quency ratios (= No. of 1's/No. of 0's) (a) converge to 1, (b) repeat periodically, (c) assume relative extrema by geometric progression of iteration order, (d) behave irregularly, i.e. neither (a), (b) nor (c),—if, and only if, the initiating process is (a) randomized, incl. conditioned processes, (b) periodic, (c) transient (single peaks or steps), (d) inductive. To (b): M. Kochen and E. H. Galanter (*Inform. Contr.* 1, 267–288 (1958)) determined the elements of minimal generating sets (mgs) for λ–placed binary numbers (here: periods), from which all others could be deduced by completion or by translation. By iterated addition (mod. 2), any periodic process generates periodically repeated arrays (of periodic processes), whose elements are exactly those of the mgs's, none of them occurring more than once. Since these arrays, in the average, imply more than 1 element, as λ increases, their number becomes progressively small if compared to the number of elements of the mgs's.

(*Additional abstract for the Cambridge Meeting of the Institute, August 25–29, 1958*)

30. **On the Bounds for the Variance of Mann-Whitney Statistic.** J. S. RUSTAGI, Michigan State University (By title)

Let $X_1, X_2, \cdots, X_m$ and $Y_1, Y_2, \cdots, Y_n$ be two random samples from strictly increasing continuous cumulative distribution functions (cdf's) $F(x)$ and $G(y)$ respectively. Then the Mann-Whitney statistic U is given by U = number of pairs (X_i, Y_j) such that $Y_j < X_i$, $i = 1, 2, \cdots, m$; $j = 1, 2, \cdots, n$. Let $L(t) = F(G^{-1}(t))$. Then variance of U, $V(U) = mn[(m-1)\int_0^1 (L(t) - kt)^2\,dt + A]$ where A is a constant free of $L(t)$ and $k = (n-1)/(m-1)$. Utilizing the techniques and results of an earlier paper by the author (*Ann. Math. Stat.*, Vol. 28, pp. 309–328), lower and upper bounds for $V(U)$ are determined in terms of $p = P(Y < X) = \int_{-\infty}^{\infty} F(t)\,dG(t) = 1 - \int_0^1 L(t)\,dt$. The problem essentially is that of minimizing and maximizing $\int_0^1 (L(t) - kt)^2\,dt$ over a class of cdf's $L(t)$ defined over [0, 1] such that $\int_0^1 L(t)\,dt = 1 - p$. Lower bounds are also obtained for $V(U)$ under an additional restriction that X is stochastically smaller than Y or $L(t) \geqq t$ for $0 \leqq t \leqq 1$. (Received July 7, 1958, revised November 24, 1958).

NEWS AND NOTICES

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

Personal Items

Frances Campbell Ameniya, formerly chairman of the Department of Mathematics at George Pepperdine College in Los Angeles, California, has been appointed Associate Professor of Mathematics at California Western University in San Diego, California.

R. E. Barlow is now working on a doctorate at Stanford while employed at Sylvania Electronic Defense Laboratory, Mt. View, California, as a mathematical statistician.

Ishu Bangdiwala is on a leave of absence from his position as Head of the Department of the Statistics Section of the Agricultural Experiment Station of the University of Puerto Rico, to accept the position as Assistant Director of Research in the Superior Council on Education, which is the governing board of the University.

Jerome Cornfield, assistant chief of the Biometrics Branch, Division of Re-

search Services, National Institute of Health, has been appointed to two professorships at the Johns Hopkins Medical Institutions. He is professor and chairman of the Department of Biostatistics in the School of Hygiene and Public Health, succeeding William G. Cochran, and also fills the newly created post of professor of Biomathematics in the School of Medicine.

John W. Cotton has returned to his post as assistant professor of Psychology at Northwestern University following a year as Postdoctoral Fellow in the Department of Statistics at the University of Chicago.

Jean Engler is spending her second year of a postdoctoral National Science Foundation Fellowship at the Department of Statistics, Harvard University.

Edgar H. Fickensher, formerly Principal of Oroville Union High School, Oroville, California, has moved to Stanford, California to finish work on a Ph.D. in Education.

Paul Gunther is currently working as a consultant in statistics and operations research.

Dr. Shanti S. Gupta spent the academic year 1957–58 as an associate professor in the Mathematics Department of the University of Alberta and later was a fellow at the Summer Research Institute of the Canadian Mathematical Congress at Queen's University. He has now joined the Bell Telephone Laboratories in Allentown, Pennsylvania as a member of the Technical Staff.

Dr. John W. Hamblen, formerly Associate Professor of Mathematics and Director of the Computing Center at Oklahoma State University, has been employed as full time Director of the Computing Center which has been established under the general supervision of the Office of the Vice President of the University of Kentucky.

Nancy Lee Hannye is now Assistant Professor at Michigan State University.

Dr. Bernard Harris has resigned his position as Mathematician, U. S. Department of Defense and accepted an appointment as Assistant Professor of Mathematics, University of Nebraska.

Assistant Professor L. L. Helms of Michigan State University has been appointed to an assistant professorship at the University of Illinois.

