

## REPORT ON THE MADISON MEETING OF THE INSTITUTE

The Eleventh Summer Meeting of the Institute of Mathematical Statistics was held at the University of Wisconsin, Madison, Wisconsin, Tuesday, September 7 through Friday, September 10, 1948. The meeting was held in conjunction with the summer meetings of the American Mathematical Society, the Mathematical Association of America and the Econometric Society. The following eighty members of the Institute attended the meeting:

C. B. Allendoerfer, V. L. Anderson, K. J. Arnold, H. M. Bacon, A. S. Barr, Walter Bartky, H. P. Beard, A. A. Bennett, T. A. Bickerstaff, J. H. Bushey, Maria Castellani, Uttam Chand, Herman Chernoff, C. C. Craig, J. H. Curtiss, G. B. Dantzig, D. B. De Lury, J. L. Doob, A. M. Dutton, P. S. Dwyer, Mrs. Daisy Edwards, Churchill Eisenhart, H. P. Evans, C. H. Fischer, J. E. Freund, H. M. Gehman, H. H. Germond, M. A. Girshick, Casper Goffman, P. R. Halmos, W. G. Hart, E. H. C. Hildebrandt, Wassily Hoeffding, D. G. Horvitz, Harold Hotelling, A. S. Householder, M. H. Ingraham, Leo Katz, Oscar Kempthorne, J. F. Kenney, W. M. Kincaid, T. C. Koopmans, H. D. Larsen, Walter Leighton, H. B. Mann, A. M. Mark, Jacob Marschak, A. W. Marshall, Kenneth May, M. R. Mickey, Jr., Dorothy J. Morrow, C. J. Nesbitt, M. J. Netzorg, John von Neumann, Jerzy Neyman, G. B. Price, C. J. Rees, J. S. Rhodes, P. R. Rider, F. D. Rigby, Herman Rubin, Arthur Sard, Henry Scheffé, E. D. Schell, I. E. Segal, G. R. Seth, W. B. Simpson, Andrew Sobczyk, E. W. Stacy, C. M. Stein, A. G. Swanson, Zenon Szatrowski, R. M. Thrall, A. W. Tucker, J. W. Tukey, W. A. Wallis, J. E. Walsh, J. E. Wilkins, Jr., S. S. Wilks, M. A. Woodbury.

The Tuesday morning session was devoted to contributed papers. Professor K. J. Arnold of the University of Wisconsin presided. The attendance was approximately forty. The following papers were presented:

1. *On Distribution-free Confidence Intervals*. Preliminary Report.  
Dr. Wassily Hoeffding, Institute of Statistics, University of North Carolina.
2. *On Certain Statistics for Samples of 3 from a Normal Population*.  
Mr. Julius Lieblein, Statistical Engineering Laboratory, National Bureau of Standards. Presented by Dr. Churchill Eisenhart.
3. *On Multinomial Distributions with Limited Freedom: A Stochastic Genesis of Pareto's and Pearson's Curves*.  
Professor Maria Castellani, University of Kansas City.
4. *Fitting Generalized Truncated Normal Distributions*.  
Professor Harold Hotelling, Institute of Statistics, University of North Carolina.
5. *On the Distribution of the Two Closest Observations Among a Set of Three Independent Observations*.  
Professor G. R. Seth, Statistical Laboratory, Iowa State College.
6. *The Derivation of Certain Recurrence Formulae and their Application to the Extension of Existing Published Incomplete Beta Function Tables*.  
Dr. T. A. Bancroft, Alabama Polytechnic Institute. (Presented by title.)

On Tuesday afternoon a session for contributed papers was held jointly with the American Mathematical Society. Professor P. S. Dwyer of the University of Michigan presided. The attendance was approximately eighty. The following papers were presented:

7. *Asymptotic Studentization in Testing Hypothesis.*  
Dr. Herman Chernoff, Cowles Commission, University of Chicago.
8. *Completeness, Similar Regions and Unbiased Estimation.* Preliminary Report.  
Professor E. L. Lehman, University of California and Professor Henry Sheffé, University of California at Los Angeles.
9. *On a Proposed Method for Estimating Populations.*  
Professor C. C. Craig, University of Michigan.
10. *Some Results on the Asymptotic Distribution of Maximum- and Quasi-maximum-likelihood Estimates.*  
Dr. Herman Rubin, Institute for Advanced Study.
11. *The Probability Points of the Distribution of the Median in Random Samples from any Continuous Population.*  
Dr. Churchill Eisenhart, Lola S. Deming and Celia S. Martin, Statistical Engineering Laboratory, National Bureau of Standards.
12. *On the Arithmetic Mean and the Median in Small Samples from the Normal and Certain Non-normal Populations.*  
Dr. Churchill Eisenhart, Lola S. Deming and Celia S. Martin, Statistical Engineering Laboratory, National Bureau of Standards.
13. *The Relative Frequencies with which Certain Estimators of the Standard Deviation of a Normal Population Tend to Underestimate Its Value.*  
Dr. Churchill Eisenhart and Celia S. Martin, Statistical Engineering Laboratory, National Bureau of Standards.
14. *Some Non-parametric Tests of Whether the Largest Observations of a Set are too Large.* Preliminary Report.  
Dr. J. E. Walsh, Project Rand, Santa Monica, California.
15. *On Some Bounded Significance Level Properties of the Equaltail Sign Test for the Mean.*  
Dr. J. E. Walsh, Project Rand, Santa Monica, California. (Presented by title.)
16. *Infinitely Divisible Distributions.*  
Professor Will Feller, Cornell University. (Presented by title.)
17. *Fluctuation Theory of Recurrent Events.*  
Professor Will Feller, Cornell University. (Presented by title.)
18. *Formulae for the Percentage Points of the Distributions of the Arithmetic Mean in Random Samples from Certain Symmetrical Universes.*  
Mr. Uttam Chand, University of North Carolina and National Bureau of Standards. (Presented by title.)

Abstracts of the contributed papers appear elsewhere in this issue of the Annals.

On Wednesday morning the Institute and the Econometric Society held a joint session on *Stochastic Processes* with Professor Harold Hotelling of the University of North Carolina presiding. Attendance was approximately ninety. Professor Hotelling presented an *Historical Summary of the Problem*. Professor J. L. Doob of the University of Illinois presented a paper, *Stochastic Differences Equations and Stochastic Differential Equations*. Professor Subrahmanyam Chandrasekhar of the University of Chicago presented a paper, *Brownian Motion, Dynamical Friction and Stellar Dynamics*.

The three joint sessions of the Institute and the Econometric Society on Thursday were devoted to a *Symposium on the Theory of Games*. The maximum attendance was approximately three hundred. The first morning session was held under the chairmanship of Professor S. S. Wilks of Princeton University.

Professor John von Neumann of the Institute for Advanced Study presented a paper, *Survey of the Theory of Games*. Professor Oskar Morgenstern of Princeton University presented a paper, *Economics and the Theory of Games*. Dr. M. A. Girshick of Project Rand presented a paper, *Statistics and the Theory of Games*. The second morning session was under the chairmanship of Professor John von Neumann of the Institute for Advanced Study. Dr. E. W. Paxson of Project Rand presented a paper, *Recent Developments*. Professor J. W. Tukey of Princeton University presented a paper, *A Problem in Strategy*. Dr. G. B. Dantzig of the Army Air Forces presented a paper, *Programming in a Linear Structure*. The final session of the symposium was a round table discussion with Professor John von Neumann of the Institute for Advanced Study as chairman and with the following participants: Dr. G. B. Dantzig, Dr. M. A. Girshick, Professor Harold Hotelling, Professor Irving Kaplansky, Professor Samuel Karlin, Dr. J. C. C. McKinsey, Professor Oskar Morgenstern, Dr. E. W. Paxson, Dr. L. S. Shapley, and Professor J. W. Tukey.

A membership business meeting was held on Friday, September 10, in Bascom Hall at which twenty-one members were present. An account of the business transacted at this meeting may be found elsewhere in this issue under the heading "Adoption of a New Constitution."

The final session was on *Sequential Estimation* and was held jointly with the Econometric Society on Friday morning with Professor Jerzy Neyman of the University of California presiding. Attendance was approximately fifty. Professor Charles Stein of the University of California presented a paper on *Sequential Estimation*. Professor W. A. Wallis of the University of Chicago presented a discussion.

Social affairs during the meeting included a tea Tuesday afternoon, a concert of the Pro Arte String Quartet Tuesday evening, a dinner Wednesday evening, a picnic Thursday afternoon, and a beer party Thursday evening.

K. J. ARNOLD  
*Assistant Secretary*