

NEWS AND NOTICES

Readers are invited to submit to the Secretary of the Institute news items of interest

Personal Items

Dr. Helen P. Beard will be on leave of absence from Newcomb College during the year 1953-1954 and will be at the Statistical Laboratory, University of California.

Dr. Robert E. Bechhofer, formerly Assistant Professor of Industrial Engineering and Director of the Statistical Consulting Service of the Department of Mathematical Statistics, Columbia University, has been appointed Associate Professor in the Department of Industrial and Administrative Engineering, Sibley School of Mechanical Engineering, Cornell University, Ithaca, New York.

Dr. Julius R. Blum has been appointed to an instructorship in the Department of Mathematics, Indiana University, Bloomington, Indiana.

Dr. Lyle D. Calvin, formerly Biometrician with G. D. Searle & Co., Chicago, has received his Ph.D. degree in experimental statistics from North Carolina State College, and has accepted the position of Experiment Station Statistician at Oregon State College, Corvallis.

Benjamin Caplan has transferred from the Council of Economic Advisors to the Office of Defense Mobilization.

Visiting Associate Professor K. L. Chung of Cornell University has been appointed to an Associate Professorship at Syracuse University.

Phelps P. Crump, formerly at North Carolina State College, has accepted the position of Statistician on the staff of the Biology Department, Brookhaven National Laboratory, Upton, L. I., New York.

Masil B. Danford has completed his graduate program at the Institute of Statistics, North Carolina State College, Raleigh, and has taken a position as a Consulting Statistician with the Air Forces' School of Aviation Medicine at Randolph Field, Texas.

Reed B. Dawson, Jr., after a year of temporary additional duty studying statistics at Harvard, has returned to the National Security Agency, Washington, D. C.

C. West Churchman has been appointed Professor of Engineering Administration and Director of Operations Research in the Engineering Administration Department at Case Institute of Technology, Cleveland, Ohio.

Paul Gunther (ex-Paul Gutt) has resigned from the Institute for Air Weapons Research, University of Chicago, to accept a position as Statistician with the Engineering Measurement and Analysis Services Department of the General Engineering Laboratory, General Electric Company, Schenectady, New York.

Daniel G. Horvitz, Assistant Professor, Department of Biostatistics, University of Pittsburgh, received his Ph.D. degree in statistics in March 1953 from Iowa State College. He joins the staff of the Department of Experimental Statistics, North Carolina State College as Associate Professor September 1.

Walter W. Hoy has left Ohio State University and has accepted a position with Chance Vought Aircraft as a Senior Project Engineer doing work in statistics.

David Huntsberger was promoted from Instructor to Assistant Professor in statistics at Iowa State, effective July 1.

Professor Stanley L. Isaacson is on leave of absence from his position as Assistant Professor of Statistics at Iowa State College from July, 1953 to July, 1954. During this period he will be visiting Associate Professor and Research Associate in the Applied Mathematics and Statistics Laboratory at Stanford University.

Dr. N. L. Johnson has returned to University College, London, after spending a year as Visiting Associate Professor at the Institute of Statistics, University of North Carolina.

Robert M. Kozelka, formerly teaching at Tufts College, Medford while finishing his work for the doctorate at Harvard under the direction of Professor Frederick Mosteller, has accepted an Assistant Professorship of mathematics at the University of Nebraska, Lincoln.

H. T. McAdams has accepted a position as Research Physicist at Cornell Aeronautical Laboratory, Buffalo. He was formerly employed as Research Chemist at Aluminum Research Laboratories, E. St. Louis, Illinois.

Professor W. G. Madow of the University of Illinois has received a grant from the Fund for the Advancement of Education and will spend the year at Princeton University.

Roger H. Moore has accepted a position of Research Assistant with the Los Alamos Scientific Laboratory at Los Alamos, New Mexico.

A. Carl Nelson, Jr. has completed his studies toward a Ph.D. in mathematical statistics at the University of North Carolina and returned to teach statistics in the Department of Mathematics, University of Delaware.

Sidney I. Neuwirth, formerly affiliated with the Research Division of Schering Corporation, Bloomfield, New Jersey, has accepted the position of Biometrician with the Committee on Research of the American Medical Association, Chicago.

Dr. Emanuel Parzen has been appointed to the staff of the Hudson Laboratories of Columbia University, New York.

