

## NEWS AND NOTICES

*Readers are invited to submit to the Treasurer of the Institute news items of interest*

### Personal Items

Dr. Albert H. Bowker, formerly Dean of the Stanford University Graduate Division and Director of the Applied Mathematics and Statistics Laboratories, Stanford University, has been appointed chancellor of the City University of New York.

Dr. Robert J. Buehler has accepted a professorship in the Department of Statistics, University of Minnesota.

Joseph M. Cameron has been appointed Chief of the Statistical Engineering Section in the Applied Mathematics Division at the National Bureau of Standards, U. S. Department of Commerce.

Dr. Churchill Eisenhart has been appointed Senior Research Fellow on the Director's staff at the National Bureau of Standards, U. S. Department of Commerce.

Dr. Raymond I. Fields, Associate Professor of Engineering Mathematics in the Speed Scientific School of the University of Louisville, has been promoted to Professor and Head, Department of Engineering Mathematics.

Dr. John J. Gart has received joint appointments as Associate Professor of Statistics in the Faculty of Philosophy and Associate Professor of Statistics in Industrial Engineering in addition to his present post as Associate Professor of Biostatistics at The Johns Hopkins University.

Dr. H. O. Hartley has joined Texas A & M University's new Graduate Institute of Statistics as Director and Distinguished Professor of Statistics.

Assistant Professor G. P. Patil has been promoted to the Associate Professorship of Mathematical Statistics at McGill University.

Leo E. Morris, Director of Mathematical Sciences, Quality Evaluation Laboratory, U. S. Naval Torpedo Station, Keyport, Washington, was recently presented the Navy Meritorious Civilian Service Award for his outstanding leadership, management ability and technical direction.

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Harold Nisselson has resigned from the Bureau of the Census to accept a position as Senior Scientist with Operations Research Incorporated in Silver Spring, Maryland.

Dr. S. S. Shrikhande has left his post of Professor of Statistics, Banaras Hindu University to join the faculty of the Bombay University as Professor of Mathematics.

Joseph V. Talacko, Associate Professor of Mathematics at Marquette University, has been promoted to Professorship.

## New Members

*The following persons have been elected to membership in the Institute*

- Abbas, Shaukat, M.A.**, (Muslim University, Aligarch, India); Graduate Student, University of Alberta, Edmonton, Alberta, Canada.
- Aziz, Emmanuel S., M.S.**, (Aberdeen University, Scotland); Graduate Student, Department of Mathematics, Imperial College of Science and Technology, Exhibition Road, South Kensington, London S.W.7, England; *54 Winchendon Road, London S.W.6, England.*
- Ballard, Kelley B., Jr.**, Student, Sacramento State College, California; *1720 Chapman Place, Davis, California.*
- Behara, Minaketan, Ph.D.**, (University of the Saar, Germany); Research Assistant, Institut für Europäische Statistik, Saarbrücken 15, Universität des Saarlandes, Germany.
- Belleza, Ines G., M.A.**, (University of North Carolina); Assistant Professor of Mathematics, University of the Philippines.
- Benson, Paul, M.A.**, (University of Michigan); Instructor in Mathematics, Bucknell University, Lewisburg, Pennsylvania; *100 South Front Street, Lewisburg.*
- Bildikar, Miss Sheela, M.A.**, (Poona University, India); Graduate Student, McGill University, Montreal 2, Quebec, Canada.
- Boen, James, Ph.D.**, (University of Illinois); Postdoctoral Fellow in Biostatistics, Department of Statistics, Stanford University.
- Bowman, Kimiko, O., M.S.**, (Virginia Polytechnic Institute); Graduate Student, Virginia Polytechnic Institute.
- Boyes, Miss Barbara Anne, B.A.**, (University of Minnesota); Mathematical Statistician, Statistical Research Division, Bureau of the Census, Washington 25, D.C.; *33 Swann Road, Washington, D.C.*
- Brown, John L., Jr., Ph.D.**, (Brown University); Professor of Engineering Research, Ordnance Research Laboratory, Pennsylvania State University, Post Office Box 30, State College, Pennsylvania.
- Burnham, James T.**, Student, San Diego State College; *6152 Dorothy Drive, San Diego 15, California.*
- Burton, Robert W., M.A.**, (University of California at Berkeley); Engineer, Hercules Powder Company, Salt Lake City, Utah; *1380 Devonshire Drive, Salt Lake City 8, Utah.*
- Cejalvo, Flor V., B.S.**, (University of the Philippines); Instructor in Mathematics, University of Philippines; *Post Office Box 6987, Stanford, California.*
- Chatterjee, Samprit, M.Sc.**, (Calcutta University); Graduate Student, Harvard University.
- Conover, William J., M.A.**, (Catholic University of America); Graduate Student, Catholic University of America; *3104 Shepherd Street, Mt. Rainier, Maryland.*
- Csorgo, M., M.A.**, (McGill University); Instructor in Mathematics, Princeton University.
- Curci, Henry E., B.S.**, (Florida State University); Mathematical Analyst/Computer Programmer, Lockheed Missiles and Space Company, Sunnyvale, California, *1101 Noel Drive, Menlo Park, California.*
- Davis, Donald B., M.S.**, (Stanford University); Graduate Student, Stanford University; *1780 Ednamary Way, Mountain View, California.*
- Disney, Ralph L., M.S.**, (The Johns Hopkins University); Visiting Lecturer, Department of Industrial Engineering, University of Michigan.
- Dowling, Thomas A., B.S.**, (Creighton University); NASA Fellow, University of North Carolina.
- Drane, J. Wanzer, M.S.**, (University of Florida); Instructor in Biometry, Emory University, Atlanta 22, Georgia.
- Doksum, Kjell A., A.B.**, (San Diego State College); Graduate Student, San Diego State College; *932 Madison Avenue, San Diego 16, California.*
- Edie, Jay L., B.S.**, (Massachusetts Institute of Technology); Research Engineer, Litton

- Systems, Inc., 221 Crescent Street, Waltham, Massachusetts; *111 Malborough Street, Boston 16, Massachusetts.*
- Edwards, George D., Jr., M.S.,** (University of Wisconsin); Graduate Assistant, Department of Statistics, University of Wisconsin, Bascom Hall, Madison, Wisconsin; *6 Sherman Terrace, Madison 4, Wisconsin.*
- El-Aloosy, A. S., B.S.,** (University of Baghdad, Iraq); Graduate Student, George Washington University, Washington D.C.; *2100 Eye Street, Washington 7, D.C.*
- El Daly, El Sayed A., M.S.,** (Rutgers University); Assistant Lecturer, Economics and Political Science, Cairo University, Cairo, Egypt; *184 Bevier Road, University Heights, New Brunswick, New Jersey.*
- Fisher, Armen G., M.S.,** (University of Wisconsin); Teaching Assistant, Statistics Center, Rutgers University; *70 Chester Circle, New Brunswick, New Jersey.*
- Fox, Miss Mary W., B.A.,** (George Washington University); Fellow in Statistics, George Washington University; *868 North Longfellow Street, Arlington 5, Virginia.*
- Fukuda, Noriko H., M.A.,** (University of California at Los Angeles); Graduate Student, University of California at Los Angeles; *969 Hilgard Avenue, Los Angeles 24, California.*
- Gebhard, Richard F., M.S.,** (University of Wisconsin); Staff Member, United Aircraft Corporation, 1690 New Britain Avenue, Farmington, Connecticut; *360 Woodland Avenue, Hartford 12, Connecticut.*
- Gomberg, David, B.A.,** (University of California at Berkeley); Graduate Student, Department of Statistics, University of California at Berkeley; *265 Wilson, Albany 10, California.*
- Halter, Judith C., B.A.,** (Bucknell University, Pennsylvania); Mathematician, National Security Agency, Fort George Meade, Maryland; *1523 Ray Road, Hyattsville, Maryland.*
- Hayward, Lynn C., M.S.,** (University of California at Los Angeles); Manager of Computer Operations, Office of Research, University of Texas, Anderson Hospital and Tumor Institute, Texas Medical Center, Houston 25, Texas.
- Hear, David G., M.S.,** (Georgia Institute of Technology); Graduate Student, University of North Carolina; *605 C Hillsboro Street, Chapel Hill, North Carolina.*
- Heintz, Mrs. Ruth E., M.A.,** (University of New York at Buffalo); Graduate Student, University of New York at Buffalo; *199 Phyllis Avenue, Buffalo 15, New York.*
- Hoel, David G., B.A.,** (University of California at Berkeley); Research Assistant/Graduate Student, Department of Statistics, University of North Carolina.
- Holland, Paul W., B.A.,** (University of Michigan); Graduate Student, Department of Statistics, Stanford University; *2014 Colony Street, Mountain View, California.*
- Huang, Jin-sheng, M.B.A.,** (University of Georgia); Graduate Student, Department of Statistics, Michigan State University.
- Huber, Peter J., Ph.D.,** (University of Erlangen, Germany); Visiting Assistant Professor of Mathematics, Cornell University.
- Huzurbazar, V. S., Ph.D.,** (Cambridge University, England); Professor and Head, Department of Mathematics and Statistics, University of Poona, India.
- Joiner, Brian L., M.S.,** (Rutgers University); Graduate Assistant, Rutgers University, *195 George Street, New Brunswick, New Jersey.*
- Joy, William R., M.S.,** (University of Arizona); Graduate Student, University of Arizona, *2120-M North Treat Avenue, Tucson, Arizona.*
- Kadane, Joseph B., B.A.,** (Harvard University); Graduate Student, Stanford University; *98 Catalpa Drive, Atherton, California.*
- Kanjo, Anis I., M.S.,** (Virginia Polytechnic Institute); Graduate Student, Virginia Polytechnic Institute; *Box 4433-A, V.P.I. Station, Blacksburg, Virginia.*
- Kayal, Gouranga D., M.S.,** (Calcutta University, India); Teaching Assistant, Statistical Laboratory, Catholic University of America.
- Kettler, Charles L., B.S.,** (Massachusetts Institute of Technology); Graduate Student,

Department of Mathematics, University of Texas; *2514 West Twelfth Street, Austin 3, Texas.*

