

NEWS AND NOTICES

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

Personal Items

Dr. Carl B. Allendoerfer, formerly Professor of Mathematics at Haverford College, Pennsylvania, has accepted an appointment as Professor and Executive Officer of the Mathematics Department, University of Washington, Seattle.

Mr. Ishver S. Bangdiwala, who came from India in 1950 to the University of North Carolina to do graduate work in statistics, has now been appointed as Assistant Consulting Statistician at the Agricultural Experiment Station, University of Puerto Rico, Rio Piedras, Puerto Rico.

Dr. Archie Blake has accepted a position as Head of the IBM Computing Section, Cornell Aeronautical Laboratory, Buffalo, New York.

Mr. K. A. Brownlee, formerly Chief, Test Design Branch, Plans and Evaluation Office, Dugway Proving Ground, Tooele, Utah, has joined the staff of the Committee on Statistics, University of Chicago, as an Assistant Professor. Mr. Brownlee's work will be principally in the Committee's Statistical Research Center.

Dr. Enrique Cansado, Professor at the University of Madrid and Chief of the Methodological Section of the Instituto Nacional de Estadística, Spain, has accepted a visiting assistant professorship in the Department of Mathematics, University of California, Los Angeles, to teach Stochastic Processes and Calculus of Probability for the academic year 1951-1952. During the previous academic year he held a Del Amo Foundation fellowship for research and studies in the U. S. A.

Dr. W. R. Church, Professor of Mathematics at the United States Naval Postgraduate School, has moved from Annapolis to Monterey, California. The Postgraduate School, which was founded at Annapolis and was a department of the U. S. Naval Academy, has been moved to Monterey.

Dr. C. W. Cotterman, formerly Associate Geneticist at the Heredity Clinic, University of Michigan, has joined the staff of the School of Veterinary Medicine, University of California, Davis.

Dr. Edgar P. King, who received his doctor's degree in mathematics in June, 1951, from the Carnegie Institute of Technology, is now employed as a mathematical statistician in the Statistical Engineering Laboratory, National Bureau of Standards, Washington D. C.

Dr. Kenneth H. Kramer, who received his doctor's degree in mathematics in February, 1952, from the Carnegie Institute of Technology, is now employed by the Youngstown Sheet and Tube Company, Youngstown, Ohio, as a development engineer on the staff of the Director of Mill Research and Development. In this job, he will serve in a consulting capacity on general statistical applications to quality control, production control and cost control.

Dr. R. A. Leibler of the Armed Forces Security Agency has accepted a position as mathematician at the Sandia Corporation, Albuquerque, New Mexico.

Dr. Ardie Lubin has left his position as Lecturer in Statistical Psychology at the Institute of Psychiatry, University of London, and is now a Research Psychologist with the Personnel Research Section, Adjutant-General's Office, U. S. Department of the Army.

Mr. John W. Morse, formerly Chief, Epidemiologic Studies Section, Venereal Disease Division, Federal Security Building, Washington, D. C., has been transferred to Chile as technical adviser in the field of health and vital statistics. The work is being sponsored by the United States TCA Point IV Program.

Mr. James A. Pierce, who has been doing graduate work in mathematics and acting as Graduate Assistant at Purdue University, is now employed by Consolidated Vultee Aircraft Corporation as an Aerophysics Engineer in an Armament Evaluation and Vulnerability Section of the Technical Design Department.

Dr. William J. Schull has accepted a position as Junior Geneticist at the Heredity Clinic, University of Michigan. He has spent the past two years in Japan as a statistical consultant with the Atomic Bomb Casualty Commission studying the effects of atomic radiation.

Dwarka Nath Nanda

Dwarka Nath Nanda died in Delhi, India, on March 9, 1952. He was the author of three contributions to multivariate statistical analysis, published in the *Annals of Mathematical Statistics* in 1948 and 1950.

Dr. Nanda was born on April 11, 1916, received the B.Sc. and M.A. degrees in Mathematics from the University of Agra, served as Statistician in the Punjab Agricultural Department for five and a half years and in the Imperial Council of Agricultural Research for two years and became Director of Statistics for the state of Mayurbhanj. He studied two years at the University of North Carolina and received the Ph.D. degree there in Mathematical Statistics in 1948.

