In their introductory text the authors also refer to manuscript tables of Bennett and Hsu [4], and state that the present tables form the basis for 3D tables appearing in Section 5, by Mary G. Natrella, of Ordnance Corps Pamphlet ORDP 20-114, entitled *Experimental Statistics.*

J. W. W.

1. D. J. Finney, "The Fisher-Yates test of significance in 2 x 2 contingency tables," *Biometrika*, v. 35, Parts 1 and 2, May 1948, p. 145–156.
2. R. Latscha, "Tests of significance in a 2 x 2 contingency table: extension of Finney's table," *Biometrika*, v. 40, Parts 1 and 2, June 1953, p. 74–86.
3. G. J. Lieberman & D. B. Owen, *Tables of the Hypergeometric Probability Distribution*, Technical Report No. 50, Applied Mathematics and Statistics Laboratories, Stanford University, April 1961.
4. B. M. Bennett & P. Hsu, *Significance Tests in a 2 x 2 Contingency Table: Extension of Finney-Latscha Tables*, Review 9, *Math. Comp.*, v. 15, 1961, p. 88–89. See also *ibid.*, v. 16, 1962, p. 503.

20[K].—Zakkula Govindarajulu, *First Two Moments of the Reciprocal of a Positive Hypergeometric Variable*, Report No. 1061, Case Institute of Technology, Cleveland, Ohio, 1962, 16 + 28 p., 28 cm.

Starting from the definitions, the first two inverse moments of a positive hypergeometric variable have been computed accurate to five decimal places for: $N = 1(1)20$, $M = 1(1)N$, $n = 1(1)M$; $N = 25(5)50$, $M/N = 5\%\ (5\%)\ 100\%$, $n = 1(1)M$; $N = 55(5)100(10)140$, $M/N = 5\%\ (5\%)\ 100\%$, $n/N(\leqq M/N) = 5\%\ (5\%)\ 100\%$. Many theoretical results of interest, recurrence formulae among the inverse moments, and various approximations for the first two inverse moments have been obtained. The rounding error involved in using the formulae recurrently, in order to compute the moments, is at most 1 to 2 units in the last decimal place. The approximate values have been compared with the true values for some sets of values of N, M, and n. For large values of N and n, the Beta approximations are accurate up to 2 or 3 decimal places, provided they exist.

Author's Summary

21[K].—Frank L. Wolf, *Elements of Probability and Statistics*, McGraw-Hill Book Co., Inc., New York, 1962, xv + 322 p., 23.5 cm. Price $7.50.

Since the appearance of the "grey book" prepared by the Commission of Mathematics in 1957, at least a dozen or so textbooks have been published on probability and statistics at the elementary level, that is, requiring only "high school algebra". A number of these books are excellent. Nonetheless, the *Elements of Probability and Statistics* by Frank L. Wolf should prove to be a valuable addition to this collection.

This book is written in a style that is highly readable. The concepts are introduced one by one in a logical sequence and as a connected whole. The notations used are in accordance with the modern practice and would prepare the students for more advanced undertakings. In looking over the book, one is continually surprised and delighted with unexpected findings, such as the following, which are quoted.

"We say that we have a function defined on a set A if there is one and only one object paired with each element of A. The set on which a function is defined is said to be the domain of the function. The objects which are paired with elements of A are called values of the function, and the collection of all of them is called the range of the function." (Page 24.)

"In the general case, if x_0 is an observed value of the variable, we can consider the function

$$L(y) = P(X = x_0 | \theta = y).$$

This function is called the likelihood function for θ, given $X = x_0$. If $\hat{\theta} \in A$ is a number with the property that

$$L(\hat{\theta}) = \max \{L(y) : y \in A\} \tag{8-2}$$

then we say that $\hat{\theta}$ is a maximum likelihood estimate of (or for) θ. We read '$\hat{\theta}$' as 'theta hat'". (Pages 138–139.)

"Since we shall so often be speaking of areas under curves, we now introduce an abbreviation.

$$\int_a^b f(x)\, dx \tag{9-7}$$

will stand for the area which lies under the curve $y = f(x)$ and over the interval from a to b. We read '$\int_a^b f(x)\, dx$' as 'the area under $f(x)$ from a to b', as 'the definite integral from a to b of $f(x)$', or (more simply) as 'the integral from a to b of $f(x)$'". (Page 178.)