- Khanna, Devki N.**, M.A., (University of Delhi, India); Graduate Research Assistant in Statistics, Kansas State University.
- Klotzkin, Kenneth C.**, M.M.E., (Rensselaer Polytechnic Institute); Graduate Assistant/Student, Rensselaer Polytechnic Institute; *90 Euclid Avenue, Troy, New York.*
- Koch, Gary G.**, M.S., (Ohio State University); Graduate Student, Ohio State University; *1210 East Chestnut Street, Mount Vernon, Ohio.*
- Land, Charles E.**, B.A., (University of Oregon); Graduate Student, Department of Statistics, University of Chicago.
- Lesnak, Richard J.**, B.S., (Carnegie Institute of Technology); Chairman, Department of Mathematics, Robert Morris Junior College, 575 Sixth Avenue, Pittsburgh 19, Pennsylvania.
- Lever, William E.**, M.S., (Florida State University); Graduate Student, Department of Statistics, Florida State University.
- Lucas, Henry L., Jr.**, Ph.D., (Cornell University); Professor, Experimental Statistics, North Carolina State College at Raleigh.
- Lund, Nicholas L.**, B.A., (Austin College); Graduate Student, Florida State University.
- McDonald, Bruce J.**, M.S., (Florida State University); NDEA Fellow in Statistics, Florida State University; *540 Bryan Street, Tallahassee, Florida.*
- Mann, Charles R.**, M.S., (Michigan State University); Graduate Assistant, Department of Statistics, Michigan State University.
- Mann, Miss Nancy R.**, M.A., (University of California at Los Angeles); Research Statistician, Rocketdyne Corporation, 6633 Canoga Avenue, Canoga Park, California; *4817 Hasekian Drive, Tarzana, California.*
- Mann, Walter Jack Mann**, B.A., (Queens College); Vice-President, Universal Marketing Research, Inc., 400 Park Avenue, New York, New York.
- Manson, Allison R.**, B.S., (Virginia Polytechnic Institute); Graduate Student, Virginia Polytechnic Institute; *214 Clay Street, Blacksburg, Virginia.*
- Mayer, Hugo E., Jr.**, M.S., (Rutgers University); Research Engineer, Western Electric Company, Post Office Box 900, Princeton, New Jersey; *271 Stiles Street, Elizabeth 3, New Jersey.*
- Mazumdar, Mainak**, M.Sc., (University of Calcutta, India); Teaching Assistant, Department of Industrial Engineering, Cornell University; *232 Linden Avenue, Ithaca, New York.*
- Merchant, Roland S.**, M.S., (Columbia University); Statistician, New York Tuberculosis and Health Association, 260 Park Avenue South, New York 10, New York; *20 Avenue D, New York 9, New York.*
- Meyer, Richard M.**, M.A., (State University of New York at Buffalo); Graduate Student, University of North Carolina.
- Miller, Miss Janice N.**, B.S., (Colorado State University); Graduate Student, The University of Texas; *Box 7955, The University of Texas, Austin, Texas.*
- Morlat, Georges**, Ph.D., (University of Paris); Scientific Consultant, Electricité de France/Professor, Institute of Mathematics, University of Paris; *36 rue d'Auffargis, le Perray en Yvelines, S & O, France.*
- Morris, Carl N.**, B.S., (California Institute of Technology); Graduate Student, Stanford University; *Box 7945, Stanford, California.*
- Naus, Joseph I.**, M.A., (Harvard University); Scientific Analyst, Institute of Naval Studies, Center for Naval Analysis, Franklin Institute, Pennsylvania/Graduate Student, Harvard University; *11 Vinal Street, Brookline 46, Massachusetts.*
- Nelson, Alvin J., Jr.**, B.S., (Brigham Young University); Dynamics Engineer, Lockheed Missiles and Space Company, Sunnyvale, California; *1929 Harris Avenue, San Jose, California.*

- Nonaka, Toshio**, Professor, Chuo University, Tokyo, Japan; *1-5 Nagasaki, Toshima-ku, Tokyo, Japan.*
- Odoroff, Charles L.**, M.A., (Harvard University); Graduate Student in Statistics, Harvard University; *30 Irving Street, Cambridge 38, Massachusetts.*
- Oh, Heoung Lock**, B.B.A., (George Washington University); Graduate Student, Department of Statistics, George Washington University; *2020 F Street, N.W., Washington 6, D.C.*
- Olfat, Mojtaba**, B.A., (Tehran University, Iran); Chief, Statistics Division, E.H.M.E. Organization, Tehran, Iran.
- Petty, Mrs. Mary T.**, M.S., (University of Chicago); Economist, Federal Reserve Bank of Chicago, 230 South La Salle Street, Chicago 90, Illinois.
- Poole, William Kenneth**, M.P.H., (University of North Carolina); Graduate Student, University of North Carolina; *614 C Hibbard Drive, Chapel Hill, North Carolina.*
- Resnick, David E.**, B.S., (Massachusetts Institute of Technology); Assistant-in-charge, Computation Center, Cooper Union, Cooper Square, New York, New York; *148-25 89th Avenue, Jamaica 35, New York.*
- Rhoads, Richard L.**, B.S., (University of Washington); Mathematician, Bureau of Mines, Interior Building, Washington 25, D.C.; *809 63rd Street, N.W., Seattle, Washington.*
- Rohatgi, Vijay K.**, M.A., (Delhi University, India); Graduate Student, Department of Mathematics, University of Alberta, Edmonton, Alberta, Canada.
- Rounding, Robert C.**, M.S., (Oklahoma State University); Captain, U.S.A.F.; *411 Tedman Drive, Fort Collins, Colorado.*
- Sachdeva, Darshan Lal**, M.S., (Florida State University); Graduate Student, University of Minnesota; *Post Office Box 13850 Coffman Union, University of Minnesota, Minneapolis 14, Minnesota.*
- Sasai, Toshio**, Professor, Kokuritsu National University, Yokohama, Japan; *1-70 Nari-mune, Suginami-ku, Tokyo, Japan.*
- Schofield, Thomas John**, M.S., (North Carolina State College); Graduate Student/Research Assistant, North Carolina State College; *Box 15110, College Station, Raleigh, North Carolina.*
- Seidel, Marquis R.**, B.S., (Villanova University); Systems Analyst, Datatrol Corporation, 8115 Fenton Street, Silver Spring, Maryland; *9135 Sligo Creek Parkway, Silver Spring, Maryland.*
- Semisich, Charles W., IV**, M.S., (Michigan State University); Graduate Student, Department of Statistics, Michigan State University; *1344 Gilbert Road, Meadowbrook, Pennsylvania.*
- Sherman, Miss Ellen**, B.A., (College of Wooster, Ohio); Graduate Student/Teaching Assistant, University of California at Berkeley.
- Shorack, Galen R.**, M.A., (University of Oregon); Graduate Student, Stanford University, *1815 Ednamary Way, Mountain View, California.*
- Sivin, Irving**, M.A., (Columbia University); Director of Surveys, Medical and Health Research Association of New York City, 125 Worth Street, New York, New York; *44 West 73rd Street, New York 23, New York.*
- Solomon, Murray**, B.A., (City College of New York); Graduate Student, School of Public Health and Administrative Medicine, Columbia University, New York 27, New York; *707 West 171st Street, New York 32, New York.*
- Staël von Holstein, Carl-Axel S.**, Fil.Kand. (University of Stockholm, Sweden); Assistant, Department of Statistics, University of Stockholm; *Ranhammarsvägen 24, Bromma, Sweden.*
- Styan, George P. H.**, B.Sc., (University of Birmingham, England); Columbia University Fellow; *125 East Homestead Avenue, Palisades Park, New Jersey.*
- Sykes, Zenas M.**, A.B., (The Johns Hopkins University); Assistant Chief Actuary, Social Security Administration, U.S. Department of Health, Education and Welfare, Washington 25, D.C.; *2708 Lavina Road, Baltimore 16, Maryland.*

- Tan, Wai-yuan**, M.S., (University of Wisconsin); Graduate Student, Department of Statistics, University of Wisconsin.
- Tarter, Michael E.**, M.A., (University of California at Los Angeles); Graduate Student, University of California at Los Angeles; *18329 Ventura Boulevard, Tarzana, California.*
- Torgersen, Erik N.**, Cand. Real., (University of Oslo, Norway); Lecturer, Department of Mathematics, University of Oslo, Norway.
- Valand, Ishwarbhai S.**, M.A., (Gujarat University, India); Senior Lecturer in Statistics, Nalini and Arund Art's College, India; *24 Sabarmati Nivas, Vallabh Vidyanagar, Anand, Kaira District, Gujarat, India.*
- Watanabe, Hiroshi**, Lic. Sc., (Tokyo University, Japan); Assistant, Department of Mathematics, Tokyo Institute of Technology, Japan; *Setagaya 4-688, Setagaya-ku, Tokyo, Japan.*
- Wheeler, Alan C.**, B.A., (Harvard College); Research Assistant/Graduate Student, Stanford University; *1911 Montecito Avenue, Mountain View, California.*
- Wiley, David Earl**, A.B., (San Diego State College); Graduate Student, Department of Educational Psychology, University of Wisconsin.

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#### PROGRAM OF VISITING LECTURERS IN STATISTICS 1963-64

With the financial support of the National Science Foundation, a Visiting Lecturer Program in Statistics is being sponsored jointly by the principal statistical organizations of the country, the American Statistical Association, Biometric Society, and Institute of Mathematical Statistics. Leading teachers and research workers in statistics have agreed to participate as lecturers. The lecturers for the 1963-64 academic year are: R. E. Bechhofer, Z. W. Birnbaum, G. E. P. Box, R. A. Bradley, J. M. Cameron, D. G. Chapman, H. Chernoff, W. G. Cochran, J. Cornfield, H. T. David, B. Epstein, F. A. Graybill, W. J. Hall, H. O. Hartley, P. G. Hoel, H. Hotelling, S. Karlin, L. Katz, W. H. Kruskal, L. LeCam, E. L. Lehmann, L. E. Moses, J. Neyman, I. Olkin, H. Raiffa, H. E. Robbins, J. Rosenblatt, I. R. Savage, O. Wesler, S. S. Wilks, J. Wolfowitz.

