

2. For the professional mathematician:

Lectures on Modern Mathematics, Volume 1, edited by T. L. Saaty. John Wiley and Sons, Inc. New York 1963. ix + 175 pages. \$5.75.

This is the first of three volumes containing lectures given by distinguished mathematicians on one of their fields of interest, in most cases not a report on what has been done there, but rather a brief enumeration and motivation of recent results and an explicit formulation of related unsolved problems which the authors consider as important and hopeful. Contents: 1. A Glimpse into Hilbert Space, by P. R. Halmos, 2. Some Applications of the Theory of Distributions, 3. Numerical Analysis, by A. S. Householder, 4. Algebraic Topology, by S. Eilenberg, 5. Lie Algebras, by I. Kaplansky, 6. Representations of Finite Groups, by R. Brauer. Each paper is followed by a list of references.

H. Schwerdtfeger, McGill University

Games, Gods and Gambling, by F. N. David. Griffin, London; Hafner, New York, 1962. 275 pages. \$6.50.

Todhunter's admirable "History of the Mathematical Theory of Probability" is now nearly a century old. It is remarkable that Miss David's smaller book is the first general book-length account of the history of probability. Almost as surprising is the fact that her book starts and finishes earlier than Todhunter's, ranging from pre-history to de Moivre. The author hopes to write a separate monograph on Laplace who forms the culmination of Todhunter's volume.

The other end of the time-spectrum is more immediately responsible for the title of the book. Readers of Dr. David's opening article in the valuable Biometrika series of "Studies in the history of probability and statistics" will expect the early portions of the book to make fascinating reading. This is further enhanced by the inclusion of a number of plates portraying ancient games and astragali, the fore-runners of dice. Indeed, it is the symmetry of the modern die that made it easy for gamblers to notice the regularity of chance phenomena which in turn came to interest men such as Paccioli, Cardano, Ferrari, Galileo, and of course, Pascal and Fermat. Continuing in the same tradition are James Bernoulli, Montmort, and perhaps the hero of the book, poor de Moivre, who found refuge but not his due in England. The author indicates and attempts to evaluate the contributions made by these pioneers. She provides some helpful thumb-nail sketches and does not shirk the knotty problems posed by widespread plagiarism.

Equally important in the development of the calculus of probabilities was increasing familiarity with a simple number system. How

late our modern notation came to be widely understood is made clear in an appendix "Memorable Arithmetic" by G. Buckley of Cambridge which, published in 1567, begins with the manner of writing numbers: "When you are about to write a number, make a beginning on the right, continuing to the left, until you have written them all." Strangely enough the only important early British contribution (not counting de Moivre who had received his formal education in France) was by John Graunt, haberdasher, with his famous bills of mortality. Newton had to be prodded by Pepys to answer what was by then a simple question of dice and had no further use for such matters, possibly regarding them as irreligious.

The last third of the book is taken up with translations of selected writings by Buckley, Galileo, DeCoste (Life of Mersenne), Pascal and Fermat, and de Moivre. It is no doubt a sign of changing times that these take the place of the quotations in the original Latin and French with which Todhunter so liberally sprinkles his text. But it is good to have such illuminating accounts of the way the pioneers thought and lived.

This book is a must for all those interested in the early history of probability. It is well-produced, with ten plates and a lively dust-jacket featuring a streamlined Fortuna.

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Statistical and Inductive Probabilities, by Hugues Leblanc.
Prentice-Hall, Inc., 1962. xii + 148 pages.

The author has made an attempt in this book to bring a settlement over the well-known controversy between two different schools of probability viz., the followers of Von Mises and that of Keynes. A very clever treatment is made by establishing the correspondence between various concepts in probability and sentence theoretic language. Because the book is more oriented toward the philosophical aspects of probability concepts, an appreciation of the book demands the knowledge of mathematical logic, besides a clear understanding of probability theory.

In Chapter 1, a resumé of a family of languages and their connection with set theory has been presented. This chapter would serve a useful purpose for many readers who lack formal training in logic. Chapter 2 surveys in detail with a critical account of the definitions of probability, conditional probability, and random variable (random function as mentioned in the book) as dealt by Neyman, Feller, Kolomogorov, Loève, Parzen and others. The main feature of Chapter 3 is that statistical probabilities when expressed in sentence theory can be interpreted as truth-values of some sort or the other. Finally,