the concept of a norm, an effective notation for particular types of matrices, and the so-called König ratio and its generalizations. The emphasis throughout is on matrix problems, and presumably much of this material will be developed in greater detail in his forthcoming book on matrices.

D. S.

46[K].—A. E. SARHAN & B. G. GREENBERG, editors, *Contributions to Order Statistics*, John Wiley & Sons, Inc., New York, 1962, xxv + 482 p., 24 cm. Price $11.25.

If the random observations $X_1, X_2, \cdots x_n$ of a sample drawn from a continuous population are arranged in ascending order of magnitude, $X_{(1)} \leqq X_{(2)} \leqq \cdots \leqq X_{(n)}$, then we have the order statistics of the sample and $X_{(i)}$ is called the ith order statistic. Order statistics are inherently much more informative than the ordinary random sample alone, and therefore have considerable practical value. It is probably for this reason that within the last fifteen years there has occurred a rather large-scale attack on the theory of order statistics.

Interest in order statistics runs high. For example, are the least or greatest values, or both, "outliers" which perhaps should be discarded? What are the distribution properties of the order statistics and how efficient are the order statistics (in particular, various linear combinations of them) in estimating population parameters? The great, practical point regarding order statistics is that computations involved in their use are rather minimal compared to that for the "most efficient" statistics, while the loss in efficiency is not very significant.

The present volume brings together the more pertient theoretical background, applications, and tables required to use order statistics. Indeed, it provides a very worthwhile manual, which is sorely needed at the present state of progress in this area of Mathematical Statistics. As examples of topics covered, we mention in particular the exact and approximate distributions and moments of order statistics from normal, exponential and gamma populations, the range $X_{(n)} - X_{(1)}$, best linear estimates of population parameters, theory and applications of extreme values, tests for suspected outlying observations, the maximum variance ratio for several independent samples, multiple-decision and multiple-comparison techniques for ranking treatment means, optimum grouping and spacing of observations, short-cut tests, and tolerance regions. From this list alone, we get a general idea concerning the over-all value of the book as a welcome addition to the statistical library. The editors of the book are to be congratulated for a job well done.

FRANK E. GRUBBS

Ballistic Research Laboratories
Aberdeen, Maryland

47[K, X].—EDWARD O. THORP, *Beat the Dealer: A Winning Strategy for the Game of Twenty-One*, Random House, New York, 1962, xiii + 236 p., 21 cm. Price $4.95.

Although volumes have been written about blackjack, the first mathematical attempt to obtain an optimal strategy was made in 1956 by Baldwin, Cantey, Maisch, and McDermott. To simplify the computations, they assumed that all