The program has five main objectives:

1. To provide education and information on the nature and scope of modern statistics and to correct misconceptions held in regard to the science.
2. To establish and emphasize the role that statistics plays in research and practice in all fields of scientific endeavor, particularly those involving experimental research, and to encourage instruction in statistical theory and application to students in all academic areas.
3. To create an awareness of the opportunities for careers in statistics among young men and women of high potential mathematical abilities and to encourage them to seek advanced training in statistics.
4. To provide information and advice to students, student counselors, and university and college faculties on the present availability of advanced training in statistics.
5. To encourage and stimulate new programs in statistics both to supplement programs in other curricula and to develop programs for the training of statisticians.

Such programs in other scientific areas such as chemistry, astronomy, and mathematics have met with great success in recent years. The presidents of the above mentioned statistical organizations initiated the present program because of the development of modern statistics and the scarcity of statisticians in colleges and universities today. These factors make it even more necessary in statistics than in the older and better known scientific areas, to give insight and to correct misimpressions regarding the nature of the subject and the opportunities in the area.

The Organizing Committee for these lectures consists of R. L. Anderson, D. J. Bogue, R. A. Bradley, G. J. Lieberman, and J. Kiefer, Chairman. Brochures describing the program's operation will be mailed to colleges throughout the U. S. in August. Institutions not receiving the brochure or requiring further information should write to Professor J. Kiefer, Department of Mathematics, Cornell University, Ithaca, New York.

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### DOCTORAL DISSERTATIONS

Readers are invited to submit information about current doctorates (received during 1963) for inclusion in the list to appear in the March issue. The list gives the doctor's name, institution, major subject, title of dissertation. To be included, the information should reach the Editor by January 6, 1964.

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### FELLOWSHIP AND RESEARCH OPPORTUNITIES IN MATHEMATICS

The Division of Mathematics, National Academy of Sciences—National Research Council, calls attention to a variety of fellowships and other support for basic research in mathematics at both the predoctoral and postdoctoral levels to be awarded during the year 1963–64. Copies of the complete announcement are available from the Division of Mathematics, National Academy of Sciences—National Research Council, 2101 Constitution Avenue, Washington, D.C. 20418.

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### PRELIMINARY ACTUARIAL EXAMINATIONS PRIZE AWARDS

The winners of the prize awards offered by the Society of Actuaries to the five undergraduates ranking highest on the score of the General Mathematics Examination of the May 1963 Preliminary Actuarial Examinations are as follows: The first prize of \$200 was awarded to Ralph E. Walde of the University of Minnesota. Additional prizes of \$100 each went to Beverly D. Causey of Princeton University; James H. Foster of the University of Notre Dame; Michael J.

Razar of Harvard University; and Mark G. Tanenbaum of Massachusetts Institute of Technology. Information concerning the Preliminary Actuarial Examinations can be obtained from the Society of Actuaries, 208 South LaSalle Street, Chicago 4, Illinois.

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### REPORT OF THE PRESIDENT FOR 1963

During the past year the Institute of Mathematical Statistics has continued to grow in activities, membership and financial strength.

*Meetings.* Since the last Annual Meeting (Minneapolis, Minnesota, September 7–10, 1962) there have been held an Eastern Regional Meeting at Harvard University, a Central Regional Meeting at the University of Wisconsin, a Western Regional Meeting at the University of Oregon, and a European Regional Meeting at the University of Copenhagen. These meetings have been well attended, and many interesting, informative and stimulating papers have been presented. The second meeting in the European Region, with some 220 participants registered, and plans for a third meeting in Bern, Switzerland, in 1964 go to establish firmly this relatively new IMS activity of an international nature.

The IMS co-sponsored a number of sessions of the Section on Statistics (Section U) at the annual meeting of the American Association for the Advancement of Science, Philadelphia, Pennsylvania, December 27–30, 1963; the IMS is affiliated with the AAAS. This first meeting of the newly organized Section on Statistics covered a wide scope of topics, mainly dealing with applications of statistical methods. It can be anticipated that demands for co-sponsorship and joint meetings from various organizations, including the Section on Statistics, will increase.

The Annual Meeting is held this year for the first time with the International Statistical Institute, with which the IMS has recently affiliated. While such a joint meeting is consonant with the IMS's role as an international organization, it raises problems about the IMS continuing to meet jointly with the American Mathematical Society and the American Statistical Association every other summer.

At Michigan State University a Summer Research Institute was held June 17 to July 26, 1963, on the topic "Inference in Stochastic Processes." Professors G. Kallianpur and H. Rubin took responsibility for the leadership.

Amendments to the Constitution and By-Laws were passed at the last Business Meeting to provide for a new officer, namely, Program Secretary. The Council elected Mrs. Dorothy Gilford, formerly Program Coordinator, to this office; the IMS is indebted to Mrs. Gilford for her effective planning of meetings.

*Publications.* *The Annals of Mathematical Statistics* continues to grow. 1527 pages were published in 1962; about 1650 pages will be published in 1963; and 1800 pages have been authorized for 1964. For the devoted and competent serv-

ices necessary to edit the *Annals* the IMS must thank the Editor, J. L. Hodges, Jr., the Associate Editors and the many statisticians who cooperate as referees. The Associate Editors and Cooperating Members of the Editorial Staff are listed on the masthead of the *Annals*, and the referees are named in the Report of the Editor. The Editor carries a particularly heavy load of responsibility.

Because so much labor is involved in editing the *Annals*, it is imperative to relieve the Editor of the noneditorial work of publishing; a committee, chaired by former Editor T. E. Harris, is studying the arrangement of a Publishing Office to accomplish this.

A comprehensive and detailed Index to Volumes 1-31 of the *Annals* was prepared by J. A. Greenwood, I. Olkin and I. R. Savage.

The IMS has an agreement with the University of Chicago Press to publish Statistical Research Monographs, two of which were published in previous years. A committee with Paul Meier as chairman is studying manuscripts for possible publication in this series.

*Membership.* The number of members of the IMS has increased during the past year in spite of the fact that the annual dues were raised from \$10 to \$15 for members in the United States and Canada and from \$5 to \$7 for members in other parts of the world. The fact that the increase in dues has been taken in stride attests to the worth of IMS membership. As a matter of fact, since the previous dues level of \$10 was inaugurated in 1951, the activities of the IMS have markedly increased; for instance, the *Annals* has about tripled in size. This growth has required more income, and it makes IMS membership of correspondingly greater value.

To encourage the budding statistician to join the IMS at his earliest opportunity the dues for students have not only been kept low, but were actually decreased. Recruitment of student members has been continued—by A. H. Bowker this year—resulting in 59 students joining the IMS in 1963.

The enlistment of Institutional Members has been maintained. The annual dues of \$100 of an Institutional Member furnishes important financial support of the activities of the IMS.

It is a pleasure to congratulate the new Fellows of the IMS namely, Peter Armitage, Donald Burkholder, Jerome Cornfield, Cuthbert Daniel, Daniel Dugué, Joseph O. Irwin, Sigeiti Moriguti, Robin L. Plackett, Ronald Pyke, and John Riordan.

*Finances.* The increase in dues will show its effect fully only in the final audit for the calendar year 1963. However, it is already apparent that it has augmented the IMS income by \$11,000 to \$12,000. For the first time since 1957 the IMS income exceeds its outgo. Thanks go to the Treasurer, G. J. Lieberman, for his supervision of the business aspects of the IMS. The Council has re-elected him for another term.

The services of the Executive Secretary, G. E. Nicholson, Jr., are also appreciated, and the Council has re-elected him.

*Cooperation with American Societies.* The recently formed Committee of Presidents of Statistical Societies has provided for cooperative efforts of the IMS, the American Statistical Association and the Eastern North American Region and the Western North American Region of the Biometric Society. Most of these activities are carried on by committees, presently 13 in number. The Committee for a Brochure on Statistics as a Career has prepared a second edition of *Careers in Statistics*. 75,000 copies of the first edition of 100,000 copies have been distributed. The Committee on the Visiting Scientists Program has planned for 31 senior statisticians to visit and lecture at colleges and universities that do not have strong and vigorous programs in statistics. A brochure describing the program is available from Jack Kiefer, the Committee chairman. A Committee for Liaison with Statistical Societies has been set up recently for cooperation with other organizations concerned with statistics and its applications.

The IMS also collaborates with mathematical organizations in the Conference Board of the Mathematical Sciences. One of the activities of the CBMS has been the Conference on Manpower Problems in the Training of Mathematicians, Washington, D. C., 16, 17 April 1963, which brought together some 60 mathematicians to discuss the implications of the report of the President's Scientific Advisory Committee on Graduate Training in Engineering, Mathematics and Physical Sciences. This report indicated that Bachelors degrees in the mathematical sciences in the United States have increased by almost 300 % in 7 years and suggested that Ph.D.'s in this discipline be increased by 300 % or alternatively 600 % in 10 years. The CBMS is also sponsoring brochures on careers in mathematics.

*International Aspects.* The greatest activity of the IMS outside of the United States and Canada is in Europe. The Committee for the European Region has a term of membership of three years, on a rotating basis. Thirteen countries are now represented on the committee. Anders Hald, chairman of the Committee, has been elected Associate Secretary for the European Region.

*Other Activities.* The IMS Council, on the advice of a committee, is supporting Colorado State College in holding a Summer Institute for Graduate Students in 1964.

*Nominating Committee.* One of the last duties of the IMS President is to announce the nominating committee for the next year. The committee to nominate candidates for election in 1964 consists of David Blackwell, chairman, R. R. Bahadur, Arthur P. Dempster, G. Elfving, D. G. Kendall, A. M. Mood, Joan R. Rosenblatt, and G. S. Watson.

*Closing.* I wish to thank, as well as the officers of the IMS, the members of the Council, and the chairmen and members of committees (as listed below) for their cooperation and their considerable efforts on behalf of the IMS. I take pleasure now in placing the presidency in the capable hands of Z. W. Birnbaum.