George W. Snedecor returned to the Statistical Laboratory, Iowa State College, in July after serving as consultant in experimental statistics for six months under a grant from the General Education Board—mainly at Alabama Polytechnic Institute and the University of Florida. His appointment as consultant was part of a cooperative program of statistics among the southeastern states supported by the Institute of Statistics of the Consolidated University of North Carolina.

E. Webb Stacy is an Operations Analyst at Headquarters Eastern Air Defense Force, Stewart Air Force Base, Newburgh, New York.

Professor Rothwell Stephens has returned to Knox College after spending a year at Princeton University on a Ford Faculty Fellowship.

Donovan J. Thompson, Assistant Professor of Statistics at Iowa State Col-

lege, has assumed the position of Assistant Professor, Department of Biostatistics, University of Pittsburgh.

William R. Thompson, Senior Biochemist in the Division of Laboratories and Research, New York State Department of Health, was awarded the Alfred E. Smith prize for outstanding professional accomplishment during the previous year by the Albany Chapter of the Public Administration Society at their annual dinner in May. The award was made in recognition of Dr. Thompson's contribution to the field of public health by his work in mathematical statistics and his application of statistical methods to biological problems.

David L. Wallace is a Moore Instructor in Mathematics at the Massachusetts Institute of Technology.

Louis H. Wegner, Jr., formerly Teaching Fellow at the University of Oregon, has accepted a position in the Aviation Division of The Rand Corporation.

H. Weingarten has been since September, 1952 a Mathematical Statistician and Head of Statistical Methodology Section, Quality Control Division, Bureau of Ordnance, Navy Department.

Council Resolution Regarding Mina Rees

Dr. Mina Rees has resigned from her position as Chief of the Division of Mathematical Sciences of the Office of Naval Research, effective September, 1953, and assumes the position of the Dean of the Faculty at Hunter College, New York City. The Council of the Institute of Mathematical Statistics feels that her departure from the Office of Naval Research should not pass unmarked.

During the last war it became apparent that the state of science and technology of a country is a paramount factor in its survival. Hence, the end of World War II was followed by an epoch of peace-time Federal support of science, first through the activities of the Office of Naval Research, then through the activities of similar organizations in the two other armed services and, finally, through the birth and development of the National Science Foundation. Thus, the Office of Naval Research did the pioneer work in Federal support of science.

Naturally, the armed services are most obviously interested in military research, hence in applied research. The Office of Naval Research has showed by example that it understood that, to be effective, applied research must be preceded by fundamental research. In order to have appropriate scientific personnel in case of war and in order to obtain without great delay the solutions of the various military-scientific problems arising from a war, it is necessary to train personnel in advance and to build a reservoir of new scientific results and new methods.

Under Dr. Rees' leadership the Division of Mathematical Sciences of the Office of Naval Research gave wholehearted support to basic research, in particular to basic research in mathematical statistics and probability. The whole

action was conducted with remarkable foresight and wisdom. Basic research has always meant basic research, unhampered by possible demands that it be of immediate usefulness to the Navy. As a result, the long range interests of the Navy and of the whole Nation were effectively served. The fruits of this activity have already been many and important and will continue to appear for many years to come.

The great demand for trained mathematical statisticians existed before and during the war, and still persists. As noted by the Committee of the National Research Council in the 1940's, there were at the time only a very few centers of instruction capable of training Ph.D.'s in mathematical statistics. Now the number of such centers has increased substantially. The Office of Naval Research basic research projects in these centers employ a great number of young men who thus obtain the training necessary for research and teaching.

The postwar development of mathematical statistics in the United States owes a great deal to the farsighted policy of the Office of Naval Research ably administered by Dr. Rees. Mathematical statistics owes Mina Rees a public "well done," and extends its best wishes to her successor at the Office of Naval Research.

Cooperative Graduate Summer Sessions in Statistics

North Carolina State College, the University of Florida, Virginia Polytechnic Institute and the Southern Regional Education Board will jointly sponsor cooperative graduate Summer Sessions in Statistics, the first session to be held at Virginia Polytechnic Institute, June 9 through July 17, 1954. The long range plan provides for sessions each summer at the cooperating institutions in rotation with the possible later addition of other institutions of the South. The sessions are designed to be of particular interest to research and professional workers in various fields, teachers of elementary statistics, professional statisticians and graduate students both in statistics and in other fields. For the benefit of students, the courses will carry graduate credit and will have a continuity of subject matter over successive summers.