On return from North Carolina he was appointed Assistant Professor of Statistics at the Indian Council of Agricultural Research. He relinquished this post in May, 1949, to take up the appointment of Senior Scientific Officer, Statistics, at the Technical Development Establishment Laboratories, Kanpur, under the Ministry of Defence, Government of India.

He is survived by his wife and three children.

Wald Memorial Fund

As a tribute in memory of the late Professor Abraham Wald, who was killed with Mrs. Wald in an airplane accident in India December 13, 1950, a group of friends and colleagues are establishing a fund to help in defraying the expenses of a college education for his two children, Betty, eight years old, and Bobby, now four.

Trustees of the fund are Theodore W. Anderson, Howard Levene, and Mortimer Spiegelman. Contributions may be made payable to WALD MEMORIAL FUND and may be sent to Howard Levene, Box 23 Fayerweather, Columbia University, New York 27, New York.

New Secretary-Treasurer

Professor K. J. Arnold of the University of Wisconsin has been elected by the Council of the Institute of Mathematical Statistics as Secretary-Treasurer for the term July 1, 1952, to June 30, 1955. He has also been appointed to an associate professorship at Michigan State College. The new business office of the Institute will be at the Department of Mathematics, Michigan State College, East Lansing, Michigan, during Professor Arnold's term of office. Professor Arnold will continue to reside in Madison, Wisconsin, until the end of August, and will receive mail during July and August at North Hall, University of Wisconsin, Madison 6, Wisconsin.

Preparation of Problem and Source Materials for the Mathematical Training of Social Scientists

As readers of the *Annals* probably know, a Committee on the Mathematical Training of Social Scientists has been at work for some time. The Committee includes representatives from the following associations and societies: American Anthropological Association, American Economics Association, American Educational Research Association, American Farm Economics Association, American Political Science Association, American Psychological Association, American Sociological Society, American Statistical Association, Econometric Society, Institute of Mathematical Statistics, Mathematical Association of America, and Psychometric Society.

As the result of a suggestion from this Committee, the Social Science Research Council is now sponsoring a small group to work during the summer of 1952 at Dartmouth College, Hanover, N. H. This group will attempt to compile from the literature of the various social sciences lists of problems, extracts from sources, and references to sources that illustrate varieties of uses of mathematics in the social sciences. These compilations are expected to serve a number of important ends—e.g., to provide mathematicians with material for use in texts and courses designed for social scientists, to indicate the general dimensions of the mathematical training appropriate for students of the social sciences now and in the future, and to facilitate the study of mathematics by social scientists for whom organized courses are not available.

This Committee believes that the group referred to would find it most helpful if it could have a wide variety of suggestions from the various areas concerned. A general appeal for such suggestions is hereby made. They should be sent to Professor William G. Madow, Chairman, Committee on the Mathematical Training of Social Scientists, Baker Library, Hanover, N. H., up to August 15, and thereafter University of Illinois, Urbana, Ill.

Although the Committee does not wish to limit the suggestions to specific types of material, it would prefer greater emphasis on materials relating to the use of mathematics in the social sciences themselves than on those relating to

statistics, since the materials necessary for statistics are better known. Moreover, the Committee would suggest that those who respond not concern themselves with questions of duplication of what others would say, but give as much information as possible. This first request for assistance is aimed at providing those who are interested in this subject with an opportunity to make their views known to the Committee in as general terms as they wish.

Finally, the Committee would appreciate learning where programs of mathematical training intended for social scientists are now in existence or in process of development, and where mathematics at the level of the calculus or higher is required for undergraduate or graduate degrees in the social sciences or may be substituted for another requirement for a degree in a social science.

Statistical Summer Session, July 29 to August 15, 1952

The Department of Statistics and the Statistical Laboratory in cooperation with the Department of Mathematics and the Department of Industrial Engineering of the Virginia Polytechnic Institute will conduct a special statistical summer session, July 29 to August 15, 1952. The program will be for graduate students, research workers, and technicians in government and industry. Special offerings will be given in the statistics of taste testing, bio-assay, sampling, and engineering research and production. For further details write the Department of Statistics, Virginia Polytechnic Institute, Blacksburg, Virginia.

Summer Seminar in Statistics

The third meeting of the Summer Seminar in Statistics will take place on the campus of the University of Connecticut, Storrs, Connecticut, during the three weeks of August 4-22, 1952. There will be one or two seminar sessions each day and a clinic on the treatment of problems in applications.