T. W. ANDERSON

**IMS OFFICERS, COMMITTEES, AND REPRESENTATIVES—1963***Council Members and Officers*

<i>Terms Expire 1963</i>	<i>Terms Expire 1964</i>	<i>Terms Expire 1965</i>
H. Chernoff	R. L. Anderson	G. A. Barnard
K. Chung	D. Blackwell	S. Karlin
M. G. Kendall	W. H. Kruskal	J. C. Kiefer
C. M. Stein	S. N. Roy	H. E. Robbins
<i>President: T. W. Anderson</i>		<i>Editor: J. L. Hodges, Jr.</i>
<i>President Elect: Z. W. Birnbaum</i>		<i>Associate Secretaries</i>
<i>Executive Secretary: G. E. Nicholson, Jr.</i>		Central: D. Burkholder
<i>Program Secretary: D. M. Gilford</i>		Eastern: S. Greenhouse
<i>Treasurer: G. J. Lieberman</i>		Western: F. Andrews

**COMMITTEES—1963***(The first person named is chairman)***COMMITTEE FOR ADAPTIVE CONTROL**

E. Parzen, G. E. P. Box, C. Derman, R. J. Lundegard

**COMMITTEE ON EUROPEAN REGION**A. Hald, J. Durbin, G. Elfving, R. Fortet, B. Gnedenko, U. Grenander, J. Hemelrijk,  
A. Linder, D. V. Lindley, A. Rényi, L. K. Schmetterer, D. Sixto-Rios, E. Sverdrup,  
K. Urbanik**COMMITTEE ON FELLOWS**I. Olkin (1963), G. Elfving (1963), A. Hald (1965), W. Kruskal (1964), D. V. Lindley (1964),  
E. Parzen (1965)**COMMITTEE ON FINANCE**

N. Morrison, L. Gilford, E. S. Keeping, G. J. Lieberman, J. Moshman, W. A. Wallis

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P. Meier, W. G. Cochran, H. E. Daniels, W. Hoeffding, J. C. Keifer

**COMMITTEE ON NEWS AND NOTICES**W. Kruskal, K. J. Arnold, J. L. Hodges, Jr., G. J. Lieberman, G. E. Nicholson,  
S. S. Wilks

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R. J. Lundegard, P. Meier, J. W. Pratt, R. Pyke, I. R. Savage, W. L. Smith

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## PROGRAM COMMITTEE FOR EUROPEAN REGIONAL MEETING

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## REPRESENTATIVES—1963

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE—  
A. Kimball

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE—  
PROGRAM COMMITTEE OF THE SECTION ON STATISTICS—  
H. Levene

AMERICAN MATHEMATICAL SOCIETY-INSTITUTE OF MATHEMATICAL  
STATISTICS COMMITTEE ON RUSSIAN TRANSLATIONS—  
W. Hoeffding, I. Olkin

AMERICAN STANDARDS ASSOCIATION COMMITTEE ON STATISTICAL  
NOMENCLATURE—P. Hoel

COMMITTEE OF PRESIDENTS OF STATISTICAL SOCIETIES—  
T. W. Anderson, Z. W. Birnbaum, G. E. Nicholson, Jr.

CONFERENCE BOARD OF THE MATHEMATICAL SCIENCES—T. W. Anderson,  
Z. W. Birnbaum

DIVISION OF MATHEMATICS-NATIONAL RESEARCH COUNCIL—E. L. Lukacs  
(to June 30, 1963) J. Kiefer (from July 1, 1963)

INTERNATIONAL STATISTICAL INSTITUTE—G. E. Nicholson, Jr.

ORGANIZATION OF THE FIFTH BERKELEY SYMPOSIUM—  
S. Karlin, H. E. Robbins

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#### REPORT OF THE PROGRAM SECRETARY FOR 1963

During the year 1962–1963, the Institute held its Annual Meeting and four regional meetings. In addition, in honor of the first meeting of Section U on Statistics of the American Association for the Advancement of Science, the Institute co-sponsored several sessions of their meeting held at Philadelphia, Pennsylvania from December 26–30, 1962.

The 25th Annual Meeting, the 93rd meeting, was held at Minneapolis, Minnesota in conjunction with meetings of the American Statistical Association and the Biometrics Society ENAR. F. J. Anscombe was Chairman of the Program Committee and B. W. Lindgren was Assistant Secretary for local arrangements for the meeting.

The Eastern Regional Meeting, the 94th meeting, was held at Harvard University, Cambridge, Massachusetts, from May 5–7, 1963, in conjunction with the Biometrics Society ENAR and the Section on Physical and Engineering Sciences of the American Statistical Association. A. P. Dempster was Chairman of the Program Committee and R. M. Elashoff was Assistant Secretary for local arrangements for the meeting.

The Central Regional Meeting, the 95th meeting, was held at the University of Wisconsin, Madison, Wisconsin, in conjunction with a Symposium on Stochastic Processes in Medicine and Biology held at the Army Mathematics Research Center. J. Gurland was Chairman of the Program Committee and M. Zelen was Assistant Secretary for the meeting.

The Western Regional Meeting, the 96th meeting, was held at the University of Oregon, Eugene, Oregon, on June 20–21, 1963. D. G. Chapman was Chairman of the Program Committee and D. R. Truax was Assistant Secretary for the meeting.

The 2nd European Regional Meeting, the 97th meeting of the Institute, was held at The H. C. Ørsted Instituttet, Copenhagen, Denmark, from July 8–10, 1963 in conjunction with meetings of the Econometric Society. J. Durbin was Chairman of the Program Committee and local arrangements were made by the Statistics Department of the University of Copenhagen.

The Institute is deeply indebted to all those who have given so generously of their time in organizing this successful program of meetings: to the Universities which have served as hosts for the meetings, to the Program Chairmen and the Assistant Secretaries, to the three Associate Secretaries: S. Greenhouse, D. Burkholder, and F. Andrews, and to A. Hald, Chairman of the Committee for the European Region.

DOROTHY GILFORD

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### REPORT OF THE TREASURER FOR 1963

Effective with the 1963 billing, dues and subscriptions were increased (voted by the Council at the 1962 business meeting) as a means to increase revenue. The increase is intended to help defray the ever-rising costs of expanded Institute activities: six meetings a year; an increased *Annals* size of 1800 pages; participation in the Conference Board of the Mathematical Societies and the Committee of Presidents of Statistical Societies with more than a score of inter-society committees; etc. There was concern in some quarters that an appreciable increase in dues at this time might result in as much as a 20% membership loss. There has, instead, been a gratifying growth trend: from January first to August fifteenth of 1963, 199 persons in the U. S./Canada have joined the Institute as well as 31 from other countries, with resignations at a minimal 59. As of August 20, there were 2056 (exclusive of life members and prerogative members) U. S./Canada members and 463 from other countries. Our Institutional members now number 53. We have approximately 1400 subscribers. Subscriptions for 1962 ran slightly below expectations but this is due to our billing procedure and the additional amount was received in 1963.

The attached financial statement indicates that we had a deficit in 1962 of about \$6,600. \$6,100 of this amount represents Institute funds expended in partial support of the *Annals Index* project over and above the National Science Foundation grant. We expect to recover most of this amount in *Index* sales in future years.

The actual 1962 revenue figures followed closely those estimated in the budget. Page charge receipts exceeded our expectations in 1962 and continue to be a major source of income with receipts running at approximately 75% of billing. Incidentally, this figure represents over 50% of the actual number of pages.

*Annals* printing costs will be somewhat higher in 1963 due to the inclusion in this figure of the reprinting of three hundred copies each of twenty back issues. We are beginning to have more inquiries about back issues and, as I noted in my

last report, the downward trend in the sale of back issues will be reversed with the widening interest in titles appearing in our journal.

Sales of the new *Index* are reflected in "miscellaneous income" with 358 sales posted in 1962. As of August 20, 1963, we have sold an additional 478 to members and 29 to subscribers. We are concerned about the small number of sales to subscribers but feel confident that this figure will rise sharply in 1963-64.

Income from sales of directories, gummed labels and membership lists, and contributions combine to make up the balance of miscellaneous income.

1962 expenses also ran fairly close to the budgeted figure. Miscellaneous expenses appear to be high because of a regrouping for expenditures by our auditors. Most of the expense is attributed to accounting and auditing costs, IBM charges in connection with billing, mailing, and maintaining records, and the return of grant interest to the National Science Foundation. This type of expense has appeared in the past under "office" or "printing" expense and these categories now reflect correspondingly smaller expenditures.

The 1963 financial outlook, increased costs and activities notwithstanding, is very bright indeed, with prospects of our starting 1964 comfortably in the black. The estimated 1963 budget follows closely our experience in 1962, with the new dues and subscription rates reflected in the revenue. The Institute can look forward to a surplus for the first time since 1957.

GERALD LIEBERMAN

#### INSTITUTE OF MATHEMATICAL STATISTICS

##### *Revenue and Expense Summary*

	1960	1961	1962	1962
		Actual	Estimated	Actual
Revenue				
Dues, Individual (U.S. & Canada)	\$15,549.00	\$16,711.28	\$17,500.00	\$17,538.50
Dues, Individual (Other)	1,952.93	2,500.00	2,700.00	2,214.00
Dues, Institutional	4,800.00	4,500.00	4,800.00	4,500.00
Subscriptions	14,324.80	19,465.42	19,000.00	17,840.80
Investment Income	3,729.31	4,052.23	3,000.00	3,299.19
Sale of back issues	1,968.58	4,156.49	3,100.00	3,233.48
Page charges	—	6,616.25	12,000.00	14,896.25
Other	612.64	601.31	1,600.00	2,898.33
	<hr/>	<hr/>	<hr/>	<hr/>
Total revenue	\$42,938.16	\$58,602.98	\$63,700.00	\$66,420.55
Expenses				
Cost of Annals	\$32,833.89	\$37,077.22	\$42,780.90	\$40,678.18
Office salaries	5,018.90	7,611.34	6,000.00	8,668.00
Payroll taxes	89.12	299.74	236.00	82.85
Office expense	1,622.40	2,564.82	4,000.00	2,102.20
Printing, Stationery, and Postage	4,276.98	10,373.31	6,200.00	4,890.62
Editorial expense	5,610.00	4,068.61	5,600.00	3,190.22
Travel	1,579.57	1,314.62	1,000.00	1,032.26
Binding expense	141.08	129.00	130.00	211.00
Contributions to other organizations	157.03	1,500.00	1,500.00	1,610.00

Miscellaneous expenses	—	197.62	200.00	4,436.64
Capital equipment	—	488.80	—	—
Annals Index expense	—	—	—	6,114.77
	<hr/>	<hr/>	<hr/>	<hr/>
Total expense	\$51,328.97	\$64,225.08	\$67,646.90	\$73,016.74
Excess expense over revenue	8,390.81	5,622.10	3,946.90	6,596.19
Reserve for addition to Annals inventory	2,727.00	*	*	*
	<hr/>	<hr/>	<hr/>	<hr/>
Deficit	\$11,117.81	\$5,622.10	\$3,946.90	\$6,596.19

\* The inventory reserve policy has been changed effective 1961.