The first session will include the following courses: Multivariate Analysis by Professor Maurice Kendall, Quantitative Genetics by Dr. Ralph Comstock, Probability and Inference, Analysis of Variance, Statistical Methods, Engineering Statistics, Education Statistics, Rank Order Statistics and Theory of Sequential Methods. The latter courses will be given by the resident staff, R. A. Bradley, D. B. Duncan, M. C. K. Tweedie, P. M. Somerville and Boyd Harshbarger. In addition, special seminars will be directed by outstanding statistical scholars and advanced courses in agriculture, science and engineering will be available.

For more detailed information, inquiries should be addressed to Boyd Harshbarger, Head, Department of Statistics, Virginia Polytechnic Institute, Blacksburg, Virginia.

University of Chicago Post-Doctoral Fellowships

Three \$4,000 post-doctoral fellowships in Statistics are offered for 1954-55 by the University of Chicago. The purpose of these fellowships, which are open to holders of the doctor's degree or its equivalent in research accomplishment, is to acquaint established research workers in the biological, physical, and social sciences with the role of modern statistical analysis in the planning of experiments and other investigative programs, and in the analysis of empirical data. The development of the field of Statistics has been so rapid that most current research falls far short of attainable standards, and these fellowships (which represent the fourth year of a five-year program supported by The Rockefeller Foundation) are intended to help reduce this lag by giving statistical training to scientists whose primary interests are in substantive fields rather than in Statistics itself. The closing date for applications is February 15, 1954; instructions for applying may be obtained from the Committee on Statistics, University of Chicago, Chicago 37.

Fulbright Awards

Announcement has been made of competition for Fulbright awards for university lecturing and advanced research of Americans in Europe and the Near East, Japan and Pakistan. The period of the awards will ordinarily extend from October 1954 to June 1955. Application must be made to Conference Board of Associated Research Councils, Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C., no later than October 15, 1953.

New Members

The following persons have been elected to membership in the Institute

May 28, 1953 to August 18, 1953

- BLOCK, HERBERT S., A.M. (Univ. of Illinois), Statistician, Goodyear Aircraft Corporation, 1210 Massillon Road, Akron 15, Ohio.
- BURKE, PAUL J., Ed.M. (Harvard Univ.), Member of Technical Staff, Bell Telephone Laboratories, 89-20 161 St., Jamaica 32, New York.
- DANIELS, H. E., Ph.D. (Univ. of Edinburgh), Lecturer in Mathematics, University of Cambridge, Statistical Laboratory, St. Andrews Hill, Cambridge, England.
- DOBRINDT, GERARD T., B.S. (John Carroll Univ.), Graduate Fellow in Mathematics, St. Louis University, 359 N. Whittier, St. Louis 8, Missouri.
- EISENBERG, HARVEY, M.A. (Brooklyn College), Mathematician, Evans Signal Laboratories, Signal Corps Engineering Labs, Belmar, New Jersey, 15 Garfield Avenue, Avon, New Jersey.
- GAVER, DONALD P., JR., S.M. (M.I.T.), Staff Member, Operations Evaluation Group, Office of the Chief of Naval Operations, 4123 North Henderson, Arlington, Virginia.
- GILBERT, WALTER M., Ph.D. (Princeton Univ.), Instructor, Mathematics Department, Washington State College, Pullman, Washington.
- GILMORE, JOHN W., Ph.D. (Oxford), Director, Market Research Department, Charles