The first week, August 4-8, which will be devoted to the modifications of statistical techniques appropriate for chemistry, is being organized by Cuthbert Daniel and W. L. Gore. The second week, August 11-15, will be divided into two parts. The latter part, devoted to applications of minimax techniques, is being organized by J. L. Hodges. The third week, August 18-22, will be divided into two parts. The first part will be devoted to follow-up studies as they arise in medicine; this is being organized by Irwin Bross. The second part will be devoted to applications in actuarial work; this is being organized by Mortimer Spiegelman. Professor R. A. Fisher will be a member of the seminar during the first two weeks.

Those interested in the subjects under discussion are invited to attend by the day, week or other period. (A nominal registration fee will be collected.) For further information on reservations for campus housing, write to the Secretary of the Seminar, Professor D. F. Votaw, Jr., 210 Leet Oliver Memorial Hall, Yale University, New Haven, Connecticut. Suggestions of problems which might be presented before the clinic may also be sent to Professor Votaw.

Doctoral Dissertations in Statistics, 1951

Listed below are the doctorates conferred during the year 1951 in the United States and Canada for which the dissertations were written on topics in statistics (or for a degree in statistics). The university, month in which degree was conferred, major subject, minor subject, and the title of the dissertation are given in each case if available.

Helen Abbey (Doctor of Science in Hygiene), Johns Hopkins, June, major in biostatistics, "An Examination of the Reed-Frost Theory of Epidemics."

R. E. Bechhofer, Columbia, June, major in mathematical statistics, minor in statistical quality control, "The Effect of Preliminary Tests of Significance on the Size and Power of Certain Tests of Univariate Linear Hypotheses."

W. S. Connor, Jr., North Carolina, August, major in mathematical statistics, minor in economics, "The Structure of Balanced Incomplete Block Designs and the Impossibility of Certain Unsymmetrical Cases."

A. M. Dutton, Iowa State College, June, major in statistics, minor in genetics, "Statistical Analysis of Long-Term Agricultural Experiments."

L. A. Goodman, Princeton, October, major in mathematics, "The Estimation of Population Size Using Sequential Sampling Tagging Methods."

E. R. Immel, California, June, major in mathematics, "Problems of Estimation and of Hypothesis Testing Connected with Birth-and-Death Markov Processes."

G. B. Kallianpur, North Carolina, August, major in mathematical statistics, minor in mathematics, "Some Topics in the Theory of Stochastic Processes."

E. P. King, Carnegie Institute of Technology, June, major in mathematics, "The Operating Characteristic of the Control Chart for Sample Means when Process Standards Are Unspecified."

K. H. Kramer, Carnegie Institute of Technology, June, major in mathematics, "The Distribution of Range in Compositions of Normal Universes."

A. S. Littell (Doctor of Science in Public Health), Johns Hopkins, June, major in biostatistics, "Estimation of the T-Year Survival Rate from Follow-up Studies over a Limited Period of Time."

Paul Meier, Princeton, October, major in mathematics, "Weighted Means and Lattice Designs."

R. B. Murphy, Princeton, October, major in mathematics, "On Tests for Outlying Observations."

Ingram Olkin, North Carolina, June, major in mathematical statistics, minor in mathematics, "On Distribution Problems in Multivariate Analysis."

D. B. Owen, University of Washington, March, major in mathematics, "A Two Sample Test Procedure."

M. P. Peisakoff, Princeton, October, major in mathematics, "Transformation Parameters."

D. D. Rippe, Michigan, June, "Statistical Rank and Sampling Variation of the Results of Factorization of Covariance Matrices"

Milton Sobel, Columbia, January, major in mathematical statistics, minor in mathematics, "An Essentially Complete Class of Decision Functions for Certain Standard Sequential Problems."

W. F. Taylor, California, January, "On Tests of Hypotheses and Best Asymptotically Normal Estimates Related to Certain Biological Tests."

M. E. Terry, North Carolina, June, major in mathematical statistics, minor in experimental statistics and mathematics, "Some Rank Order Tests which are Most Powerful Against Specific Parametric Alternatives."

F. H. Tingey, University of Washington, August, major in mathematics, minor in meteorology, "Extension of Kolmogoroff Statistic to More Than One Dimension."

