	With Attribute	Without Attribute	Total
Series I	a	$A - a$	A
Series II	b	$B - b$	B
	r	$N - r$	N

with fixed marginal totals $A \geqq B$, and $a/A \geqq b/B$.

The present volume is the result of computations carried out by several authors over a number of years. Finney [1] gave a table of the one-tail significance levels of b, that is, of the largest integers b_p such that $\text{Prob}\{b \leqq b_p\} \leqq p$, for $p = .05, .025, .01$, and $.005$ and all permissible combinations of a, A, and B with $A = 3(1)15$, $B \leqq A$, together with the corresponding values of actual tail probability $\text{Prob}\{b \leqq b_p\}$ to 3D. Latscha [2] extended the Finney table for $A = 16(1)20$. B. M. Bennett and P. Hsu have extended the full computations in the Finney format for $21 \leqq A \leqq 45$, $B \leqq A$, adding a fourth decimal place in the exact probabilities. (See *Math. Comp.*, v. 16, 1962, p. 252–253, RMT **20**; ibid., p. 503, RMT **58**.)

Table 1 in the present volume includes the Finney and Latscha tables, with known errors corrected, and the full Bennett-Hsu tables up to $B \leqq A \leqq 30$. As in the original Finney format, the listed significant value of b is such that $\text{Prob}\{b \leqq b_p\}$ does not exceed the nominal significance level p, and is sometimes much less than the nominal level, because of the discrete nature of the probability distribution. The inclusion of the exact probability is therefore useful for the practical man who may wish to use that value of b for which $\Pr\{b \leqq b_p\}$ is closest to p. For example, for $A = 14$, $B = 11$, and $a = 14$, Table 1 gives $b_{.025} = 6$ with $\text{Prob}\{b \leqq b_{.025}\} = 0.009$, whereas $b_{.05} = 7$ with $\text{Prob}\{b \leqq b_{.05}\} = 0.026$. Consequently, by taking 7 as the critical value of b, the test will be conducted more nearly at the 0.025 level of significance.

Table 2 gives Bennett and Hsu's values for $31 \leqq A \leqq 40$, $B \leqq A$, in abridged form, i.e. gives only the two significant values $b_{.05}$ and $b_{.01}$, and not the exact probabilities. The whole of the Bennett and Hsu table for $A = 21(1)45$, $B \leqq A$, has been deposited in the UMT file.

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1. D. J. FINNEY, "The Fisher-Yates test of significance in 2 × 2 contingency tables," *Biometrika*, v. 35, Parts 1 and 2, May 1948, pp. 145–156. [*MTAC*, v. 3, 1948, p. 359]
2. R. LATSCHA, "Tests of significance in a 2 × 2 contingency table: Extension of Finney's table," *Biometrika*, v. 40, Parts 1 and 2, June 1953, p. 74-86. [*MTAC*, v. 8, 1954, p. 157]

75[K].—SOL WEINTRAUB, *Tables of the Cumulative Binomial Probability Distribution for Small Values of p*, The Free Press of Glencoe, New York, 1963, xxix + 818 p., 28 cm. Price $19.95.

This book of tables gives to 10 decimals the cumulative binomial sums

$$E(n, r, p) = \sum_{i=r}^{n} \binom{n}{i} p^i (1 - p)^{n-i}$$

for $p = .00001, .0001(.0001).001(.001).100$, $n = 1(1)100$, $r = 1(1)n$. Through the relation $E(n, r, p) = 1 - E(n, n - r + 1, 1 - p)$ one may also readily obtain the cumulative sums for $p \geqq .9$ from this volume. The tables, which are arranged in order of increasing n, and within each n in order of increasing p, were reproduced directly from computer print-outs. Previously published binomial tables generally have a p-mesh of .01, and give either 5 or 7 decimals. Anyone, therefore, who frequently has need of binomial tables for $p \leqq .1$ or $p \geqq .9$ will find this volume a valuable addition to the existing tables. The necessity for interpolation can now often be eliminated.

This reviewer spot checked certain entries for $n = 15$ and 25. Of 64 values checked, all were found to be correct to 10 decimals. A comparison of all possible entries in the present tables (471 in number) for $n = 45$, 49 with the 7D tables of the National Bureau of Standards [1] and for $n = 97$ with the 7D tables of the Army Ordnance Corps [2] showed that the author's tables agree with the earlier tables except in two instances. Here, a further check proved certain NBS entries to be incorrect.

The introductory material, which contains examples of applications, notes on the computer program, and an error analysis, suffers, unfortunately, from a number of defects. Nowhere, for example, does the author state explicitly and concisely what he has tabulated and what range of arguments is covered by his tables. One would expect such a statement to appear either on the "contents" page or early in the introduction.

The error analysis attempts to prove that the upper bound of the error is sufficient to insure 10-decimal accuracy. But (as pointed out to me by H. Oser) in the proof of case B on page xxi, it is assumed that $e(n, r, p) = \binom{n}{r} p^r(1 - p)^{n-r}$ as a function of r always attains a maximum M at a point $r = m$ such that there exist $r_1 > m$, $r_2 < m$ with $e(n, r_1, p) < M$ and $e(n, r_2, p) < M$. It is also assumed that for $r + 1 > m$ there exists an integer $k < m$ such that $e(n, k, p) = e(n, r + 1, p)$. These assumptions are incorrect and render the proof invalid. So the conclusion that the error in each tabulated value is less than 7×10^{-11} may not hold. If it does, this is still not a small enough bound to guarantee the 10-decimal accuracy claimed.

The example on pages xiii–xiv ends with a disappointing error. It is stated that "we . . . find that the chances for success are now approximately a little more than 1 in 100," whereas the correct chances for success in this example are *less* than .01.

The statement on page xxiii that formula (1) on that page (the formula for $E(n, r, p)$ given above) is equal to $(p + q)^n$, where $q = 1 - p$, is true only if one takes $r = 0$. This the author neglected to include.

In short, for material on the cumulative binomial distribution and its applications, one will do much better to consult the introductions of previously published tables than that of the present work. Particularly noteworthy for a full discussion of applications is the Harvard University Computation Laboratory's publication of binomial tables [3].

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1. NATIONAL BUREAU OF STANDARDS, *Tables of the Binomial Probability Distribution*, Applied Mathematics Series, No. 6, U. S. Government Printing Office, Washington, D.C., 1950.

2. L. E. SIMON & F. E. GRUBBS, *Tables of the Cumulative Binomial Probabilities*, Ballistic Research Laboratories, Ordnance Corps Pamphlet ORDP 20-1, Aberdeen Proving Ground, Md., 1952.

3. HARVARD UNIVERSITY, COMPUTATION LABORATORY, *Annals*, v. 35, *Tables of the Cumulative Binomial Probability Distribution*, Harvard University Press, Cambridge, Mass., 1955.