- Pfizer & Company, Inc., Brooklyn 6, New York, *440 East 56th Street, New York 22, New York.*
- GOLDSMITH, BERNARD P., B.S. (Univ. of New Hampshire), Quality Control Engineer, Raytheon Mfg. Company, Newton, Massachusetts, *40 Abbott Road, Dedham, Massachusetts.*
- HANANIA, MARY, M.A. (A.U.B., Beirut, Lebanon), Graduate Student, Columbia University, New York, *International House, Berkeley, California.*
- HOBBS, WILLISTON C., M.S. (Howard Univ.), Associate Professor and Head of the Department of Mathematics, Box 6, Morris Brown College, Atlanta, Georgia.
- HOYT, JOHN PAUL, Ph.D. (George Washington Univ.), Associate Professor of Mathematics, U. S. Naval Academy, Annapolis, Maryland, *1943 Fairfax Road, Annapolis, Maryland.*
- HUDSON, JULIUS F., B.S. (Univ. of Tennessee), Associate Statistician, Carbide and Carbon Chemicals Co., K-25 Plant, Oak Ridge, Tennessee, *3926 Greenleaf Avenue, Knoxville, Tennessee.*
- KAWAR, BUTRUS SAMI, B.S. (Univ. of Georgia), Graduate Student, Mathematics Department, University of Georgia, Athens, Georgia.
- KRIS, ELIZABETH CHRISTINE, M.S. (Illinois Inst. of Tech.), Instructor and Assistant in Research, (1) Department of Psychology, Illinois Institute of Technology; (2) Research Assistant in Measurement & Statistics, Psycho-Physiological Laboratory, Institute for Juvenile Research, Department of Public Welfare; and (3) University Fellow, University of Chicago, Committee on Human Development, *5701 Maryland Avenue, Chicago 37, Illinois.*
- LARRIERU, JEAN, Diplome de l'Institut de Statistique (Paris), Ingenieur-Chercheur, Electricité de France, Service des Etudes et Recherches Hydrauliques, Paris, France, *4 Rue Nungesser, Fontenay-Sous-Bois, Seine, France.*
- McMILLAN, ROBERT G., B.A. (Emory Univ.), Junior Statistician, Y-12 Plant, Carbide and Carbon Chemicals Company, Oak Ridge, Tennessee.
- MINKER, JACK, M.S. (Univ. of Wisconsin), Advanced Development Engineer, RCA Victor, Camden, New Jersey, *105-D Wallworth Park Apartments, Haddonfield, New Jersey.*
- MOLITZ, HELLMUTH, Doktor-Ingenieur (Technische Hochschule, Berlin), Forschungsinstitut Weil am Rhein, Hauptstrasse 193, Germany.
- MONRO, SUTTON, B.S. (Mass. Inst. Tech.), Fundamental Quality Engineer, Bell Telephone Labs., Inc., 463 West Street, New York, New York, *103 Cypress Street, Maplewood, New Jersey.*
- NICHOL, ROBERT J., A.B. (Duke Univ.), Graduate Assistant, Department of Statistics, North Carolina State College, Raleigh, North Carolina.
- NISHIME, FRANK S., B.S. (Univ. of Illinois), Graduate Student, University of Illinois, *108 N. Romine, Urbana, Illinois.*
- RAMACHANDRAN, K. V., M.A. (Bombay Univ.), Graduate Student, Institute of Statistics, Chapel Hill, North Carolina, *309 Connor Dormitory, University of North Carolina, Chapel Hill, North Carolina.*
- RANDOLPH, PAUL H., M.A. (Univ. of Minnesota), Associate Operations Analyst, Operations Research, Armour Research Foundation of the Illinois Institute of Technology, Chicago, *370 Dogwood, Park Forest, Illinois.*
- ROSS, WILLARD C. JR., M.S. (State Univ. of Iowa), Part-time Instructor in Department of Mathematics and Astronomy, State University of Iowa, *141 Riverside Park, Iowa City, Iowa.*
- SACKS, JEROME, B.A. (Cornell Univ.), Graduate Student, Department of Mathematics, Cornell University, Ithaca, New York.
- SANDS, DANIEL E., M.S. (Pennsylvania State College), Graduate Assistant, Institute of Statistics, Department of Experimental Statistics, North Carolina State College, Raleigh, North Carolina, *Box 5457, State College Station, Raleigh, North Carolina.*
- SEAL, KIRON CHANDRA, A.M. (Princeton Univ.), Research Assistant & Graduate Student,

Department of Statistics, Phillips Hall, University of North Carolina, Chapel Hill, North Carolina.

STRIEBEL, CHARLOTTE T., M.A. (Ohio State Univ.), Research Assistant, Department of Psychology, Ohio State University, 204 S. Cassingham Road, Columbus 9, Ohio.

SUNDRUM, R. M., Ph.D. (Univ. of London), Research Associate, Institute of Statistics, University of North Carolina, Chapel Hill, North Carolina.

SWANSON, MARGARET, B.S. (Madison College), Graduate Student and Research Assistant, Statistical Laboratory, University of California, 1820 Euclid Avenue, Apt. 8, Berkeley 9, California.