New Members

The following persons have been elected to membership in the Institute

(December 2, 1951 to March 1, 1952)

- Boretti, Lodovico**, Ph.D. (Univ. of Genoa), Assistant Professor of Mathematical Statistics, Institute of Statistics, University of Genoa, Italy.
- Borsting, Jack R.**, B.A. (Oregon State College, Corvallis), Graduate Assistant, Department of Mathematics, University of Oregon, Eugene, Oregon.
- Bowman, John R.**, Ph.D. (Univ. of Pittsburgh), Head, Department of Research in Physical Chemistry, Mellon Institute, Pittsburgh 13, Pennsylvania.
- Bush, Kenneth A.**, Ph.D. (Univ. of North Carolina), Associate Professor, Department of Mathematics, State University of New York, Champlain College, Plattsburgh, New York.
- Busk, Thøger**, B.Sc. (Univ. of Copenhagen), Statistician, W. H. O. Tuberculosis Research Office, Copenhagen, % *Dr. Tvaergade 41, III, Copenhagen, K., Denmark.*
- Ehrenfeld, Sylvain**, A.M. (Columbia Univ.), Graduate student, Department of Mathematical Statistics, Columbia University, *370 Columbus Avenue, New York 24, New York.*
- Elkin, William F.**, M.S. (Univ. of Michigan), Graduate Research Assistant, Department of Biostatistics, School of Public Health, University of North Carolina, Chapel Hill, North Carolina.
- Gomberg, Louis**, B.A. (New York University), Graduate Student, Department of Mathematical Statistics, Columbia University, *2120 Mapes Avenue, New York 60, New York.*
- Green, William K.**, M.A. (Univ. of Illinois), Analyst, Department of Defense, Armed Forces Security Agency, Washington, D. C., *Apartment 102, 6616 Willston Place, Falls Church, Virginia.*
- Hagan, John S.**, M.S. (St. Louis Univ.), Graduate student, Department of Mathematical Statistics, Columbia University, New York 27, New York, *4426 Broadway, Kansas City 2, Missouri.*
- Heimlich, C. Roger**, Student, Laboratory Instructor for Machine Methods, Purdue University, *726 N. Chauncey Avenue, West Lafayette, Indiana.*
- Ito, Koichi**, B.E. (Univ. of Tokyo), Graduate student, Department of Mathematics, Saint Louis University, *#83 Vandeventer Place, St. Louis 8, Missouri.*
- Jones, Wayne H.**, M.S. (Univ. of Chicago), Analytical Statistician, Personnel Research Section, Personnel Research and Procedures Branch, Adjutant General's Office, Department of the Army, Washington, D. C., *915 Cofer Road, Falls Church, Virginia.*

