and where,

$$\bar{x} = \sum_{i=1}^{n} x_i/n,$$

$$s^2 = \sum_{i=1}^{n} (x_i - \bar{x})^2/(n - 1),$$

and

$$\sqrt{n}k = t(n - 1, u_\alpha\sqrt{n}, 1 - P).$$

Here $t(f, \delta, \epsilon)$ [1] is the 100ϵ percentage point of the non-central t distribution with f degrees of freedom, δ is the measure of non-centrality in the definition of t, and u_α is the $100(1 - \alpha)$ percentage point of the unit normal distribution with zero mean.

By use of the tables (especially Table IV) and iteration of the approximations given by Johnson and Welch in [1] the authors obtain values of the coefficient $\sqrt{n}k$ to 4S, for $n = 5(1)20(5)50(10)\ 100(100)\ 300$, for P and $\alpha = .90, .95, .99$. A method for determination of these coefficients is given in [1], but the calculations are, of course, quite tedious, so that the present tables render a valuable service for practical applications to one-sided tolerance limits.

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1. N. S. Johnson & B. L. Welch, "Applications of the non-central t-distribution," *Biometrika*, v. 31, 1939, p. 362–389.

75[K].—J. Pachares, "Tables of the upper 10% points of the Studentized range," *Biometrika*, v. 46, 1959, p. 461–466.

Let $q = w/s$, where w is a sample range based on n values, and s is an independent estimate of standard deviation based on m values. Then tables of q' have been prepared for $Pr(q \geqq q') = \alpha$, where $\alpha = .01, .05, .10$, $n = 2\ (1)\ 20$, and $m = 1\ (1)\ 20, 24, 30, 40, 60, 120, \infty$. Three significant figures are given throughout. The work of Harter [1] has been used in improving the accuracy throughout, particularly for $\alpha = .01$. For $\alpha = .01$ and $.05$, these tables correct errors in [2].

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1. H. L. Harter, *The Probability Integrals of the Range and of the Studentized Range*, WADC Technical Report 58-484, vols. I & II, 1959. Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D.C.
2. J. M. May, "Extended and corrected tables of the upper percentage points of the 'Studentized' range," *Biometrika*, v. 39, 1952, p. 192–193. [**RMT** 1080, *MTAC*, v. 7, 1953, p. 94]

76[K].—K. C. S. Pillai & Pablo Samson, Jr., "On Hotelling's generalization of T^2," *Biometrika*, v. 46, 1959, p. 160–168.

Let S_1/n_1, S_2/n_2 denote independent covariance matrices arising from samples of sizes n_1 and n_2 from two p-variate normal populations, and $U^{(s)} = \text{trace } S_2^{-1}S_1$, where s is the number of non-zero roots. Two approximations are compared with the