to so that vistas are opened for those who have access to the advanced literature. The specialist, however, will be disappointed because so many topics are treated that none has been presented in depth.

This book has none of the superficialities that characterize so many introductory textbooks. It requires attentive reading and covers plant sciences in a fashion that establishes it as a basic reference text without equal. It deserves a place in every botanical library.

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Bayesian Statistics

Introduction to Probability and Statistics from a Bayesian Viewpoint. vols. 1 and 2. vol. 1, *Probability* (271 pp., \$6); vol. 2, *Inference* (306 pp., \$6.50). D. V. Lindley. Cambridge University Press, New York, 1965. Illus.

The author writes that "the content of the two parts of this book is the minimum that, in my view, any mathematician ought to know about random phenomena—probability and statistics. The first part deals with probability, the deductive aspect of randomness. The second part is devoted to statistics, the inferential side of our subject." The style is both concise and leisurely, with room always found for careful explanation of mathematical points. The mathematical knowledge assumed of the reader includes calculus and a little matrix algebra, but no measure theory. The book will be accessible and attractive to graduate students of statistics and mathematics and to some advanced undergraduates, as well as to more experienced readers.

In part 1 the axioms of probability theory are interpreted in terms of both objective frequencies and subjective degrees of belief. Bayesian arguments are used throughout part 2. The primary purpose of a statistical analysis of data is to obtain a posterior distribution for the parameters. Since it is necessary to stop somewhere, the author stops short of decision theory and contents himself with displaying properties of posterior distributions.

Excellence of exposition and the current interest in Bayesian thinking make the book welcome. I have read it with pleasure and admiration, mingled with alarm. Many previously published books have given the impression that statistical problems are to be treated in terms of a few glib concepts, notably "confidence intervals" and "significance tests." Surely the greatest merit of Bayesian theory, especially Bayesian decision theory, is that in order to apply it one must ask searching questions about purposes and circumstances, and these may lead to a better analysis. But Lindley seems to think that the traditional concepts are adequate and only need a Bayesian justification to make them thoroughly respectable. He has redefined "confidence interval" and "significance test" so that the old propositions shall have new Bayesian truth. Ingenious, but is this not to pursue Bayesian theory for the wrong reason? Will the next generation of students be just as rigid in concepts as their forerunners, but more confused about the meaning of terms?

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Mathematical Research

Lectures on Modern Mathematics. vol. 3. T. L. Saaty, Ed. Wiley, New York, 1965. x + 321 pp. Illus. \$11.75.

This volume, the last in a three-volume series, contains six expository lectures sponsored jointly by George Washington University and the Office of Naval Research. Each speaker was invited to contribute to his description (for the nonspecialist) of a substantial research area of mathematics his individual evaluation of the esthetic and practical aspects of the field, its position in mathematical development as a whole, and its future.

The first article, "Topics in classical analysis" by Einar Hille, covers functional inequalities, functional equations, mean values, transfinite diameters, and potential theory. As Hille points out, the first two topics are closely related and the last three have much in common. Each topic is treated in an expert manner and is relatively easy to follow. Of great help is the short section on orientation that precedes each topic and indicates, in particular, how the problems originally arose.

"Geometry," by H. S. M. Coxeter, is a delightful account of some of the topics of especial interest to the author himself. These include Euclidean geometry, ordered geometry, sphere packing, integral quaternions, conics and k-arcs in a finite plane, hyperbolic geometry, and relativity. Some of these topics may seem a little out of fashion and, at one point, Coxeter remarks that the problem of packing equal spheres in Euclidean n-space has been found to have a practical application in the theory of communication. No excuse (if one were intended) is needed because the areas covered are intriguing to the nonspecialist. It is, in fact, comforting to learn, for example, that "the most natural geometric spaces to use for our four-dimensional diagram [the space-time of relativity theory] are real affine four-space and real projective four-space".

In "Mathematical logic," Georg Kreisel discusses set theory, intuitionistic mathematics, proof theory, impredicative (full) classical analysis, and foundational problems. There are more than 90 pages of text together with 46 footnotes and, as a decidedly *non*-specialist, I found this very difficult to read and to follow. (Several remarks are directed to the specialist.) Near the beginning, in discussing the notion of collection, Kreisel writes that "one speaks of a wood (collection) without or before having counted the trees . . . ." I am afraid that, throughout this article, I could not see the wood for the trees.

"Some recent advances and current problems in number theory," by Paul Erdös, is packed with items which, as the author freely admits, interest him personally. This is all to the good because, although number theory may not be fashionable in some circles, it is still one of the best areas in which to find unsolved problems and to make plausible conjectures. The topics discussed include the distribution of primes, primes in arithmetic progressions, the comparative theory of primes, the arithmetic theory of polynomials, combinatorial number theory, and (briefly) Diophantine equations and inequalities.

There are two parts to the article "On stochastic processes" by Michel Loève: (i) Traditional setup and (ii) Discussion. The first part, which sets the stage for the second, begins with basic vocabulary and notation especial-