## THE ANNALS of MATHEMATICAL STATISTICS

FOUNDED AND EDITED BY H. C. CARVER, 1930-1938 EDITED BY S. S. WILKS, 1938-1949

THE OFFICIAL JOURNAL OF THE INSTITUTE OF MATHEMATICAL STATISTICS

Contents	PAGE
Abraham Wald, 1902–1950. J. Wolfowitz	1
The Formative Years of Abraham Wald and His Work in Geometry. Karl Menger	14
Abraham Wald's Contributions to Econometrics. G. TINTNER	21
The Publications of Abraham Wald	29
On the Power Function of Tests of Randomness Based on Runs Up and Down. HOWARD LEVENE	34
On the Structure of Balanced Incomplete Block Designs. W. S. Connor, Jr.	57
Formulas for the Group Sequential Sampling of Attributes. Howard L. Jones	72
An Application of Information Theory to Multivariate Analysis. S. Kull- BACK	88
Corrections for Nonnormality in the Use of the Two-Sample $t$ - and $F$ -Tests at High Significance Levels. RALPH ALLAN BRADLEY	103
A Bayes Approach to a Quality Control Model. M. A. Girshick and Herman Rubin	114
Testing a Straggler Mean in a Two-Way Classification Using the Range. Jack Mosнмan	126
Notes: Note on Wilcoxon's Two-Sample Test when Ties Are Present. J. Hemel- RIJK	133
Correction to "On Certain Methods of Estimating the Linear Structural Relation." J. NEYMAN AND ELIZABETH L. SCOTT	135
Abstracts of Papers	
News and Notices	
Report of the Washington Meeting of the Institute	
Report of the Boston Meeting of the Institute	155
Minutes of the Annual Membership Meeting, Boston, December 28, 1951	<b>15</b> 9
Report of the President of the Institute	160
Report of the Secretary-Treasurer of the Institute	
Report of the Editor of the Annals	166
Publications Received	167

Vol. 23, No. 1 — March, 1952

## THE ANNALS OF MATHEMATICAL STATISTICS

EDITOR
T. W. ANDERSON

R. C. BOSE W. FELLER ASSOCIATE EDITORS
M A GIRSHICK
E. L. LEHMANN

ALEXANDER M. MOOD JOHN W. TUKEY

WITH THE COOPERATION OF

M. S. BARTLETT
Z. W. BIRNBAUM
DAVID BLACKWELL
HARALD CRAMÉR
WILLIAM G. COCHRAN
J. F. DALY
J. L. DOOB
T. E. HARRIS

J. L. Hodges, Jr.
Wassily Hoeffding
Paul G. Hoel
Harold Hotelling
Howard Levene
William G. Madow
H. B. Mann
Frederick Mosteller

J. NEYMAN
EDWARD PAULSON
H. E. ROBBINS
S. N. ROY
L. J. SAVAGE
HENRY SCHEFFÉ
JACOB WOLFOWITZ
MAX A. WOODBURY

Published quarterly by the Institute of Mathematical Statistics in March, June, September and December at Baltimore, Maryland.

## INSTITUTE OF MATHEMATICAL STATISTICS

General Office: Business Administration Building, University of Michigan,

Ann Arbor, Michigan

C. H. Fischer, Secretary-Treasurer

This address should be used for all communications concerning membership, subscriptions, changes of address, back numbers, etc., but *not* for editorial correspondence. Changes in mailing address which are to become effective for a given issue should be reported to the Secretary on or before the 15th of the month preceding the month of that issue.

Editorial Office:

Department of Mathematical Statistics, Columbia University,

New York 27, New York T. W. Anderson, Editor

Manuscripts should be submitted to this address; each manuscript should be typewritten, double-spaced with wide margins, and the original copy should be submitted (preferably with one additional copy). Footnotes should be reduced to a minimum and whenever possible replaced by a bibliography at the end of the paper; formulae in footnotes should be avoided. Figures, charts, and diagrams should be professionally drawn on plain white paper or tracing cloth in black India ink twice the size they are to be printed. Authors are requested to keep in mind typographical difficulties of complicated mathematical formulae.

Authors will ordinarily receive only galley proofs. Fifty reprints without covers will be furnished free. Additional reprints and covers furnished at cost.

Subscription Price:

\$12 per year in the U. S. and Canada; \$10 elsewhere. Single issues \$3.50. Back numbers are available at \$12 per volume or \$3.50 per issue.

COMPOSED AND PRINTED AT THE WAVERLY PRESS, INC., BALTIMORE, MARYLAND, U. S. A.