## INSTITUTE OF MATHEMATICAL STATISTICS

Exhibit A

*Balance Sheet**December 31, 1962**Assets*

## Current Assets:

Cash in bank—checking account		\$15,884.44
Cash in banks—savings accounts		47,666.58

## Investments:

U. S. Government bonds—at cost	\$8,857.25
Savings certificate	5,000.00

Total investments	13,857.25
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## Receivables:

Dues	\$1,620.00
Subscriptions	1,634.00
Back issues of Annals	2,161.10
Advertising	192.50

Total receivables	5,607.60
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## Inventory—at cost:

Annals	\$22,043.56
Index	8,146.88

Total inventory	30,190.44
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Total assets	<u>\$113,206.31</u>
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*Liabilities, Unexpended Grant and Surplus*

## Current Liabilities:

Accounts payable	\$9,959.40
Payroll taxes payable	119.30
Dues advanced by members	12,265.00
Advance subscriptions	7,907.48
Wald royalties payable	96.40
Payable to other societies	1,326.00
Other liabilities	1,455.88

Total liabilities	\$33,129.46
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Unexpected Grant:		
Grant from National Science Foundation for "Visiting Scientist"—Note 1		11,500.00
Surplus:		
Reserve for life members.....	\$2,757.50	
Reserve for replacement of <i>Annals</i> issued—Note 2..	25,942.84	
Available for general purposes.....	39,876.51	
	<hr/>	
Total surplus—Exhibit C.....		68,576.85
		<hr/>
Total liabilities, unexpended grant and surplus.....		<u>\$113,206.31</u>

## INSTITUTE OF MATHEMATICAL STATISTICS

Exhibit B

*Statement of Operations**For the Year Ended December 31, 1962*

Income:		
Dues.....	\$24,252.50	
Subscriptions.....	17,840.80	
Sales of back issues of <i>Annals</i> .....	\$8,517.85	
Less cost of back issues sold.....	5,284.37	
	<hr/>	
Net.....		3,233.48
Sales of indexes.....	\$1,765.00	
Less cost of indexes sold.....	804.16	
	<hr/>	
Net.....		960.84
Advertising.....		931.62
Page charges.....		14,896.25
Interest on investments and savings accounts.....		3,299.19
Miscellaneous income.....		1,005.87
	<hr/>	
Total income.....		\$66,420.55
Expenses:		
Cost of <i>Annals</i> .....	\$40,678.18	
Office salaries.....	8,668.00	
Payroll taxes.....	82.85	
Office expense.....	2,102.20	
Printing, stationery and postage.....	4,890.62	
Editorial expense.....	3,190.22	
Travel and meeting expense.....	1,032.26	
Binding expense.....	211.00	
Contributions to other organizations.....	1,610.00	
Miscellaneous expense.....	4,436.64	
<i>Annals</i> index expense—Note 3.....	6,114.77	
	<hr/>	
Total expenses.....		73,016.74
		<hr/>
Operating loss—to Exhibit C.....		<u>\$ (6,596.19)</u>

INSTITUTE OF MATHEMATICAL STATISTICS  
*Statement of Changes in Surplus*  
 For the Year Ended December 31, 1962

Exhibit C

Surplus, January 1, 1962.....	\$75,173.04
Reductions:	
Operating loss for the year, ended December 31, 1962—Exhibit B.....	6,596.19
Surplus, December 31, 1962—Exhibit A.....	\$68,576.85

*Changes in Allocated Surplus*

	Reserve for Life Members	Reserve for Replacement of Annals	General Purposes
Balance, January 1, 1962	\$2,757.50	\$23,525.99	\$48,889.55
Operating loss			(6,596.19)
Allocation to reserve for replacement of <i>Annals</i>		2,416.85	(2,416.85)
Balance December 31, 1962—Exhibit A	\$2,757.50	\$25,942.84	\$39,876.51

INSTITUTE OF MATHEMATICAL STATISTICS

*Notes to Financial Statements*

December 31, 1962

Note 1. The National Science Foundation on 9/19/62 granted the Institute \$40,000 for a "Visiting Scientists (College)" program which was budgeted as follows:

	First Year	Second Year	Third Year	Total
Honorarium fund for visiting scientists	\$5,000	\$6,250	\$6,250	\$17,500
Travel for visiting scientists	5,000	6,500	6,500	18,000
Secretary, mailing, and other direct costs	1,500	1,500	1,500	4,500
Total	\$11,500	\$14,250	\$14,250	\$40,000

The fiscal years of the grant are from September 1, to August 31. The first year's advance was received in October, 1962. The second and third years advance are due on 9/1/63 and 9/1/64 respectively. At December 31, 1962 none of the budgeted funds for the fiscal year 9/1/62 to 8/31/63 had been spent.

Note 2. The reserve for replacement of *Annals* issued is computed as follows:

Estimated cost to reprint 300 copies each of Volumes 1 through 33.....	\$47,986.40
Less inventory of back issues at December 31, 1962 (see Exhibit A) which is covered by insurance.....	22,043.56
Reserve necessary at December 31, 1962.....	\$25,942.84

During 1960 and 1961 a special study was made by the Finance Committee on the policy of maintaining a reserve to replace the back issues of *Annals* in case of fire or other emergency which would destroy the entire inventory. It was recommended (among other things) that the reserve be adjusted to reflect the amount necessary to reprint 300 copies of each

issue of *Annals*. This report was adopted at the Twenty-Fourth Annual Meeting along with the report of other standing committees.

The estimated cost to reprint was obtained from figures supplied by Cushing-Malloy, the firm that is currently reprinting specific issues of *Annals* as required. The reduction factor is the cost of the issues on hand at December 31, even though there is some indication that the group policy coverage furnished by Waverly Press, Inc., might base its reimbursement on expected sales value.

Note 3. The National Science Foundation in 1960 granted the Institute \$22,550.00 to cover the cost of compiling an index for *Annals*, Volumes 1 through 30. Under the terms of the original grant, receipts in excess of \$6,000.00 (but not more than the grant) from sale of indexes during the three year period beginning with the date of publication must be returned to the Foundation. Publication was in November, 1962.

Upon application of the Institute, the original grant was amended June 8, 1962 as follows; "It is also a condition of this grant that the grantee, after recovering its cost (approximately \$11,000.00) incurred in connection with this publication, shall refund to the Foundation all proceeds for sales for a period of three years from the date of publication. The amount of the refund shall not exceed the amount of the grant.

The grant was expended as follows:

Original grant.....		\$22,550.00
Expenditures:		
Salaries.....	\$25,436.39	
Payroll taxes.....	595.95	
Travel.....	706.13	
Office expense.....	885.06	
Printing expense and postage.....	541.24	
Service—University of Minnesota.....	500.00	
Total expenditures.....		<u>28,664.77</u>
Excess of cost over grant—Exhibit B.....		<u>\$6,114.77</u>

The above costs do not reflect the following printing charges from North Central Publishing Co. for actual printing of the index:

	Number of Copies	Costs
Inventory 12/31/62—Exhibit A	3,637	\$8,146.88
Cost of indexes sold in 1962—Exhibit B	359	804.16
Totals	<u>3,996</u>	<u>\$8,951.04</u>

### REPORT OF THE EDITOR FOR 1963

The *Annals* continues to grow. The 1963 volume of 1659 pages is the largest yet published, and it includes 158 articles and notes and 174 abstracts. It seems likely that the 1964 volume will be larger again. During the year ending July 31, 1963, a record 271 papers were submitted; submissions have increased about 10 per cent a year over the past five years. Under the current *Annals* system, the main burden of editorial judgement of these manuscripts falls on the associate

editors. The Institute is greatly indebted to these distinguished scholars for their work.

The new book review section, under the editorship of William Kruskal, is well launched, with eight reviews published and a considerable number of others in preparation.

The Editorial Board is very conscious of the desirability of prompt editorial action and publication, and it makes every effort to discharge its responsibilities without delay. Currently, the median time from submission of a manuscript to the writing of the first major editorial letter is a little less than three months. The median time from submission to publication is now about 13 months; this includes the time taken by the author for revisions, and the four months needed for actual publication. We are fortunate in having, at present, no backlog of accepted papers awaiting publication.

I should like to express my appreciation for the work done efficiently and cheerfully by Mrs. Vincent Rizzolo, who manages the voluminous work in the editorial office, and by Mrs. LeRoy Blomgren, who is responsible for the copy-marking and proofreading. The Institute is indebted to the University of California, Berkeley, for a great deal of direct and indirect support for both the editorial and publishing operations. Waverly Press continues the effective job of composing and printing the *Annals* it has performed for thirty years.

I take great pleasure in extending the thanks of the Editorial Board to the scholars whose names are listed below for their help as referees.