TERPSTRA, T. J., M.S. (Univ. of Groningen), Chief Textile Research Laboratory, H. ten Cate Hzn & Co., Almelo, Holland, *Brugstraat 11, Almelo, Holland.*

VAN DER WAERDEN, B. L., Ph.D. (Univ. of Amsterdam), Professor, University of Zurich, *Rainfussweg 7, Zurich, Switzerland.*

REPORT OF THE STANFORD MEETING OF THE INSTITUTE

The fifty-sixth meeting of the Institute of Mathematical Statistics was held at Stanford University, June 19-20, 1953, in conjunction with the annual meeting of the Biometric Society, WNAR, and the fourth West Coast Regional Meeting of the Econometric Society. Ninety-three persons registered, including the following members of the institute:

Om P. Aggarwal, S. G. Allen, Jr., F. C. Andrews, L. A. Aroian, R. B. Ashley, G. A. Baker, R. O. Been, Z. W. Birnbaum, J. R. Blum, C. H. Boll, A. H. Bowker, R. N. Bradt, Bernice Brown, D. G. Chapman, Herman Chernoff, C. L. Chiang, Randolph Church, E. L. Crow, Besse Day, W. J. Dixon, Robert Dorfman, Mary Elveback, Evelyn Fix, M. A. Girshick, W. C. Guenther, J. L. Hodges, Jr., P. G. Hoel, W. C. Hoffman, J. F. Hofman, J. M. Howell, T. A. Jeeves, Leo Katz, H. S. Konijn, L. M. Le Cam, E. L. Lehmann, G. J. Lieberman, R. K. Maggy, C. A. Magwire, F. J. Massey, Jr., P. L. Meyer, A. M. Mood, Lincoln Moses, M. E. Muller, Peter Newman, Jerzy Neyman, J. H. Powell, Joseph Putter, G. J. Resnikoff, R. G. Richards, Herman Rubin, E. L. Scott, F. F. Sheehan, Rosedith Sitgreaves, R. F. Tate, Dan Teichroew, Leo Tornqvist, Donald Truax, Elizabeth Vaughan, J. E. Walsh, Irving Weiss, Oscar Wesler.

Professor G. A. Baker, University of California, Davis, was chairman of the opening session on Friday morning, a joint session with the Biometric Society. The speakers and their subjects were:

1. Special invited address. *Estimation of Biological Populations*. D. G. Chapman, University of Washington.
2. *Stochastic Models Related to Experimental Studies of Inter-Species and Intra-Species Competition*. L. LeCam and J. Neyman, University of California, Berkeley.
3. *Sample Survey Techniques in Morbidity Measurement*. Arthur Weissman, California State Department of Health.
4. *The Diffusion of Drugs into and through Tissues*. D. J. Jenden, University of California Medical School, San Francisco.

On Friday afternoon Professor M. A. Girshick, Stanford University, presided at a session at which the following contributed papers were presented:

1. *On the Probability Function of the Quotient of Sample Ranges from a Rectangular Distribution.* Leo A. Aroian, Hughes Aircraft and Development Laboratories, Culver City.
2. *Actuarial Validity of the Binomial Distribution for Large Numbers of Lives with Small Mortality Probabilities.* John E. Walsh, U. S. Naval Ordnance Test Station, China Lake.
3. *On the Distribution of the Likelihood Ratio.* Herman Chernoff, Stanford University.
4. *Testing the Approximate Validity of Statistical Hypotheses.* J. L. Hodges, Jr. and Erich L. Lehmann, University of California, Berkeley.
5. *Distribution of Correlated Means.* D. S. Villars, U. S. Naval Ordnance Test Station, China Lake. (Introduced by John E. Walsh.)
6. *On the Detection of Sure Signals in Noise.* (By title.) R. C. Davis, U. S. Naval Ordnance Test Station, Pasadena Annex.
7. *A Statistic Associated with the Joint Distribution of n Successive Amplitudes.* Preliminary Report. William C. Hoffman, U. S. Navy Electronics Laboratory, San Diego.
8. *Some Two-Sample Tests Based on a Particular Measure of Discrepancy.* (By title.) Louis H. Wegner, University of Oregon.
9. *Confidence Intervals for a Proportion.* Preliminary Report. E. L. Crow, U. S. Naval Ordnance Test Station, China Lake.
10. *On Estimating Both Mean and Standard Deviation of a Normal Population from the Lowest r out of n Observations.* John V. Breakwell, North American Aviation Company, Los Angeles. (Introduced by A. M. Mood.)
11. *Strong Consistency of Stochastic Approximation Methods.* (By title.) Julius R. Blum, University of California, Berkeley.
12. *Some Probability Results for Mortality Rates Based on Insurance Data.* (By title.) John E. Walsh, U. S. Naval Ordnance Test Station, China Lake.
13. *Extensions of the U-Test to Three Populations.* (By title.) Louis H. Wegner, University of Oregon.
14. *Normal Regression Theory and Some Classical Statistics in Multivariate Analysis.* (By title.) Junjiro Ogawa, Osaka University. (Introduced by H. Hotelling.)
15. *The Use of Maximum Likelihood Estimates in Chi Square Tests of Goodness of Fit.* (By title.) Herman Chernoff, Stanford University, and Erich L. Lehmann, University of California, Berkeley.
16. *On the Treatment of Ties in Nonparametric Tests.* (By title.) Joseph Putter, University of California, Berkeley.
17. *Asymptotic Relative Efficiency of Some Rank Tests for Analysis of Variance Problems.* (By title.) F. C. Andrews, Stanford University.
18. *Application of the Studentized Maximum Chi-Distribution.* Preliminary Report. T. A. Jeeves, University of California, Berkeley.

