significance points for the 2×3 contingency table for $A = 3(1)20$ at levels of significance $\alpha = 0.05, 0.025, 0.01$, and 0.001, respectively, when $a = [\frac{3}{2}A]$, which by symmetry includes all significant combinations if the categories of Success and Failure are interchanged.

AUTHORS' SUMMARY

46[K].—SAMUEL S. WILKS, *Mathematical Statistics*, John Wiley & Sons, New York, 1962, 23.5 cm., xvi + 644 p. Price $15.00.

This long awaited book by Professor Wilks is written primarily as a text on the graduate mathematics level. A brief summary of its contents will best indicate the wide extent of the material it covers. The first part of the book is concerned with standard topics. Chapter 1 gives a condensed treatment of probability measures and spaces, followed by chapters on distribution functions, expected values and moments, special distributions, characteristic functions, and limit theorems. Each of these subjects is covered in considerable detail for a general-purpose mathematical statistics text. For instance, the chapter on mean values and moments is composed of 24 pages of tightly packed exposition on this topic for one-dimensional random variables, two-dimensional random variables, k-dimensional random variables, linear functions of a random variable, conditional random variables and, finally, least-squares regression.

The book then has chapters on sampling theory, asymptotic sampling theory, linear estimation, nonparametric estimation, and parametric estimation. Separate chapters treat the testing of parametric and nonparametric hypotheses. At the end there are introductory chapters on sequential analysis, decision functions, time series, and multivariate theory.

The outstanding feature of this book is its extensive and detailed, yet unified, coverage of material. It gives enough topics for a full-year graduate course, with much to spare. In this way the book fills a real need for instructors who want a more modern treatment and selection of topics, and less measure theory, than Harald Cramér's 1946 classic has, but who still want a graduate text that gives a thorough grounding in fundamentals along with plenty of "elbow room".

However, this bounty comes at a price, namely, the neglect of discussion on the statistical aspects of the mathematical theory. The author himself states in the preface that, in order to give a proper mathematical treatment, no attempt was made to discuss the statistical methodology for which the mathematics is being developed. Hence, this book is better described as a treatise on the "mathematics of statistics" rather than "mathematical statistics". There is a lack of motivation and emphasis, and the novice mathematical statistician will not know where he is going or why.

For example, in the chapter on special distributions ten pages are devoted to introducing the beta distribution and its multivariate form, the Dirichlet, while a total of only five pages are used for the χ^2-, the t-, and the F-distributions. Without any guiding discussion on their relative importance and usefulness in later work, the student is likely to be misled and will spend a disproportionate amount of energy on the beta and Dirichlet distributions. But here we also see an example of the value of the book; the section on the beta and Dirichlet distributions is preliminary to an unusually thorough treatment of order statistics.

Although it is supposed to be self-contained in the sense that no prior knowledge of mathematical statistics is necessary to follow the mathematical argumentation, this text will present insurmountable obstacles for anyone who is not already well acquainted with statistical method and practice, or who is not being guided by a skillful teacher. Moreover, the mathematical argumentation is itself condensed and frequently difficult, so that there will be further difficulty for all but the most mathematically mature readers.

This book is well referenced with frequent comments about related research and extensions of topics under discussion. An especially convenient feature is the inclusion of "backward" references in the bibliography, that is, after each book or paper the text page number on which it was referenced is listed. Many excellent problems are included after every chapter. Some awkwardness results from the author's attempt to preserve consistent notation throughout the book. In particular, no notational distinction is made between a random variable and the corresponding real variable, and reading some sections, such as those on conditional random variables, becomes a guessing game for anyone who does not know the material beforehand. Also regrettable is Professor Wilks' decision not to use matrix notation for the multivariate work.

There are quite a few mistakes in the text; some places the argumentation even goes astray, so it is hoped that corrigenda will be forthcoming, and eventually a second edition.

In short, this book is a comprehensive text written uncompromisingly for the graduate student of mathematical statistics. It is exceptionally useful because of its detailed coverage of topics, but it needs to be supplemented either by a teacher who provides direction and motivation, or by previous experience in the field. The book will be widely used as a text for graduate mathematical statistics courses for students with strong backgrounds in mathematics and some undergraduate training in statistics. It will also be an invaluable reference text for mathematical statisticians.

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47[K, W].—R. L. ACKOFF, with the collaboration of S. K. GUPTA & J. S. MINAS, *Scientific Method: Optimizing Applied Research Decisions*, John Wiley & Sons, New York, 1962, xii + 464 p., 23.5 cm. Price $10.25.

This book is a study "in the large" of scientific activity and is intended to aid the scientist in the evaluation of his own research procedures by making use of Decision Theory.

The book consists of fifteen chapters and two appendices and a large number of references. The first chapter gives a delightful discussion of science and its methods. The discussion of optimal solutions to problems in the second chapter has a broad philosophical scope, using ideas from statistics, decision theory, and game theory.

The formulation of the problem discussion in the third chapter introduces much of the author's knowledge and practice of operations research, and is a valuable contribution, as are the chapters on Models, Defining and Measurement. The next four chapters are on Sampling, Estimation, Testing Hypotheses, and Experimentation