# THE ANNALS of MATHEMATICAL STATISTICS

(FOUNDED BY H. C. CARVER)

THE OFFICIAL JOURNAL OF THE INSTITUTE OF MATHEMATICAL STATISTICS

## **Contents**

A Contribution to the Theory of Self-Renewing Aggregates, With	PAGE
Special Reference to Industrial Replacement. ALFRED J. LOTKA	1
On the Mathematics of the Representative Method of Sampling. A. T. Craig	26
On a New Class of "Contagious" Distributions Applicable in Entomology and Bacteriology. J. NEYMAN	35
On Confidence Limits and Sufficiency with Particular Reference to Parameters of Location. B. L. Welch	58
The Regression Systems of Two Sums Having Random Elements in Common. J. F. Kenney	70
A Note on Confidence Intervals and Inverse Probability. ALBERT WERTHEIMER	74
Note on a Matching Problem. S. KULLBACK	77
Report of the Detroit Meeting of the Institute	81
Abstracts of Papers	88
Constitution and By-Laws of the Institute	91
Directory of the Institute	95

Vol. X, No. 1 — March, 1939

# THE ANNALS OF MATHEMATICAL STATISTICS

### EDITED BY

### S. S. WILKS, Editor

### A. T. CRAIG

### J. NEYMAN

### WITH THE COÖPERATION OF

H. C. CARVER	R. A. Fisher	R. de Mises
H. Cramér	T. C. Fry	E. S. Pearson
W. E. DEMING	H. HOTELLING	H. L. RIETZ
G. Darmois		W. A. Shewhart

Manuscripts for publication in the Annals of Mathematical Statistics should be sent to S. S. Wilks, Fine Hall, Princeton, New Jersey. Manuscripts should be typewritten double-spaced with wide margins, and the original copy should be submitted. 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 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.

The subscription price for the Annals is \$4.00 per year. Single copies \$1.25. Back numbers are available at the following rates:

Vols. I-IV \$5.00 each. Single numbers \$1.50. Vols. V to date \$4.00 each. Single numbers \$1.25.

Subscriptions, renewals, orders for back numbers and other business communications should be sent to A. T. Craig, University of Iowa, Iowa City, Iowa.

The Annals of Mathematical Statistics is published quarterly by the Institute of Mathematical Statistics.

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