly there are many mathematicans who are aware that Lie groups are somehow relevant to the kinds of mathematics that interest them. A quick look at this book may well enable them to find out what the connection is and serve as a useful introduction to the literature. The book is not the specialised proceedings of a research symposium that one might expect before opening it.

ELMER REES

SCHWARZENBERGER, R. L. E. *N-dimensional crystallography* (Pitman, Research Notes in Mathematics No. 41, 1980), £6.50.

These notes are largely based on undergraduate lectures given by the author at the University of Warwick. However it contains a lot of material that could be used in courses at a higher level; in particular it could serve as a basis for some interdisciplinary seminars between mathematicians, physicists and chemists. There are many books on this topic written by chemists and physicists but there seem to be only a few written by mathematicians. This book should help mathemati-