76[K].—R. Doornbos & H. J. Prins, "On slippage tests. I," *Indagationes Mathematicae*, v. 20, 1958, p. 38–46 (*Proc. Kon. Ned. Ak. van Wetensch.*, v. 61, Sec. A, 1958, p. 38–46); "On slippage tests. II," Ibid., p. 47–55; "On slippage tests. III," Ibid., p. 438–447.

The tables, which appear in part III, are related to two of the special cases included in this series of papers. In the first, from each of k Poisson distributions, with means μ_i, a random drawing Z_i is taken ($i = 1, 2, \cdots k$). To test the null hypothesis that $u_i = u$, $i = 1, \cdots, k$, for which the table is prepared, against the alternate that one of the u_i's is greater than the others which have equal values, the authors propose the statistic, $\max Z_i$. For $k = 2(1)10$ and the sum of the k observations, $n = 2(1)25$, values of $\max Z_i$ are given for which the significance levels are near 5% and 1%. In each case the actual significance levels are given to 3D.

In the second case, each of k objects is ranked by each of m observers. The null hypothesis under test is that each of the m rankings is independently and randomly chosen from the set of permutations of the integers $1, 2, \cdots, k$. As a test against the alternate that one of the objects has a higher probability of being ranked low while the others are ranked in random order, the proposed statistic is $\min S_i$ where S_i is the sum of ranks assigned the i-th object ($i = 1, 2, \cdots, k$). Critical values S_α of $\min S_i$ for significance levels near $\alpha = .05, .025, .01$ are tabled for $m = 3(1)9$ and $k = 2(1)10$. Again in each case true significance levels are shown to 3D.

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77[K].—F. G. Foster, "Upper percentage points of the generalized beta distribution. III," *Biometrika*, v. 45, 1958, p. 492–503.

Let $\theta_{\max}$ denote the greatest root of $| \nu_2 B - (\nu_1 A + \nu_2 B)| = 0$ where A and B are independent estimates, based on ν_1 and ν_2 degrees of freedom, of a parent dispersion matrix of a four-dimensional multinormal distribution. Define

$$I_x(4; p, q) = \Pr(\theta_{\max} \leqq k)$$

with $p = \frac{1}{2}(\nu_2 - 3)$, $q = \frac{1}{2}(\nu_1 - 3)$. Employing methods similar to those used in two preceding papers [1], [2] for the two and three-dimensional cases, the author tabulates 80%, 85%, 90%, 95%, and 99% points of $I_x(4; p, q)$ to 4D for $\nu_1 = 5(2)195$ and $\nu_2 = 4(1)11$.

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1. F. G. Foster & D. H. Rees, "Upper percentage points of the generalized beta distribution. I," *Biometrika*, v. 44, 1957, p. 237–247. [*MTAC*, Rev. 165, v. 12, 1958, p. 302]
2. F. G. Foster, "Upper percentage points of the generalized beta distribution. II," *Biometrika*, v. 44, 1957, p. 441–453. [*MTAC*, Rev. 167, v. 12, 1958, p. 302.]

78[K].—W. Hetz & H. Klinger, "Untersuchungen zur Frage der Verteilung von Objekten auf Plätze," *Metrika*, v. 1, 1958, p. 3–20.

For the classical distribution problem in which k indistinguishable objects are randomly distributed into n distinguishable cells (as in Maxwell-Boltzmann statistics) the authors take the number, s, of occupied cells as a statistic to test the hypothesis of uniform probability over the cells. Let $P(s \mid n, k)$ be the probability density for s. The correspondence is noted between this distribution and the results of a series of n drawings from a discrete distribution in which the random variable assumes only the values 0, 1, 2, $\cdots$, and in which the sample sum is k and the number of non-zero values is s. In developing a recursion formula for $P(s \mid n, k)$ it is shown that the uniform distribution over cells arises from the Poisson distribution, and the binomial and negative binomial distribution give particular non-uniformities. The function tabulated is $Z_{k;\alpha}$, which is defined under the hypothesis of uniformity by $\sum_{s=1}^{Z_{k,\alpha}} P(s \mid n, k) \leqq \alpha$ and $\sum_{s=1}^{Z_{k,\alpha}+1} P(s \mid n, k) > \alpha$, for $\alpha = .05, .01, .001; n = 3(1)20$, and ranges of k varying from (3, 15) for $n = 3$ to (2, 100) for $n = 20$.

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79[K].—A. HUITSON, "Further critical values for the sum of two variances," *Biometrika*, v. 45, 1958, p. 279–282.

Let s_i^2, $i = 1, 2$, be an estimate of the variance σ_i^2 with f_i degrees of freedom so that $f_i s_i^2/\sigma_i^2$ is distributed as χ^2 with f_i dif. To assign confidence limits to the form $\lambda_1\sigma_1^2 + \lambda_2\sigma_2^2$, where λ_1 and λ_2 are arbitrary positive constants, the author has previously [1] tabulated upper and lower 5% and 1% critical values of

$$(\lambda_1 s_1^2 + \lambda_2 s_2^2)/(\lambda_1\sigma_1^2 + \lambda_2\sigma_2^2).$$

The present tables are an extension, giving upper and lower $2\frac{1}{2}$% and $\frac{1}{2}$% critical values for the same function to 2D for $\lambda_1 s_1^2/(\lambda_1 s_1^2 + \lambda_2 s_2^2) = 0(.1)1$ and $f_1, f_2 = 16, 36, 144, \infty$.

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1. A. HUITSON, "A method of assigning confidence limits to linear combinations of variances," *Biometrika*, v. 42, 1955, p. 471–479. [*MTAC*, Rev. 19, v. 12, 1958, p. 71.]

80[K].—SOLOMON KULLBACK, *Information Theory and Statistics*, John Wiley & Sons, New York, 1959, xvii + 395 p., 24 cm. Price $12.50.

This interesting book, which discusses logarithmic measures of information and their applications to the testing of statistical hypotheses, contains three extended tables in addition to a number of shorter or more specialized ones. Table I gives $\log_e n$ and $n \log_e n$ to 10D for $n = 1(1)1000$. Table II lists values of

$$p_1 \log_e \frac{p_1}{p_2} + (1 - p_1) \log_e \frac{1 - p_1}{1 - p_2} \quad \text{to 7D for} \quad p_1, p_2 = .01(.01).05(.05).95$$

(.01).99. Table III gives 5% points for noncentral χ^2 to 4D with $2n$ degrees of freedom for $n = 1(1)7$ and noncentrality parameter β^2 for $\beta = 0(.2)5$. As it is stated, this is taken directly from an equivalent table of R. A. Fisher [1].

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