Saturday morning, Professor Robert Dorfman, University of California, Berkeley, was chairman of a joint session with the Econometric Society. The following papers were presented:

1. *Estimating Individual Behavior Patterns from Aggregate Data.* Peter Newman, Nuffield College, Oxford, and Stanford University.
2. *Applications of Multivariate Analysis.* Richard O. Been, University of California, Berkeley.

Saturday afternoon, Professor Paul G. Hoel, University of California, Los Angeles, presided at the session on the Power of Nonparametric Tests. The speakers and their subjects were:

1. *Local Large Sample Power of Some Two-Sample Tests Against Normal Alternatives.* A. M. Mood, Rand Corporation.
2. *Asymptotic Efficiency of Nonparametric Tests.* Erich L. Lehmann, University of California, Berkeley.
3. *On the Treatment of Ties in Nonparametric Tests.* Joseph Putter, University of California, Berkeley.
4. *Asymptotic Relative Efficiency of Some Rank Tests for Analysis of Variance Problems.* F. C. Andrews, Stanford University.
5. *Power Efficiency Against Normal Alternatives for Certain Two-Sample Tests.* W. J. Dixon, University of Oregon.

An informal beer party was held on Friday evening.

ROSEDITH SITGREAVES
Assistant Secretary

REPORT OF THE KINGSTON MEETING OF THE INSTITUTE

The fifty-seventh meeting and fifteenth summer meeting of the Institute of Mathematical Statistics was held in Kingston, Ontario, on August 31–September 4, 1953. The meeting was held in conjunction with meetings of the American Mathematical Society, the Mathematical Association of America, and the Econometric Society. An invited address was given by Professor H. O. Hartley on *Experimental Sampling with Control Variables*. On the afternoon of September 2, the members had a choice of a trip by motorboat among the Thousand Islands or a trip to the Sand Banks and swimming beach. On the evening of September 2 there was a showing of Canadian films. On the evening of September 3 the members were guests of Queen's University and the Canadian Mathematical Congress at a theatre party.

Approximately 550 persons attended the meetings, including the following 93 members of the Institute:

Carl B. Allendoerfer, Sigurd L. Andersen, R. L. Anderson, Harvey J. Arnold, Herbert E. Arnold, Kenneth J. Arnold, J. D. Bankier, Robert E. Bechhofer, Allan Birnbaum, David Blackwell, Julius R. Blum, Colin R. Blyth, R. C. Bose, Ralph A. Bradley, Margaret K. Butler, Randolph Church, A. Bruce Clarke, A. C. Cohen, Jr., Randal H. Cole, T. Freeman Cope, A. H. Copeland, Cecil C. Craig, George B. Dantzig, D. B. DeLury, Cyrus Derman, Tom Donnelly, George L. Edgett, Herbert P. Evans, Robert M. Exselsen, C. H. Fischer, J. Sutherland Frame, D. A. S. Fraser, Ramon G. Gamoneda, Harry M. Gehman, B. C. Getchell, J. A. Greenwood, Irwin Guttman, John S. Hagan, J. F. Hannan, M. H. Hansen, Bertha I. Hart, H. Leon Harter, H. O. Hartley, Wassily Hoeffding, Robert Hogg, W. C. Hood, H. S. Houthakker, Stanley Isaacson, J. E. Jackson, Walter Jacobs, T. J. Jaramillo, A. E. Karp, Leo Katz, E. S. Keeping, Bradford F. Kimball, T. C. Koopmans, Carl F. Kosack, E. Christine Kris, Solomon Kullback, O. E. Lancaster, F. C. Leone, Julius Lieblein, H. T. McAdams, G. E. McCreary, William G. Madow, Kenneth O. May, John W. Mayne, Paul Meier, Elmer B. Mode, Jack Moshman, Shu-Teh Chen Moy, C. R. Newell, J. Neyman,

