mates for $\gamma \leqq .95$ and overestimates for $\gamma \geqq .99$, while in Table IV, k is probably underestimated for $P = .875$ and overestimated for the other P values. Differences shown between Table II and Table III values in a few cases exceed 20% of the presumably more accurate Table II values and differences shown between Table II and Table IV sometimes exceed 10% of the Table II values.

C. C. CRAIG

University of Michigan
Ann Arbor, Michigan

1. N. L. JOHNSON & B. L. WELCH, "Applications of the non-central t-distribution," *Biometrika*, v. 31, 1939, p. 362–389.
2. G. J. RESNIKOFF & G. J. LIEBERMAN, *Tables of the Noncentral t-Distribution*, Stanford University Press, Stanford, Calif., 1957.
3. C. EISENHART, M. W. HASTAY & W. A. WALLIS, *Techniques of Statistical Analysis*, McGraw-Hill Book Co., New York, 1947.
4. R. M. MCCLUNG, "First aid for pet projects injured in the lab or on the range or what to do until the statistician comes," U. S. Naval Ordnance Test Station Technical Memorandum No. 1113, October 1955.

83[K].—K. V. RAMACHANDRAN, "On the Studentized smallest chi-square," Amer. Stat. Assn., *Jn.*, v. 53, 1958, p. 868–872.

Consider the F statistics, $\frac{S_i}{S} \cdot \frac{m}{t}$, $i = 1, 2, \cdots, k$, in which $S_1, S_2, \cdots, S_k$ and S are mutually independent, with each $S_{i/\sigma}2$ having a χ^2 distribution under the null hypothesis with t degrees of freedom and S/σ^2 a χ^2 distribution with m d.f. There are numerous applications of statistical methods, a few of which are discussed, in which one needs the value of V for which $\Pr \mid \frac{S_{\min}}{S} \frac{m}{t} \geqq V \mid = 1 - \alpha$. The author tabulates lower 5% points of $\frac{S_{\min}}{S} \cdot \frac{m}{t}$ for values of t, m and k as follows: For $t = 1, m \geqq 5, k = 1(1)8$ to 1S; for $t = 2, 5 < m < 10$ and $m \geqq 12, k = 1(1)8$ to 3D; for $t = 3, 4, 6, m = 5, 6(2)12, 20, 24, \infty, k = 1(1)8$ to 3D; for $t = 1(1)4(2)12, 16, 20, m = \infty, k = 1(1)8$ to 3D; for $t = 1(1)4(2)12, 16, 20, m = 5, 6(2)12, 20, 24, \infty, k = 1, 2, 3$ to 3D.

C. C. CRAIG

University of Michigan
Ann Arbor, Michigan

84[K].—A. E. SARHAN & B. G. GREENBERG, "Estimation of location and scale parameters by order statistics from singly and doubly censored samples. Part II.," *Ann. Math. Stat.*, v. 29, 1958, p. 79–105.

This paper, a continuation of a previous one [1], is mainly devoted to an extension of tables given in the earlier paper to cover samples $11 \leqq n \leqq 15$ and to a discussion of efficiencies of the estimators used. Samples of n are from $N(\mu, \sigma^2)$; r_1 and r_2 observations are censored in the left and right tails respectively ($r_1 r_2 \geqq 0$); and $\bar{x}$ and σ are estimated by the most efficient linear forms in the ordered uncensored observations. Table I gives the coefficients for these best linear systematic statistics to 4D for all combinations of r_1, r_2 for $n = 11(1)15$. Table II gives variances and the covariance of these estimates to 4D for $n = 11(1)15$ and all pairs of r_1, r_2 values. In Table III efficiencies of the two estimates relative to that for uncensored samples are given to 4D for the same range of values of n and r_1, r_2. For

$n = 12$ and 15, variances and efficiencies relative to best linear systematic estimates are given for alternate estimates proposed by Gupta [2] for $n > 10$, and generalized in [1] to doubly censored samples, are given to 8D and 4D respectively for all r_1, r_2. The authors state that extensions of Tables I, II, III to 8D for $16 \leqq n \leqq 20$ are available upon application.

C. C. CRAIG

University of Michigan
Ann Arbor, Michigan

1. A. E. SARHAN & B. G. GREENBERG, "Estimation of location and scale parameters by order statistics from singly and doubly censored samples. Part I. The normal distribution up to samples of size 10," *Ann. Math. Stat.*, v. 27, 1957, p. 427–451. [*MTAC*, Review 141, v. 12, 1958, p. 289.]

2. A. K. GUPTA, "Estimation of the mean and standard deviation of a normal population from a censored sample." *Biometrika*, v. 39, 1952, p. 88–95.

85[K].—J. M. SENGUPTA & NIKHILESH BHATTACHARYA, "Tables of random normal deviates," *Sankhya*, v. 20, 1958, p. 250–286.

As explained by the editor in a foreword, this is a reissue of an original table of random normal deviates which appeared in 1934 in *Sankhya* [1]. Since errors had been discovered in the earlier tables, the new set was reconstructed by conversion of Tippett's random numbers [2] to random normal deviates, as was the case before. After the present table was prepared, in 1952, as stated by the editor, it was learned that an identical table had been constructed in 1954 at the University of California. On comparison it was found that the two tables checked perfectly. As discussed in the text, rather extensive tests of the hypothesis that the entries were random drawings from $N(0, 1)$ were applied with satisfactory results. These tables contain 10,400 3D numbers.

C. C. CRAIG

University of Michigan
Ann Arbor, Michigan

1. P. C. MAHARANOBIS, S. S. BOSE, P. R. ROY & S. K. BANNERJEE, "Tables of random samples from a normal population," *Sankhya*, v. 1, 1934, p. 289–328.

2. L. H. C. TIPPETT, *Random Sampling Numbers*, Tracts for Computers, No. XV, Cambridge University Press, London, 1927.

86[K].—MINORU SIOTANI, "Note on the utilization of the generalized Student ratio in analysis of variance or dispersion," *Ann. Inst. Stat. Math.*, v. 9, 1958, p. 157–171.

In samples from a p-dimensional normal universe an important statistic, applications of which are discussed in this paper, is $T_0^2 = m \operatorname{tr} L^{-1}V$ in which L and V are two independent unbiased estimates of the population variance matrix with n and m degrees of freedom respectively. Tables are given for the 5% and 1% points of the distribution of T_0^2 to 2D for $m = 1(1)10(2)20$ and

$$n = 10(2)30(5)50, 60, 80, 100.$$

C. C. CRAIG

University of Michigan
Ann Arbor, Michigan