- Kozelka, Robert M.**, M.A. (Univ. of Minnesota), Graduate student, Department of Mathematics, Harvard University, *16 Usher Road, W. Medford 55, Massachusetts.*
- Lamke, Tom A.**, Ph.D. (Univ. of Wisconsin), Research Specialist, Bureau of Research, Iowa State Teachers College, Cedar Falls, Iowa.
- Lehrer, Thomas A.**, M.A. (Harvard), Graduate student, Department of Mathematics, Harvard University, *6 Kirkland Road, Cambridge 38, Massachusetts.*
- Lindquist, E. F.**, Ph.D. (State Univ. of Iowa), Professor of Education, College of Education, State University of Iowa, Iowa City, Iowa.
- Miller, Raphael**, M.A. (Yale), Graduate student, Department of Mathematics, Yale University, *104 York Square, New Haven, Connecticut.*
- Miyashita, Totaro**, M.A. (Univ. of Tokyo), Graduate student, Department of Economics, University of Chicago, *Room 472, International House, 1414 East 59th Street, Chicago 37, Illinois.*
- Moore, Roger H.**, B.S. (Univ. of Oregon), Research Assistant and Graduate student, Department of Mathematics, University of Oregon, *1319 East 15th Street, Eugene, Oregon.*
- Newell, Charles R.**, B.Sc. (Univ. of Toronto), Statistician, Norton Company, Chippawa, Ontario, *1761 Peer Street, Niagara Falls, Ontario, Canada.*
- Nicholson, Wesley L.**, A.B. (Univ. of Oregon), Research Assistant and Graduate student, Department of Mathematics, University of Oregon, *446 E. 13th Street, Eugene, Oregon.*
- North, John D.**, Chairman and Managing Director, Boulton Paul Aircraft, Ltd., Wolverhampton, England.
- Palmer, Boyd Z.**, B.A. (Earlham College, Richmond, Indiana), Graduate student, Department of Mathematical Statistics, University of North Carolina, *University Trailer Court, #95, Chapel Hill, North Carolina.*
- Romero, Mario G.**, Student, George Washington University, Washington, D. C. and employee of Section on Mathematical Statistics, Bureau of Statistics, Direccion General de Estadística, San Jose, Costa Rica, Central America.
- Rosenblatt, Harry M.**, B.S. (George Washington Univ.), Graduate student, Department of Mathematical Statistics, George Washington University, and Mathematical Statistician, Navy Department, Bureau of Ordnance, *506 Oglethorpe St., N. E., Washington D. C.*
- Schmid, John, Jr.**, Ph.D. (Univ. of Wisconsin), Assistant Professor and Examiner, Board of Examiners, Room 5, Berkey Hall, Michigan State College, East Lansing, Michigan.
- Tsao, Chia K.**, M.A. (Univ. of Oregon), Graduate Assistant, Statistical Laboratory, and graduate student, Department of Mathematics, University of Oregon, Eugene, Oregon.
- Tucker, Howard G.**, M.A. (Univ. of Calif.), Graduate student, Department of Mathematical Statistics, University of California, *1074 Spruce Street, Berkeley 7, California.*
- Uemura, Kazuo**, Kogakushi (Univ. of Tokyo), Graduate student, Department of Mathematical Statistics, University of North Carolina, *226 B. Dorm, Chapel Hill, North Carolina.*
- Walker, Andrew M.**, M.A. (Univ. of Cambridge), Research Assistant in Mathematical Statistics, Mathematics Department, The University, Manchester 13, England.
- Winston, Gerald**, M.A. (Columbia Univ.), Chief Statistician, Research and Development Branch, Philadelphia Quartermaster Depot, 2800 S. 20th St., Philadelphia 45, Pennsylvania.
- Zahl, Samuel**, B.S. (Univ. of Chicago), Graduate student, Department of Mathematics, University of Chicago, *4340 S. Drexel Boulevard, Chicago, Illinois.*

REPORT OF THE BLACKSBURG MEETING OF THE INSTITUTE

The fifty-first meeting of the Institute of Mathematical Statistics was held at the Virginia Polytechnic Institute, Blacksburg, Virginia on March 19-21, 1952, with the Biometric Society (Eastern North American Region). Ninety persons attended the meeting, including the following thirty-seven members of the Institute:

R. L. Anderson, R. E. Bechhofer, Z. W. Birnbaum, R. C. Bose, R. A. Bradley, A. E. Brandt, G. L. Burrows, E. L. Cox, Gertrude Cox, B. de Looz, D. B. Duncan, Churchill Eisenhart, R. E. Greenwood, R. J. Hader, Boyd Harshbarger, Harold Hotelling, Paul Irick, A. T. James, A. W. Kimball, C. F. Kossack, T. E. Kurtz, R. F. Link, Paul Meier, Sigeiti Moriguti, M. H. Quenouille, S. N. Roy, Henry Scheffé, S. A. Schmitt, H. Fairfield Smith, Harry Smith, Jr., Henry Teicher, M. E. Terry, J. W. Tukey, G. W. Tyler, Kazuo Uemura, D. L. Wallace, Lionel Weiss.

At the opening session, Wednesday morning, March 19, Professor M. H. Quenouille, Yale University, gave an address entitled *The Consequences of Testing Significance*. Professor J. M. Grayson, Virginia Polytechnic Institute, was the chairman and H. Fairfield Smith, North Carolina State College, was a discussant.

The second session, held Wednesday afternoon, at which Professor C. F. Kossack, Purdue University, was chairman, was devoted to *Multiple Comparisons*. At this session the following papers were given:

1. *On a Multiple Decision Procedure Associated with Certain Ranking Problems*. Robert E. Bechhofer, Columbia University.
2. *The Multiple Comparisons Test for Separating Ranked Treatments in an Analysis of Variance*. D. B. Duncan, Virginia Polytechnic Institute.
3. *Allowances for Various Types of Error Rates*. John W. Tukey, Princeton University.
4. *Short Cuts to Allowances*. R. F. Link and D. L. Wallace, Princeton University.

