SACKS, G. E., *Degrees of Unsolvability* (Annals of Mathematics Studies, No. 55, Princeton University Press, London: Oxford University Press, 1963), ix+174 pp., 28s.

The second sentence of this book is " We say f and g have the same degree of recursive unsolvability if f is recursive in g and g is recursive in f". This sentence gives a good indication of the prerequisites that a reader of this book should have: a fair knowledge of recursive functions and an insensitivity to omissions of the word " that ". The number of misprints appears to be very small, except for several trivial errors in the first four pages and a spelling mistake in the page headings to Section **5**.

This book gives a connected account of certain results concerning functions of the natural numbers. More specifically, the results described relate to the partial order structure of the set of sets of functions with the same degree of recursive unsolvability. This topic is about ten years old. The book obviously will be essential reading for those hoping to work in the subject, but anyone with the necessary background will be able to read it profitably.

R. M. DICKER

LOÈVE, MICHEL, *Probability Theory* (D. van Nostrand Co., London, 3rd ed., 1963), xvi+685 pp., 115s.

The third edition of this book is very similar to the second edition published in 1960. The only major change is in Section 36 on martingale times.

It is divided into five parts. Part One is on " Notions of Measure Theory " needed in the rest of the book. Part Two is on probability distributions and their characteristic functions. Part Three is on limit theorems for independent random variables. Part Four is on conditional probability, martingales, ergodic theorems and second order theory. Part Five is on stochastic processes in continuous time. There is also an Introductory Part on random events which includes an account of Markov chains.

The emphasis throughout is on rigour and mathematical generality. Loève only considers real-valued random variables and stochastic processes but he never makes the assumption, dear to applied probability theorists, that random variables are either integer-valued or continuous. This makes the book rather heavy, but it is good to have one fully rigorous book on probability theory. Its main weakness is that it is not well motivated. Most mathematicians are attracted to probability theory because of its applications. But Loève concentrates almost exclusively on existence, convergence and uniqueness theorems.

M. W. BIRCH

HEYTING, A., *Axiomatic Projective Geometry* (Noordhoff-Groningen; North-Holland Publishing Co., Amsterdam, 1963.), xii+148 pp., 36s.

It is well known that Desargues' theorem on triangles in perspective, although it holds in the familiar real and complex projective geometries, cannot be deduced from the axioms of incidence alone in two dimensions. The purpose of this book is to investigate in detail the logical relations between Desargues' proposition, possibly weakened by the introduction of additional incidences, Pappus' proposition and similar configurations. (It is necessary, in a systematic study of this type, to distinguish between a *proposition* concerning the elements of an axiomatic theory and a *theorem*, or valid proposition, which is deducible from the axioms.) An aspect of especial interest is the relationship between these propositions and the properties of the algebraic systems obtained by introducing coordinates into the geometry.

After a brief preliminary chapter containing remarks on the axiomatic method, analytic geometry and vector spaces over a division ring, the various geometrical