J. L. HODGES, JR.

Abrahamson, I. G.	Burkholder, D. L.	Ghosh, Sakti P.
Aitchison, J.	Capon, Jack	Ghurye, S. G.
Anderson, R. L.	Chernoff, Herman	Giri, N.
Anderson, T. W.	Chiang, C. L.	Gnanadesikan, R.
Anscombe, F. J.	Cogburn, Robert	Good, I. J.
Bahadur, R. R.	Corsten, L. C. A.	Goodman, Leo A.
Barankin, Edward W.	Craswell, Keith J.	Graybill, Franklin A.
Bartholomew, D. J.	Curnow, R. N.	Guenther, William C.
Baxter, Glen	Daniels, H. E.	Gupta, S. S.
Beale, E. M. L.	David, F. N.	Guttman, Irwin
Bechhofer, Robert	David, H. A.	Hájek, Jaroslav
Bennett, Blair M.	David, H. T.	Hall, W. J.
Berman, Simeon M.	DeGroot, Morris H.	Hannan, J.
Bhattacharya, P. K.	Dwass, Meyer	Harter, H. Leon
Birnbaum, Z. W.	Elashoff, Robert M.	Hartley, H. O.
Blackwell, David	Esary, James	Hill, Bruce M.
Blum, J. R.	Esséen, C. G.	Hobby, C.
Blumenthal, R. M.	Fan, Ky	Hoeffding, Wassily
Blyth, Colin	Farrell, Roger H.	Hogg, Robert V.
Boothroyd, R.	Ferguson, Thomas S.	Huber, Peter J.
Breiman, Leo	Fisz, M.	Imhof, J. P.
Bruck, R. H.	Freedman, David A.	Khatri, C. G.
Brunk, H. D.	Freiberger, W.	James, Allan T.
Buehler, Robert J.	Gaver, Donald P., Jr.	Johns, M. V., Jr.

Johnson, N. L.	Ogawa, Junjiro	Sprott, D. A.
Katz, Melvin, Jr.	Olkin, Ingram	Stanton, R. G.
Katz, Morris	Owen, Donald B.	Steck, G. P.
Kesten, Harry	Parzen, Emanuel	Stein, Charles M.
Kinney, John R.	Perrin, Edward B.	Stone, Charles
Klotz, Jerome	Port, Sidney	Striebel, Charlotte
Koop, J. C.	Pratt, John W.	Stuart, Alan
Koopmans, L. H.	Pruitt, W. E.	Takács, Lajos
Kudo, Hirokichi	Raiffa, Howard	Tate, R. F.
Laha, R. G.	Reich, Edgar	Thomasian, A. J.
Lamperti, John	Riordan, John	Tierney, Martin S.
Latta, Gordon	Rosenblatt, Murray	Tocher, K. D.
Lindley, D. V.	Ruben, Harold	Tsao, Chia Kuei
Lukacs, Eugene	Rubin, Herman	Uzawa, Hirofumi
McFadden, J. A.	Sacks, Jerome	van der Vaart, H. R.
McNolty, Frank	Saunders, Sam C.	Venter, J. H.
Madansky, Albert	Savage, I. R.	Walker, A. M.
Marcus, Marvin D.	Schatzoff, M.	Watson, G. S.
Marshall, Albert W.	Schaufele, Ronald A.	Weiss, Lionel
Martin-Löf, P.	Scheffé, Henry	Wells, W. T.
Masani, P.	Seiden, Esther	Wendel, James B.
Mehr, C. B.	Shah, B. V.	Wijsman, R. A.
Mesner, D. M.	Shenton, L. R.	Wilk, M. B.
Miller, H. D.	Siddiqui, M. M.	Wilks, S. S.
Muller, Mervin E.	Silvey, S. D.	Williams, W. H.
Nadler, Jack	Sitgreaves, Rosedith	Wolfowitz, J.
Nelder, J. A.	Slepian, David	Ylvisaker, N. Donald
Newell, Gordon F.	Smith, W. L.	Zelen, Marvin
Ney, P. E.	Snell, J. Laurie	Zyskind, George
Nuesch, Peter		

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## REPORT OF THE MADISON, WISCONSIN MEETING OF THE INSTITUTE OF MATHEMATICAL STATISTICS

The 95th meeting of the Institute of Mathematical Statistics was held at the University of Wisconsin, Madison, on June 14–15, 1963. The first day of the meeting was held in conjunction with the last day of the Symposium on Stochastic Processes in Medicine and Biology sponsored by the Mathematics Research Center, U. S. Army.

There were 124 persons registered for the meeting.

### Program

Friday, June 14, 1963

**9:00 A.M.—Session 1** (Joint with Symposium on Stochastic Models in Medicine and Biology)

Chairman: W. J. Dixon, University of California, Los Angeles

1. *Stochastic Approximation to the Median Effective Dose in Bioassay*, W. G. COCHRAN, Harvard University.

2. *Some Stochastic Models of Repeated Plays of the Prisoner's Dilemma Game*, A. RAPOPORT, University of Michigan.

**1:30 P.M.—Session 2** (Joint with Symposium on Stochastic Models in Medicine and Biology)

Chairman: D. B. DELURY, University of Toronto

*A Stochastic Model of Competing Risks of Illness and Competing Risks of Death*, C. L. CHIANG, University of California, Berkeley.

**3:00 P.M.—Session 3 Survey Sampling Theory**

Chairman: W. T. FEDERER, Cornell University and Mathematics Research Center, U. S. Army

1. *Applications of Non-Linear Programming to Problems in Survey Designs*, H. O. HARTLEY, Iowa State University.
2. *Changing the Selection Probabilities*, L. KISH, University of Michigan.
3. *Sampling Selection and the Choice of Estimator*, W. H. WILLIAMS, Bell Telephone Laboratories.
4. *Analytical Surveys With Stratified and Cluster Sampling*, J. SEDRANSK, Harvard University.

**3:00 P.M.—Session 4 Contributed Papers I**

Chairman: N. R. DRAPER, University of Wisconsin

1. *Two Normally Distributed Distribution Free Statistics*, C. B. BELL and K. DOKSUM, San Diego State College.
2. *On the Consistency of the Two-Sample Empty Cell Test*, M. CSÖRGÖ and I. GUTTMAN, McGill University and University of Wisconsin.
3. *Prediction in Location and Scale Parameter Families*, F. L. RAMSEY and R. J. BUEHLER, Iowa State University.
4. *A Two Stage Sampling Procedure for Estimating the Common Mean of Several Normal Populations With Unknown Variances*, K. ALAM, University of Minnesota.
5. *Some Applications of the Jirina Sequential Procedure to Observations With Trend*, S. C. SAUNDERS, Boeing Scientific Research Laboratories, Seattle, Washington.

**4:30 P.M.—Session 5 Moment Inequalities**

Chairman: M. ZELEN, Mathematics Research Center, U. S. Army

1. *Recent Developments in Determining Bounds on Expected Values in Terms of Moments*, B. HARRIS, University of Nebraska and Mathematics Research Center, U. S. Army.
2. *Moment Inequalities for Distributions With Increasing Failure Rate*, R. E. BARLOW, A. W. MARSHALL, F. PROSCHAN, Boeing Scientific Research Laboratories, Seattle, Washington.
3. *Bounds for Central Limit Theorem Error*, S. ZAHL, Cambridge Air Force Research Center, Bedford, Massachusetts.

**4:30 P.M.—Session 6 Contributed Papers II**

Chairman: J. H. TORRIE, University of Wisconsin

1. *Comparison of Combined Estimators in Balanced Incomplete Blocks*, V. SESHADRI, McGill University.
2. *On Selecting the Factors for Experimentation*, M. S. PATEL, Purdue University.
3. *A Note on Interpenetrating Subsampling*, P. K. PATHAK, Michigan State University.

4. *A New Table for Percentage Points of the Chi-Square Distribution*, H. L. HARTER, Aeronautical Research Laboratories, Wright-Patterson Air Force Base, Ohio.

**7:30 P.M.—Session 7 Statistical Inference**

Chairman: I. GUTTMAN, University of Wisconsin

1. *Bayesian Hypothesis Testing*, L. J. SAVAGE, University of Michigan.
2. *A Bayesian Approach to the Problem of Comparing Two Variances*, G. E. P. BOX and G. C. TIAO, University of Wisconsin.
3. *A Bayesian Analysis of the Regression Model With Autocorrelated Errors*, A. ZELLNER, University of Wisconsin, and G. C. TIAO, University of Wisconsin.

Saturday, June 15, 1963

**9:00 A.M.—Session 8 Stochastic Models in Control and Prediction**

Chairman: R. J. ALTPETER, University of Wisconsin

1. *Some Statistical Aspects of Control and Prediction*, G. E. P. BOX, University of Wisconsin, and G. M. JENKINS, Imperial College of Science and Technology.
2. *A Dynamic Inventory System*, W. G. HOWE, Mathematics Research Center, U. S. Army.

**10:15 A.M.—Session 9 Contributed Papers III**

Chairman: G. C. TIAO, University of Wisconsin

1. *Bayesian Bio-Assay*, C. H. KRAFT and C. VAN EEDEN, University of Minnesota.
2. *Bio-Assay With Prior Information*, M. SKIBINSKY, University of Minnesota.
3. *A New Test of Fiducial Consistency*, R. J. BUEHLER, Iowa State University.
4. *On the Independence of Certain Wishart Variables*, R. V. HOGG, University of Iowa.
5. *Mean and Variance of a Generalized Two-Coin Tossing Problem* (Preliminary report), S. G. MOHANTY, State University of New York at Buffalo.

**10:15 A.M.—Session 10 Contributed Papers IV**

Chairman: P. M. ANSELONE, Mathematics Research Center, U. S. Army, University of Wisconsin.

1. *On the Busy Period of Single Server, Many Queue, Service Systems* (Preliminary report), P. D. WELCH, IBM Thomas J. Watson Research Center, Yorktown Heights, New York.
2.  *$\lambda$ -Continuous Markov Chains*, S. C. MOY, Syracuse University.
3. *Likelihood Ratios of Differential Processes*, H. RUBIN, Michigan State University.
4. *Quasi-Martingale Processes*, D. L. FISK, Michigan State University.
5. *On the Asymptotic Normality of a Class of Statistics Related to Linear Stochastic Processes* (Preliminary report), K. C. CHANDA, Iowa State University.