The Thursday morning session was devoted to contributed papers of the Biometric Society.

At 2:00 P.M., Thursday, Professor Robert J. Hader, North Carolina State College, gave an address on *Double Sampling Acceptance Inspection on Measurable Quality Characteristics*. Professor H. L. Manning, Virginia Polytechnic Institute, was chairman and Professor R. C. Bose, University of North Carolina, was a discussant.

At 3:30 P.M., Thursday, a joint session for contributed papers of the Institute and the Biometric Society was held with Professor P. S. Dear, Virginia Polytechnic Institute, as chairman. The following papers were presented:

1. *On the Approximation of Sampling Distributions by Punch Card Methods*. Carl F. Kossack and Lester L. Helms, Purdue University.
2. *Resolvable Incomplete Block Designs with Two Replications*. R. C. Bose and K. R. Nair, University of North Carolina.
3. *Rank Analysis of Incomplete Block Designs. I. The Method of Paired Comparisons*. R. A. Bradley and M. E. Terry, Virginia Polytechnic Institute.

4. *Multiple Regression with a Quantal Response*. D. B. Duncan and R. C. Rhodes, Virginia Polytechnic Institute.
5. *Rank Analysis of Incomplete Block Designs. II. The Method for Blocks of Three. Preliminary Report*. (By title.) R. A. Bradley and M. E. Terry, Virginia Polytechnic Institute.

At 7:00 P.M., Thursday, the banquet was held, with Professor Boyd Harshbarger, Virginia Polytechnic Institute, acting as chairman. Dr. Louis A. Pardue, Vice President of Virginia Polytechnic Institute, gave a welcome. Dr. H. N. Young, Director, Virginia Agricultural Experiment Station, gave an address entitled *Administration of Research*.

The Friday morning session was devoted to contributed papers of the Institute. Professor R. A. Bradley, Virginia Polytechnic Institute, was chairman. The following papers were presented:

1. *Limit Theorems Associated with Variants of the von Mises Statistic*. M. Rosenblatt, University of Chicago.
2. *A Modification of Schwarz's Inequality with Applications to Distributions*. Sigeiti Moriguti, University of North Carolina and University of Tokyo.
3. *Confidence Intervals of Fixed Geometric Size for Scale Parameters. Preliminary Report*. (By title.) Lionel Weiss, University of Virginia.
4. *On Lower Bounds of Powers of Certain Multivariate Tests*. S. N. Roy, University of North Carolina.
5. *Normal Multivariate Analysis and the Orthogonal Group*. A. T. James, Princeton University.
6. *Exact Formulae in Sequential Analysis for Exponential Distributions*. Johan H. B. Kemperman, Purdue University.
7. *A Note on a Generalized Behrens-Fisher Problem*. (By title.) Henry Scheffé, Columbia University.
8. *Large-Sample Confidence Intervals for Density Function Values at Percentage Points*. (By title.) John E. Walsh, China Lake, California.
9. *Sequential Sufficient Statistics*. (By title.) R. R. Bahadur, Delhi, India.
10. *Some Powerful Rank Order Tests*. (By title.) Wassily Hoeffding, University of North Carolina.
11. *Confidence Bounds for a Set of Means*. (By title.) D. A. S. Fraser, University of Toronto.

At 2:00 P.M., Friday, Dr. John H. Curtiss, National Bureau of Standards, gave an address entitled *Some Chain Functions Useful in the Monte Carlo Method*. Dr. L. A. Pardue, Virginia Polytechnic Institute, was chairman.

At 3:15 P.M., Friday, a session was held on *Experimental Design*, at which Mr. Glenn Burrows, Bureau of Agricultural Economics, acted as chairman and Professor R. C. Bose, University of North Carolina, was a discussant. The following papers were presented:

1. *Recent Developments in Incomplete Block Designs*. K. R. Nair, Forestry Research Institute, Dehra Dun, India.
2. *Latinized Rectangular Lattices*. Boyd Harshbarger, Virginia Polytechnic Institute.

BOYD HARSHBARGER
Assistant Secretary