E. G. Olds, Toby Oxtoby, Emanuel Parzen, W. E. Patte, James H. Powell, G. Baley Price, Herbert Robbins, S. N. Roy, Herman Rubin, Evelyn L. Rumer, Rosedith Sitgreaves, Milton Sobel, Paul M. Somerville, Henry Teicher, R. M. Thrall, Marrian M. Torrey, A. W. Tucker, John W. Tukey, John R. B. Whittlesey, R. Wormleighton.

The Program of the meeting was as follows:

TUESDAY, SEPTEMBER 1, 1953

Some Extreme Value Problems. 9:00 A.M.–10:50 A.M.

Chairman: Allan Birnbaum, Columbia University.

The Problem of Maximum Coincident Values and Application of Extreme Value Theory.

Emil H. Jebe, Iowa State College. (Read by H. O. Hartley, Iowa State College and University College, London.)

Estimation of Extremal Parameters by Use of Order Statistics. Julius Lieblein, Statistical Engineering Laboratory, National Bureau of Standards.

Discussion: Bradford F. Kimball, Public Service Commission of the State of New York.

“Robust” Tests. 11:00 A.M.–12:50 P.M.

Chairman: R. L. Anderson, University of North Carolina.

Tests on Variances and Their Sensitivity to Nonnormality. G. E. P. Box, University of North Carolina. (Introduced by John W. Tukey.)

An Investigation of a “Robust” Test on Variances. Sigurd L. Andersen, University of North Carolina.

Discussion: R. A. Bradley, Virginia Polytechnic Institute, and John W. Tukey, Princeton University.

Linear Programming. 2:00 P.M. 3:50 P.M.

Co-Sponsor: Econometric Society.

Chairman: T. C. Koopmans, Cowles Commission for Research in Economics.

Constrained Games and Linear Programming. A. Charnes and W. W. Cooper, Carnegie Institute of Technology.

The Selection of Farm Enterprises A case study in Linear Programming. R. J. Freund and R. A. King, University of North Carolina.

Transformed Problems. H. D. Mills, Princeton University.

Elementary Proof of the Min-Max Theorem of Games. George Dantzig, The Rand Corp.

Discussion: A. W. Tucker, Princeton University.

CONTRIBUTED PAPERS I. 4:30 P.M.–6:20 P.M.

Chairman: Milton Sobel, Cornell University.

Papers:

- (1) *Sequential Probability Ratio Confidence Sets (Preliminary Report).* Allan Birnbaum, Columbia University.
- (2) *Optimum Sample Size for Choosing the Population having the Smaller Variance.* Paul N. Somerville, University of North Carolina and Virginia Polytechnic Institute.
- (3) *The Generation of Pseudo-Random Numbers on a Decimal Calculator.* Jack Moshman, Oak Ridge National Laboratory.
- (4) *On the Integral Solution of Pearson's Random Walk Problem and Related Matters.* David Durand, National Bureau of Economic Research, and J. Arthur Greenwood, Manhattan Life Insurance Company.

- (5) *On Optimal Systems*. David Blackwell, Howard University.
- (6) *Maximum Likelihood Regression Equations*. H. Leon Harter, Wright-Patterson Air Force Base.
- (7) *Spherical Distributions (Preliminary Report)*. G. E. P. Box, University of North Carolina.
- (8) *On the Monotonic Character of the Power of a Certain Test in Multivariate Analysis of Variance*. S. N. Roy, University of North Carolina.
- (9) *Some Large-Sample Results on Estimation and Power for a Method of Paired Comparisons. (Preliminary Report.)* Ralph Allan Bradley, Virginia Polytechnic Institute.
- (10) *Nonparametric Estimation of Survivorship. (By title)*. Paul Meier, Johns Hopkins University.
- (11) *Comparison of Two Rank Order Tests for the Two-Sample Problem. (By title)*. Gottfried E. Noether, Boston University.
- (12) *The Poisson Distribution as a Limit of Dependent Binomial Distributions with Unequal Probabilities. (By title.)* John E. Walsh, U. S. Naval Ordnance Test Station, Inyokern.
- (13) *An Estimate of the Number of States in a Discrete Markov Chain. (By title.)* A. T. Reid, University of Chicago.
- (14) *On a Test of the Rank of a Matrix of Means for k p -Variate Normal Populations. (By title.)* S. N. Roy, University of North Carolina.
- (15) *On the Monotonic Character of the Power of a Test of Independence in Multivariate Analysis. (By title.)* S. N. Roy, University of North Carolina.