"Problem *9–27. To illustrate the fact that we have glossed over some logical difficulties in interpreting probabilities as areas for a continuous variable, let X be the result of a spin in Fig. 9-1 and consider the problem of finding the probabilities for the following 'events':

(a) $\{X: X$ is a rational number$\}$

(b) $\{X:$ in the decimal representation for X the digit 3 does not occur$\}$

(c) $\{X:$ the digits in the decimal representation of X are all even$\}$." (Page 183.)

As the author stated in the preface, the first eight chapters cover essentially the same material as does the experimental probability text prepared by the Commission on Mathematics of the College Entrance Examination Board. Chapter 9 jumps from discrete distributions to continuous probability distributions by the use of a "spinner", a rather useful device to introduce the concept of continuous variable to students who have not had calculus. Chapters 10, 11, 12, 13 introduce normal, chi-square, F, and Student's distributions, respectively, and Chapter 14, the bivariate distributions. Eight tables are included in the appendix, with their sources indicated in parentheses.

A-1	Tables of square roots	(Dixon and Massey)
A-2	Binomial distributions	(National Bureau of Standards, AMS-6)
A-3	Cumulative probabilities for binomial distributions	(National Bureau of Standards, AMS-6)
A-4	Random digits	(Interstate Commerce Comm., U.S. Bureau of Transport Economics and Statistics: *Table of 105000 Random Decimal Digits*)
A-5	Cumulative normal distributions	(Mood)

A-6	Chi-square distribution	(Fisher: *Statistical Methods for Research Workers*)
A-7	Critical values of F	(Wadsworth and Bryan)
A-8	Student's t distribution	(Fisher: *ibid.*)

Many problems are included between sections of each chapter; the ones marked with asterisks are the more difficult and more interesting, such as the one referred to above. A series of problems are included which give some idea of game theory.

Two review sections appear in this volume, one after Chapter 5 and another after Chapter 7. These reviews should be useful to both the teachers and students.

H. H. Ku

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22[L, M].—C. J. Ancker, Jr. & A. V. Gafarian, *The Function* $J(x, y) = \int_0^x \frac{\gamma(y, \xi)}{\xi} d\xi$—*Some Properties and a Table*, System Development Corporation Santa Monica, California, 1962, 36 p., 27.5 cm.

This report contains some analysis and a table of the function

$$J(x,y) = \int_0^x \frac{\gamma(y,\xi)}{\xi} d\xi, \qquad x \geqq 0, y > 0,$$

where

$$\gamma(y,\xi) = \int_0^\xi e^{-\eta} \eta^{y-1} d\eta$$

is the Incomplete Gamma-Function. The report is divided into four parts. The first part contains: (1) a recurrence relation in the variable y, (2) a closed expression for positive integer y, (3) definite integrals expressible in terms of the function, (4) some derivatives of the function, (5) a convergent power series expansion about $x = 0$, (6) an asymptotic expansion about infinity, (7) an approximation in closed form, and (8) the Laplace and Mellin transforms, treating y as a fixed parameter. The second part is a description of the computational technique used to obtain the table and a discussion of the accuracy of the table. The third part contains procedures for computing $J(x, y)$ outside the range of the table. Finally, in part four, there are some graphs and a table of $J(x, y)$ for x and $y = 0.1(0.1)10$ to six significant figures.

Author's Summary

23[L, M, X].—Wilfred Kaplan, *Operational Methods for Linear Systems*, Addison-Wesley Publishing Company, Inc., Reading, Massachusetts, 1962, xi + 577 p., 24 cm. Price $10.75.

This book treats in a careful, detailed manner the subject usually known as operational calculus. A long introductory chapter is devoted to linear differential equations; this is followed by a chapter treating such matters as the superposition principle, the transfer and frequency response functions, and stability. Then come chapters on functions of a complex variable, Fourier series, the Fourier integral, the Laplace transform, and stability. The last chapter treats in an interesting