## THE ANNALS of MATHEMATICAL STATISTICS

THE ANNALS OF MATHEMATICAL STATISTICS IS AFFILIATED WITH THE AMERICAN STATISTICAL ASSOCIATION AND IS DEVOTED TO THE THEORY AND APPLICATION OF MATHEMATICAL STATISTICS

EDITORIAL COMMITTEE

H. C. CARVER

A. L. O'TOOLE

T. E. RAIFORD

Volume VIII, 1937

PUBLISHED QUARTERLY ANN ARBOR, MICHIGAN

The Annals is not copyrighted: any articles or tables appearing therein may be reproduced in whole or in part at any time if accompanied by the proper reference to this publication

Four Dollars per annum

Made in United States of America

Address: Annals of Mathematical Statistics Post Office Box 171, Ann Arbor, Michigan

COMPOSED AND PRINTED AT THE WAVERLY PRESS, Inc.
BALTIMORE, Md.

## CONTENTS OF VOLUME VIII

| Applications of Two Osculatory Formulas. John L. Roberts                            | 1   |
|---|-----|
| Some Simple Developments in the Use of the Coefficient of Stability.  C. H. Forsyth |     |
| Internal and External Means Arising from the Scaling of Frequency Func-             | 5   |
| tions. Edward L. Dodd   | 12  |
| Moments of any Rational Integral Isobaric Sample Moment Function.  PAUL S. DWYER    | 21  |
| Notes   |     |
| A Coefficient of Correlation between Scholarship and Salaries. John                 |     |
| L. Roberts  | 66  |
| Note on the Derivation of the Multiple Correlation Coefficient. WIL-                |     |
| LIAM J. KIRKHAM   | 68  |
| Note on Numerical Evaluation of Double Series. Chester C. Camp                      | 72  |
| Report of the Annual Meeting of the Institute of Mathematical Statistics            | 76  |
| Notice to Subscribers   | 76  |
| Regression and Correlation Evaluated by a Method of Partial Sums. Felix Berstein    | 77  |
| Methods of Obtaining Probability Distributions. Burton H. Camp                      | 90  |
| Moment Recurrence Relations for Binomial, Poisson and Hypergeometric                |     |
| Frequency Distributions. John Riordan   | 103 |
| Note on Zoch's Paper on the Postulate of the Arithmetic Mean. Albert Wertheimer     | 112 |
| Note on the Binomial Distribution. C. E. CLARK                                      | 116 |
| Convexity Properties of Generalized Mean Value Functions. NILAN                     | 110 |
| Norris  | 118 |
| A Simple Form of Periodogram. DINSMORE ALTER  |     |
| On Certain Distributions Derived from the Multinomial Distribution.                 |     |
| SOLOMON KULLBACK  |     |
| A Problem in Least Squares. JAN K. WISNIEWSKI                                       |     |
| A Significance Test for Component Analysis. PAUL G. HOEL                            | 149 |
| Contributions to the Theory of Comparative Statistical Analysis. I.                 |     |
| Fundamental Theorems of Comparative Analysis. WILLIAM G.                            |     |
| Madow   |     |
| Reply to Mr. Wertheimer's Paper. RICHMOND T. ZOCH                                   | 177 |
| Correlation Surfaces of Two or More Indices When the Components of the              |     |
| Indices Are Normally Distributed. George A. Baker                                   |     |
| The Type B Gram-Charlier Series. LEO A. AROIAN                                      | 183 |
| A Test of a Sample Variance Based on Both Tail Ends of the Distribution.            |     |
| John W. Fertig, with the assistance of Elizabeth A. Proehl                          | 193 |
|   |     |

| On  | the  | Polynomials                          | Related                    | to  | the   | Differential  | Equation   | $\frac{1}{y}\frac{dy}{dx}$ | =             |    |
|-----|--|--------------------------------------|----------------------------|-----|-------|---------------|------------|----------------------------|---------------|----|
|     | $\frac{c}{b_0 + c}$                                      | $\frac{a_0 + a_1x}{b_1x + b_2x^2} =$ | $\equiv \frac{N}{D}$ . Fr. | ANK | S. Be | EALE          |            |                            | 20            | )6 |
| The | Sim  | ultaneous Cor                        | nputation                  | of  | Group | os of Regress | sion Equat | ions a                     | $\mathbf{nd}$ |    |
|     |  | ciated Multipl                       |                            |     |       |               |            |                            |               | 24 |
|     | Constitution of the Institute of Mathematical Statistics |                                      |                            |     |       |               |            |                            |               |    |
|     |  | y of the Instit                      |                            |     |       |               |            |                            |               |    |