Council Meeting. 8:00 P.M.

WEDNESDAY, SEPTEMBER 2, 1953

Invited Address. 10:00 A.M.

Chairman: Robert E. Bechhofer, Cornell University.
Experimental Sampling with Control Variables. H. O. Hartley, Iowa State College and University College, London.

THURSDAY, SEPTEMBER 3, 1953

Multiple Decision Procedures. 10:00 A.M.–11:50 A.M.

Chairman: George L. Edgett, Queen's University.
Single-sample and Two-sample Procedures for Ranking Populations According to an Unknown Parameter. Milton Sobel, Cornell University.
Sequential Procedures for Ranking Populations According to an Unknown Parameter. Robert E. Bechhofer, Cornell University.
Optimum Sample Size for Choosing the Largest of $k + 1$ Parameters. Paul N. Somerville, University of North Carolina.
 Discussion: R. C. Bose and S. N. Roy, University of North Carolina.

Recent Advances in Mathematical Statistics. 2:00 P.M.–3:50 P.M.

Chairman: Carl F. Kossack, Purdue University.
Nonparametric Methods, Quality Control, Biological Statistics, C. C. Craig, University of Michigan.
Experimental Design, Survey Theory. R. C. Bose, University of North Carolina.
Testing Hypotheses, Estimation Techniques, Distribution Theory. Henry Teicher, Purdue University.

Business Meeting. 4:00 P.M.

CONTRIBUTED PAPERS II. 4:30 P.M.-6:20 P.M.

Chairman: D. B. DeLury, Ontario Research Foundation.

Papers:

- (1) *The Asymptotic Variance of Estimates of the Mean Life of a Radioactive Source (Preliminary Report.)* Richard F. Link, Princeton University.
- (2) *Testing the Equality of Means of Rectangular Populations.* Robert V. Hogg, State University of Iowa.
- (3) *The Structure of the Sample Space for Group Organization Theory.* Leo Katz and James H. Powell, Michigan State College.
- (4) *A Family of Cumulative Frequency Functions for J-shaped frequency Functions.* C. W. Topp and F. C. Leone, Case Institute of Technology.
- (5) *Multilayer Significance Procedures. (Preliminary Report.)* John W. Tukey, Princeton University.
- (6) *Estimation in Truncated Multivariate Normal Distributions.* A. C. Cohen, Jr., University of Georgia.
- (7) *The Extrema of Certain Functionals of Distribution Functions (Preliminary Report).* Wassily Hoeffding, University of North Carolina.
- (8) *Probability Distributions Related to Random Transformations of a Finite Set (Preliminary Report).* H. Rubin and R. Sitgreaves, Stanford University.
- (9) *Characterization of Tolerance Regions.* (By title.) D. A. S. Fraser, University of Toronto.
- (10) *A Nonparametric Model for the Linear Hypothesis.* (By title.) D. A. S. Fraser, University of Toronto.
- (11) *On the Analysis of Diurnal Fluctuations in Physiological States and Performance. (Preliminary Report.)* (By title.) Christine Kris, Illinois Institute of Technology and University of Chicago.

GEORGE L. EDGETT
Assistant Secretary

**MINUTES OF THE BUSINESS MEETING,
KINGSTON, ONTARIO, SEPTEMBER 3, 1953**

The business meeting of the Institute of Mathematical Statistics was called to order by President Morris H. Hansen at 4:05 P.M., in Miller Hall, Queen's University, Kingston, Ontario. Approximately forty members were present.

The President reported to the business meeting that the financial position of the Institute continues good with a continuing growth in membership. In fact, the present healthy financial position raises the question of the disposition of the excess of current income over current expenses. There was general agreement in the Council that it is desirable to acquire a moderate surplus, equivalent at least to two or three years annual income, in order to have stability in meeting crises of the sort that occurred a few years ago. Beyond this, our net income position poses for consideration the question of possible reduction in dues against increased Institute activities.

One step along this line is reported below in the form of an amendment to the