easy to follow, so that this chapter provides an excellent introduction to the kinds of problem that arise in stochastic processes.

Whether or not one agrees that an introductory course on probability for undergraduates in mathematics should follow the pattern of Part 1 of Professor Lindley's book, there is no doubt that this part could be recommended to such students either by Bayesians or by non-Bayesians. An additional feature that is relevant in this context is the excellent set of examples at the end of each chapter.

The fact that the book is written from a Bayesian point of view does not affect Part I greatly. But the situation is quite different as regards Part II which is concerned with inference. This part remains traditional, indeed almost old-fashioned, in the sense that it is directed towards the derivation of the classical procedures in everyday use—tests and confidence intervals for normal means and variances, goodness-of-fit tests, etc., and it includes a discussion of the classical methods of maximum-likelihood and least squares. It is in the derivation and interpretation of these procedures that the Bayesian viewpoint makes itself felt. Prior distributions are chosen which give approximate agreement between orthodox and Bayesian solutions and while one can sympathise with the author's intention of reconciling Bayesian theory and standard practice, it does result in a certain degree of artificiality.

Is Part II a satisfactory introductory text on inference for the mathematics undergraduates at whom it is aimed? The reviewer certainly would not recommend it as such. This is not because of its unorthodoxy since the Bayesian viewpoint has many attractive features. But it treats a very limited and not very exciting aspect of the theoretical side of the subject, and while it is written in an extremely lucid style it leaves the impression that the subject is dull. S. D. SILVEY

MOORE, THERAL O., *Elementary General Topology* (Prentice-Hall), 174 pp., 48s.

It is reasonable to suggest that this book should succeed in its aim " to provide a systematic survey of the standard topics of general topology which the beginner can follow with minimum effort and maximum results ". I admit that I have doubts about the order of presentation. The general definition of a topological space comes virtually without warning, several pages before anything which could reasonably be described as motivation. Of course the order " general definitions first and explanations afterwards " is popular with many modern mathematical authors. It is true, as the present author claims, that early theorems are often easier when proved in full generality and that there is a real economy in doing the general case first and applying it afterwards. But I cannot help feeling that some beginners are bound to react against this treatment by saying " Yes, this is a very simple definition, but what is the point of it? ". Indeed, I feel that this is what the reaction *ought* to be. It is a pity that some of the statements on p. 72, which certainly help to rectify the situation, have not been placed earlier in the book.

I have no other adverse criticisms. Indeed, I wish to praise this book very highly. The material is presented in a most interesting fashion and one which should hold the attention of the diligent reader. Working through the text and doing all the exercises as they come should pay dividends. The author forces the reader to play an active part by persuading him to supply his own proofs of some of the standard results, but at the same time does include proofs, so that the reader is not left to flounder on his own. This is an excellent device and it is enhanced by the author's sympathetic asides.

Emphasis is placed in this book on those topics in Topology which are relevant to Mathematical Analysis. The first chapter is devoted to Elementary Set Theory, further items from which appear as they are needed later on. Topological Spaces are then introduced in full generality. The third Chapter is devoted to the idea of continuity; following that compactness and product spaces are discussed. There is then a chapter on Metric Spaces, which were first introduced earlier in the book. Function spaces, nets and convergence and continuous curves are also treated; the last sections lead up to a proof of the Hahn-Mazurkiewicz Theorem. Thus the book covers some worth-while topics, without doing too much. I would recommend it enthusiastically to any beginner.

E. M. PATTERSON

MILNOR, J., *Lectures on the h-Cobordism Theorem*, Notes by L. Siebenmann and J. Sondow (Princeton Mathematical Notes, Oxford University Press), 18s.

In 1962 Stephen Smale (On the structure of manifolds, *Amer. J. Math.* **84**, 387-389) proved that if W is a compact smooth manifold with two simply connected boundary components V and V' of dimensions greater than 4, both of which are deformation retracts of W, then W is diffeomorphic to $V\times[0, 1]$ and V is diffeomorphic to V'. In these preliminary informal notes of a Princeton seminar on differential topology, a proof of this theorem is presented. The original methods of Smale are circumvented and an argument is given which is inspired by recent ideas of Marston Morse. Thus the use of handlebodies in the manner of Smale is avoided completely and the proof proceeds by constructing a Morse function for W which is successively simplified by alteration and elimination of its critical points until no such points are left, and W is in consequence seen to be a product cobordism between V and V', as required.

W. H. COCKCROFT

MUMFORD, D., *Geometric Invariant Theory* (Ergebnisse der Mathematik und ihrer Grenzgebiete. Band 34. Springer-Verlag, Berlin).

The main purpose of this book is to investigate two invariant-theoretic problems in algebraic geometry. In classical terminology (which the author nowhere uses) the first is: if an algebraic variety V is acted on by an algebraic group G, when does a decomposition variety V/G exist? The second investigates what the author calls moduli; classically, the Riemann surfaces with a given genus are specified, conformally, by a number of parameters (moduli) and the ultimate generalisation (suitably interpreted!) appears as: when can a set of algebraic varieties be turned " naturally " into an algebraic variety? This is soon restricted to specific cases and related to the first problem, i.e. the desired variety becomes a decomposition space.

The book is written throughout in the language of schemes and, owing to the generality and relative inaccessibility of the background material, the book is made to serve as " an exposition of a whole topic ". A number of years has now passed since Grothendieck first began to develop his theory of pre-schemes. The full—and only—version of this work has never been completed, although several volumes have appeared and the author here succeeds in giving a readable and condensed account of much of Grothendieck's work. Nevertheless, the readership of the book will necessarily be small owing to the peculiarities of the expository section itself (that this is probably intentional appears from the specialised bibliography): from the onset the reader is assumed to be familiar with pre-schemes (surely, a small additional chapter could have dealt with this) and there is much reference to unpublished material.

However, the book is well written, and the fast flow of concepts should convince any die-hard geometer of the value of schemes.

P. H. H. FANTHAM

MATES, B., *Elementary Logic* (Oxford University Press), 42s.

This book sets out to cover the basic notions of logic in a way which is both rigorous and comprehensible to the beginner. After a couple of introductory chapters dealing with the fundamental ideas the author sets up a formalised predicate calculus