**Contributed Papers Presented by Title**

1. *Stochastic Processes and Genotypic Frequencies Under Mixed Selfing and Random Mating*, R. W. ALLARD, Department of Agronomy, University of California, Davis; G. A. BAKER, JR., Los Alamos Scientific Laboratory; G. A. BAKER, Department of Mathematics, University of California, Davis; J. CHRISTY, Los Alamos Scientific Laboratory.
2. *Analysis of Genetic Change in Finite Populations Composed of Mixture of Pure Lines*, G. A. BAKER, JR., Los Alamos Scientific Laboratory; R. W. ALLARD, Department of Agronomy, University of California, Davis; G. A. BAKER, Department of Mathematics, University of California, Davis; J. CHRISTY, Los Alamos Scientific Laboratory.

3. *An Algorithm for the Analysis of Multidimensional Partially Balanced Designs*, J. N. SRIVASTAVA, Department of Statistics, University of North Carolina

D. L. BURKHOLDER  
Associate Secretary

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## REPORT ON THE EUGENE, OREGON MEETING OF THE INSTITUTE OF MATHEMATICAL STATISTICS

The 96th meeting of The Institute of Mathematical Statistics, Western Regional Meeting, was held at the University of Oregon, Eugene, Oregon, on June 20–21, 1963.

Sixty-five people registered for the meeting. All sessions were held in room 231 Commonwealth Hall.

### Program

Thursday, June 20, 1963

#### 8:30 a.m.—Registration

Place: Commonwealth Hall

#### 9:45 a.m.—Welcome

H. ALPERT, Dean of the Graduate School, University of Oregon

#### 10:00 a.m.—Survival Problems

Chairman: H. SOLOMON, Stanford University

1. *Survival in Favorable Games*, T. FERGUSON, University of California, Los Angeles.
2. *Some Problems in Group Survival*, J. MACQUEEN, University of California, Los Angeles.
3. *Fair Casinos*, L. DUBINS, University of California, Berkeley.

#### 1:30 p.m.—Stochastic Processes

Chairman: R. PYKE, University of Washington

1. *Prediction of Stationary Sequences of Distributions*, R. GANGOLLI, University of Washington.
2. *Some Representation Theorems for Stationary Stochastic Processes*, D. L. HANSON, Sandia Corporation.
3. *On the Coefficient of Coherence for Weakly Stationary Stochastic Processes*, L. H. KOOPMANS, Sandia Corporation.

#### 3:30 p.m.—Contributed Papers I

Chairman: S. NASH, University of British Columbia

1. *Confidence Bands in Straight Line Regression*, A. V. GAFARIAN, System Development Corporation.
2. *On the Robustness of Some Non-Parametric Estimates for Shift* (Preliminary Report), A. HØYLAND, University of Oslo and University of California, Berkeley.
3. *On the Efficiency of Optimal Nonparametric Procedures in the Two Sample Case With Nuisance Parameters*, P. W. MIKULSKI, University of Maryland.
4. *A Note on Multiple Minima in Least Squares*, R. H. MOORE, Los Alamos Scientific Laboratory.

Friday June 21, 1963

**9:00 a.m.—Statistical Inference**

Chairman: T. MATTHES, University of Oregon

1. *Multistage Estimation*, J. BLUM, University of New Mexico.
2. *Robust Estimation of a Location Parameter*, P. HUBER, University of California, Berkeley.
3. *Estimation of Shift of a Symmetric Distribution in the Multivariate Case*, P. BRCKEL, University of California, Berkeley.

**11:00 a.m.—Topics in Probability**

Chairman: J. BLUM, University of New Mexico

1. *Continuous Singular Infinitely Divisible Distributions*, H. TUCKER, University of California, Riverside.
2. *Limit Theorems Associated With Recurrent Events*, S. PORT, RAND Corporation.

**1:30 p.m.—Mathematical Programming**

Chairman: ELIZABETH SCOTT, University of California, Berkeley

1. *Programming in Information Theory*, E. EISENBERG, University of California, Berkeley.
2. *Markov-Renewal Programming*, W. JEWELL, University of California, Berkeley (Read by RICHARD VAN SLYKE, University of California, Berkeley).
3. *Construction of Incomplete Factorial Designs by Linear Programming*, S. WEBB, Rocketdyne Division North American Aviation.

**3:30 p.m.—Contributed Papers II**

Chairman: R. E. ODEH, University of Oregon

1. *Confounding in the  $3(2^{k-2})$  Designs*, P. W. M. JOHN, University of California, Davis.
2. *Estimation of the Interval Containing the Change in Mean Value*, D. E. ROBISON, Space Technology Laboratories, Inc.
3. *Exchangeable Processes Which are Functions of Stationary Markov Chains*, S. W. DHARMADHIKARI, University of California, Berkeley.
4. *Representations of Uniform Distributions as Convolutions*, RALPH STRAUCH, University of California, Berkeley.

**Contributed Papers Presented by Title**

*A Review of the Literature on a Class of Coverage Problems*, W. C. GUENTHER, University of Wyoming.

FRED C. ANDREWS  
Associate Secretary

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**REPORT OF THE OTTAWA, CANADA MEETING OF THE  
INSTITUTE OF MATHEMATICAL STATISTICS**

The 26th annual meeting, and 98th meeting, of the Institute of Mathematical Statistics was held on the campus of Carleton University at Ottawa, August 27–29, 1963, in conjunction with the 34th Session of the International Statistical

Institute and meetings of the International Union for the Scientific Study of Population.

L. LeCam, University of California, Berkeley, delivered the Wald Memorial Lectures on *Asymptotic Methods in Decision Theory*. H. Robbins, Columbia University, delivered the Rietz Lecture on *The Empirical Bayes Approach to Statistical Decision Problems*, and P. Whittle, University of Manchester, presented a Special Invited Paper on *Statistical Regulation Theory*.

There were about 660 persons attending the meetings, including 298 registered for the IMS meetings. Of this total, about 260 were members of the Institute.

### Program

**Monday, August 26, 1963**

**7:30 p.m.—1963 Council Meeting—Institute of Mathematical Statistics**

**Tuesday, August 27, 1963**

**8:30 a.m.—9:40 a.m.—Probability I**

Chairman: R. PYKE, University of Washington

1. *Renewal Theory Results for Distribution With Monotone Failure Rates*, R. E. BARLOW, San Jose State College and F. PROSCHAN, Boeing Scientific Research Laboratories.
2. *Stochastic Give-and-Take*, M. H. DEGROOT and M. M. RAO, Carnegie Institute of Technology.

**8:30 a.m.—9:40 a.m.—Contributed Papers I**

Chairman: J. D. BANKIER, MacMaster University

1. *Asymptotically Exact Truncation in Binomial Sequential Analysis* (Preliminary Report), H. T. DAVID and R. M. MENGIDO, Iowa State University.
2. *Single Sampling Inspection Plans Based on a Specified Acceptance Probability and Minimum Costs*, A. HALD, University of Copenhagen.
3. *Optimality and the OC Curve for the Wald Sequential Probability Ratio Test*, J. A. LECHNER, Westinghouse Research Laboratories.
4. *Sequential Optimum Procedures for Unbiased Estimation of a Binomial Parameter*, M. T. T. WASAN, Queen's University.

**9:50 a.m.—11:30 a.m.—Probability II**

Chairman: D. FELDMAN, Michigan State University

1. *On the Limit Behavior of Extreme Order Statistics*, O. BARNDORFF-NIELSEN, University of Minnesota.
2. *Markov Renewal Processes*, R. PYKE, University of Washington.
3. *On Stable Sequences of Events*, A. RÉNYI, Hungarian Academy of Sciences.

**1:00 p.m.—1:50 p.m.—Wald Lecture I**

Chairman: E. PARZEN, Stanford University

*Asymptotic Methods in Decision Theory I*, L. LECAM, University of California, Berkeley.

**2:00 p.m.—3:50 p.m.—Probability III**

Chairman: J. STAPLETON, Michigan State University

1. *Results and Problems in Branching Processes*, T. E. HARRIS, The RAND Corporation.
2. *Construction of a Relativistically Invariant Diffusion Process*, H. DINGES, University of Munich.
3. *About Lévy-Kolmogorov Inequalities*, D. DUGUÉ, University of Paris.

**2:00 p.m.—3:50 p.m.—Contributed Papers II**

Chairman: E. SAMUEL, Hebrew University

1. *Enumeration of Cyclic Paired-Comparison Designs*, H. A. DAVID, Virginia Polytechnic Institute.
2. *Applications of the Factorial Calculus to General Unequal Numbers Analyses*, W. T. FEDERER, Mathematics Research Center and M. ZELEN, National Institutes of Health.
3. *Founding 3(2<sup>5-2</sup>) Designs of Resolution V*, P. W. M. JOHN, University of California, Davis.
4. *Minimal Sufficient Statistics for the Group Divisible Partially Balanced Incomplete Block Design (GD-PBIB) with Interaction Under an Eisenhart Model II*, C. H. KAPADIA, Southern Methodist University and D. L. WEEKS, Oklahoma State University.

**4:00 p.m.—4:50 p.m.—Special Invited Address**

Chairman: L. KATZ, Michigan State University

*Statistical Regulation Theory*, P. WHITTLE, University of Manchester.

**5:00 p.m.—Business Meeting, Institute of Mathematical Statistics****8:00 p.m.—1964 Council Meeting, Institute of Mathematical Statistics****8:30 p.m.—Informal Party**

Wednesday, August 28, 1963

**8:30 a.m.—10:20 a.m.—Inference I**

Chairman: G. J. LIEBERMAN, Stanford University

1. *Stochastic Comparison of Tests*, R. R. BAHADUR, University of Chicago.
2. *On Stochastic Approximation Methods*, J. VENTER, University of Chicago.

**8:30 a.m.—10:20 a.m.—Contributed Papers III**

Chairman: R. GNANADESIKAN, Bell Telephone Laboratories

1. *A Characterization of Multisample Distribution Free Statistics* (Preliminary Report), C. B. BELL, San Diego State College.
2. *The Use of Quasi-Range in Setting Exact Confidence Bounds for the Standard Deviation of a Normal Population*, H. L. HARTER, Aeronautical Research Laboratories.
3. *Large Deviations in Multinomial Distributions*, W. HOEFFDING, University of North Carolina.
4. *Goodness Criteria for 2-Sample Distribution-Free Tests*, J. M. MOSER and C. B. BELL, San Diego State College.
5. *Estimation by Order Statistics When the Censored Minimum of Random Variables is Observed*, C. D. ROBERTS, National Institutes of Health.
6. *Ordering of Probabilities of Rank Orders: Fine Structure* (Preliminary Report), I. R. SAVAGE and M. SOBEL, University of Minnesota.

