BOOK REVIEWS

Mathematical statistics. By S. S. Wilks. Princeton University Press, 1943. 11+284 pp. $3.75.

The aim of this book is to present, for advanced undergraduate or for beginning graduate students, a summary of the mathematical theory of statistics developed during the twenty years prior to April, 1943, with a minimum of excursions into applied mathematical statistical problems. Aside from this book and the author's *Statistical inference* published in 1937, most of the theory covered still exists only in the original contributions widely scattered in scientific literature. A reference list of literature for supplementary reading, which is appended, includes these contributions as well as some text books and several articles more than twenty years old. It is of interest to note that the author himself is responsible for nine of the 123 references.

As a matter of fact, the material summarized is not limited to developments since 1922, since a good many accepted principles and formulas are necessary to lead up to the newer developments or serve as particular illustrations. For the purpose in hand, this method of treatment seems desirable, but it is worth noting that the point of view is not historical and the book does not attempt the difficult task of tracing in detail the growth of understanding of new principles.

Subjects covered are a discussion of distribution functions, including the Stieltjes integral, regression, partial and multiple correlation, the normal distribution, the Pearson system, and the Gram-Charlier series; sampling theory, sampling from a normal population, including a discussion of the χ^2 distribution, the "Student" t-distribution, and Snedecor's F-distribution; the theory of statistical estimation, including confidence intervals and regions, point estimation and maximum likelihood estimates, and tolerance interval estimation; tests of statistical hypotheses; normal regression theory and its application to the analysis of variance, including the case of incomplete layouts; combinatorial statistical theory, including some discussion of the theory of runs, matching theory, independence in contingency tables, and sampling inspection; and an introduction to multivariate statistical analysis.

As would be expected from the author and sponsorship, the book is an important addition to available statements of mathematical statistical principles. The exposition follows accepted standards of generality and precision. The mathematical theorist will find and enjoy the consistent development of advanced mathematical theory based for