**10:30 a.m.—11:20 a.m.—Contributed Papers IV**

Chairman: W. HOEFFDING, University of North Carolina

1. *Sampling Properties of Tests for Categorical Data*, K. C. CHANDA, Iowa State University.
2. *Idempotent Transformations of a Random Variable* (Preliminary Report), N. C. SEVERO and P. J. SCHILLO, State University of New York, Buffalo.
3. *The Distribution of the Goodness-of-Fit Statistic  $U_N^2$* , M. A. STEPHENS, University of Toronto.

**1:00 p.m.—1:50 p.m.—Wald Lecture II**

Chairman: E. PARZEN, Stanford University

*Asymptotic Methods in Decision Theory II*, L. LECAM, University of California, Berkeley.

**2:00 p.m.—3:50 p.m.—Inference II**

Chairman: K. J. ARNOLD, Michigan State University

1. *The Rotating Arm Transformation*, R. S. PINKHAM and M. B. WILK, Rutgers University.
2. *Fiducial Prediction and Fiducial Consistency*, R. J. BUEHLER and F. L. RAMSEY, Iowa State University.
3. *Estimation of a Selection Function*, K. CRASWELL, University of Washington.

**2:00 p.m.—3:50 p.m.—Contributed Papers V**

Chairman: M. HALPERIN, Sperry Rand Research Center

1. *The Monotonicity of the Power Functions of Test Procedures for Two Multivariate Problems*, T. W. ANDERSON and S. DAS GUPTA, Columbia University.
2. *Posterior Odds for Multivariate Normal Classifications*, S. GEISSER, National Institutes of Health.
3. *Minimax Character of the  $R^2$ -Test in the Simplest Case*, N. GIRI and J. KIEFER, Cornell University.
4. *Simultaneous Tests for Equality of Covariance Matrices Against Certain Alternatives*, P. R. KRISHNAIAH, Aeronautical Research Laboratories.
5. *The Relation Between Pitman's Asymptotic Relative Efficiency of Two Tests and the Correlation Coefficient Between Their Test Statistics*, C. VAN EEDEN, University of Minnesota.

**4:00 p.m.—4:50 p.m.—Contributed Papers VI**

Chairman: M. V. JOHNS, JR., Stanford University

1. *Distribution of the Number of Admissible Points* (Preliminary Report), O. BARNDORFF-NIELSEN and M. SOBEL, University of Minnesota.
2. *A Note on Classical and Bayesian Prediction Intervals for Location, Scale, and Regression Models*, W. J. HALL, University of North Carolina and M. R. NOVICK, Educational Testing Service.

Thursday, August 29, 1963

**8:30 a.m.—10:20 a.m.—Bayesian Statistics I**

Chairman: J. PRATT, Harvard University

1. *Nonparametric Bayesian Estimation*, L. J. SAVAGE, University of Michigan.
2. *A Bayesian Approach to the Importance of Assumptions Applied to the Comparison of Variances*, G. E. P. BOX and G. C. TIAO, University of Wisconsin.

3. *Bayesian Analysis of Contingency Tables*, D. V. LINDLEY, University College of Wales.

**10:30 a.m.—11:20 a.m.—Rietz Lecture**

Chairman: J. PRATT, Harvard University

*The Empirical Bayes Approach to Statistical Decision Problems*, H. ROBBINS, Columbia University.

**1:00 p.m.—1:50 p.m.—Wald Lecture III**

Chairman: C. KRAFT, University of Minnesota

*Asymptotic Methods in Decision Theory III*, L. LECAM, University of California, Berkeley.

**2:00 p.m.—4:30 p.m.—Bayesian Statistics II**

Chairman: D. V. LINDLEY, University College of Wales

1. *What Are We Statisticians Agreed On?*, G. A. BARNARD, University of London.
2. *Bayesian Interpretation of Standard Inference Statements*, J. PRATT, Harvard University.
3. *On the Asymptotic Behavior of Bayes' Estimates in the Discrete Case*, D. A. FREEDMAN, University of California, Berkeley.
4. *A Stratified Model Using Prior Information*, W. A. ERICSON, University of Michigan.

**2:00 p.m.—4:30 p.m.—Contributed Papers VII**

Chairman: M. R. LEADBETTER, Research Triangle Institute

1. *Limiting Distributions of Random Sums of Independent Random Variables*, H. WITTENBERG, University of California, Berkeley.
2. *The Distribution of Products of Independent Random Variables* (Preliminary Report), M. D. SPRINGER, General Motors Research Laboratories and W. E. THOMPSON, University of New Mexico.
3. *Unbalanced Limit Theorems* (Preliminary Report), H. TEICHER, Purdue University.
4. *Some Results on Estimating the Number of Classes in a Discrete Uniform Population*, B. HARRIS, Mathematics Research Center.
5. *The Non-Linear Regression of Time Series*, D. R. BRILLINGER, Bell Telephone Laboratories, Inc., and Princeton University.
6. *Economic Partially Balanced 2<sup>n</sup> Factorial Fractions*, J. N. SRIVASTAVA and R. C. BOSE, University of North Carolina.
7. *A Class of Procedures with Monotonicity Properties for Four Problems in Multivariate Normal Statistical Analysis*, G. S. MUDHOLKAR, University of North Carolina.

**Contributed Papers by Title**

1. *Some Statistical Results in Renewal Theory*, T. N. BHARGAVA, Kent State University.
2. *Double Limit and Run Control Charts: Exact Statistical Properties*, J. TIAGO DE OLIVEIRA and S. B. LITTAUER, Columbia University.
3. *Poisson Regression: Confidence Limits and Tests of the Model*, J. J. GART, The Johns Hopkins University.
4. *Minimax Character of Hotelling's  $T^2$ -Test in the Simplest Case*, N. GIRI, J. KIEFER, Cornell University and C. STEIN, Stanford University.
5. *The Limit Distribution of a Binary Cascade Process* (Preliminary Report), P. E. NEY, Cornell University.
6. *A Method of Fitting the Regression Curve  $E(y) = \alpha + \delta x + \beta \rho^z$* , B. K. SHAH, University of Baroda and C. G. KHATRI, Gujarat University.
7. *Further Investigation in Fitting the Regression Curve of the Type  $E(y) = \alpha + \delta x + \beta \rho^z$* , B. K. SHAH, University of Baroda and C. G. KHATRI, Gujarat University.

8. *The Parametric and Non-Parametric Compound Decision Problems in the Sequence Case*, M. V. JOHNS, JR., Stanford University.
9. *On Characterizing Nonadditivity*, M. D. LUM, Aeronautical Research Laboratories.
10. *An Experimental Study of the Power of Goodness-of-Fit Tests*, R. C. TAEUBER, CEIR, Inc., C. J. BECKER, B. F. CRON and B. C. HASSELL, U. S. Navy Underwater Sound Laboratory.
11. *Probability Distribution of the Radial Error*, A. G. LAURENT, Wayne State University.
12. *A Ratio Limit Theorem for Cascade Processes*, P. E. NEY, Cornell University.
13. *On General Birth and Death Processes and Mission Reliability* (Preliminary Report), R. S. DICK, International Electric Corporation.
14. *Adequate Subfields and Almost Sufficiency*, O. BARNDORFF-NIELSEN and M. SKIBINSKY, University of Minnesota.
15. *Use of Behavioristic Models in Analysing Special (Pertaining to Space) Data—Part II*, S. K. KATTI, The Florida State University.
16. *On Head-of-the-Line Priority Queues*, P. D. WELCH, International Business Machines Research Center.
17. *Censored Least Squares Unbiased Linear Estimation for the Log Weibull (Extreme Value) Distribution*, J. S. WHITE, General Motors Research Laboratories.

SAMUEL W. GREENHOUSE  
Associate Secretary

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### PUBLICATIONS RECEIVED

- ANDO, ALBERT; FISHER, FRANKLIN and SIMON, HERBERT (1963). *Essays on the Structure of Social Science Models*. M.I.T. Press, Cambridge, Mass. 192 pp. \$5.00.
- CHRIST, CARL F. and Others (1963). *Measurement in Economics*. Stanford University Press. 319 pp. \$10.00.
- EISENHART, CHURCHILL; DEMING, LOLA S. and MARTIN, CELIA S. (1963). *Tables Describing Small-Sample Properties of the Mean, Median, Standard Deviation, and Other Statistics in Sampling from Various Distributions*. NBS Technical Note No. 191. U. S. Government Printing Office. 14 pp. 20 cents.
- FRAME, J. SUTHERLAND and McLEOD, JOHN (1963). *Buildings and Facilities for the Mathematical Sciences*. Conference Board of the Mathematical Sciences, Washington, D. C. 170 pp.
- NATRELLA, MARY GIBBONS (1963). *Experimental Statistics*. National Bureau of Standards, Washington, D. C. 360 pp. \$4.25.
- WILCOXON, FRANK; KATTI, S. K. and WILCOX, ROBERTA A. (1963). *Critical Values and Probability Levels for the Wilcoxon Rank Sum Test and the Wilcoxon Signed Rank Test*. American Cyanamid Company and Florida State University. 64 pp.
- Anuario Estadístico de España Edición Manual* (1963). Instituto Nacional de Estadística, Madrid. xxviii + 759 pp.
- Hungarian Problem Book, I and II*. Compiled by József Kurschák; Revised and Edited by G. Hajós, G. Neukomm, and J. Surányi; Translated by Elvira Rapaport. Published by Random House (New York) and L. W. Singer (Syracuse), 1963; vols. 11, 12 of the New Mathematical Library. Vol. I: viii + 111 pp, Vol. II: viii + 120 pp, Paper; \$1.95 each.