David Hogben has obtained a leave of absence from the Western Electric Co., Kearny, New Jersey, to pursue studies at Iowa State College for the Ph.D. degree.

John R. Howell has recently joined the staff of the University of Dayton Research Institute as head of the Computer Section.

Howard L. Jones has retired as General Supervisor of Statistics with the Illinois Bell Telephone Company, and has accepted an appointment as Professor of Statistics in the School of Business at the University of Chicago.

Dr. Orval M. Klose, formerly Associate Professor and Head of the Mathematics Department at Seattle University, has accepted a position as Associate Professor of Mathematics at Humboldt State College in Arcata, California.

John M. Leiman has resigned his position with the Personnel Laboratory,

Wright Air Division Center, and has accepted a position with System Development Corporation of Santa Monica, California.

Dr. Radha G. Laha has been appointed Research Assistant Professor in the Department of Mathematics at the Catholic University of America for the year 1958–59.

Ronald Pyke has accepted a position as Assistant Professor in the Department of Mathematical Statistics at Columbia University for the year 1958–59. He formerly held a similar position at Stanford University.

Philburn Ratoosh, on leave from the Ohio State University, is Visiting Associate Professor of Psychology, at the University of California, Berkeley, for 1958–59.

Enders A. Robinson has been appointed Assistant Professor in the Department of Mathematics at the University of Wisconsin, Madison, Wisconsin.

Jagdish S. Rustagi, formerly with the Department of Statistics, Michigan State University, has accepted the position of Reader in Statistics, Department of Mathematics, Muslim University, Aligarh, India.

Professor Henry Scheffé of the University of California will be Visiting Professor at Princeton University for the academic year 1958–59, where his work with the Statistical Techniques Research Group will be partially supported by a grant from the National Science Foundation.

After spending the 1957–1958 year as a Fellow at the Center for Advanced Study in the Behavioral Sciences, Sidney Siegel has returned to his position as Associate Professor of Psychology at Pennsylvania State University.

Jack Silber spent the summer of 1958 as Consultant to the Assistant for Operations Analysis, USAF and has returned to Roosevelt University as Professor of Mathematics and Acting Assistant to the Dean of Faculties.

Romuald Slimak has been recently appointed Manager, Univac Computing Center, Remington Rand Univac Division, Sperry Rand Corporation, 315 4th Avenue, New York 10, New York.

Seiji Sugihara is now Research Specialist at Lockheed Aircraft Corporation, Missile Systems Division, Sunnyvale, California.

Dr. Balkrishna V. Sukhatme has been appointed Professor of Statistics in the Indian Council of Agricultural Research, New Delhi, India.

Dr. John W. Wilkinson, Formerly Assistant Professor of Mathematics at Qeuen's University, Kingston, Ontario, has accepted a position as Research Statistician at Westinghouse Research Laboratories, Pittsburgh 35, Pennsylvania.

Dr. W. H. Williams has resigned as Assistant Professor of Statistics at Iowa State College to become Assistant Professor of Mathematics at McMaster University, Hamilton, Canada.

Mr. D. M. G. Wishart has been appointed Lecturer in Statistics in the Department of Pure Mathematics of the University of Birmingham, England, from October 1, 1958.

New Members

The following persons have been elected to membership in the Institute

June 23, 1958, to October 16, 1958

Adorno, David S., M.A. (Penn. State Univ.), Research Assistant, Dept. of Statistics, Harvard University, Cambridge, Mass.; *323 South Road, Bedford, Mass.*

Ando, Albert K., Ph.D. (Carnegie Inst. of Tech.), Assistant Professor, *Dept. of Economics, Massachusetts Institute of Technology, Cambridge 39, Mass.*

Bagai, Om Parkash, M.A. (Panjab, India), Student for Ph.D., Math., U.B.C., Vancouver, Canada; *Dept. of Math., U.B.C., Vancouver, Canada.*

Bardwell, George E., M.S. (Univ. of Colorado), Assistant Professor, University of Denver; *1445 Cleveland Place, Denver 2, Colorado.*

Barney, Jesus, C.P.A. (Monterrey Inst. of Tech.), Professor of Math. Stat. and Auditing, Monterrey Institute of Technology, Monterrey, N.L., Mexico; *Sucursal De Correos "J", Monterrey, N.L., Mexico.*

Cannon, L. Dennis, M.S. (Purdue Univ.), Graduate Research Assistant, Purdue University Statistical Laboratory, West Lafayette, Indiana; *137 South Salisbury St., West Lafayette, Indiana.*

Chacko, V. John, M.Sc. (Univ. of Trawaneore), Graduate Student, University of California (T.A.), University of California, Berkeley; *Dept. of Statistics, University of California, Berkeley 6, California.*

Chipman, John S., Ph.D. (The Johns Hopkins Univ.), Associate Professor of Economics, University of Minnesota, Minneapolis 14, Minn.; *Dept. of Economics, University of Minnesota, Minneaplis 14, Minn.*

Christie, Theodore J., B.S., (Rutgers Univ.), Doctoral Candidate, Dept. of Ind'l. and Admin. Eng'g., Cornell University, Ithaca, New York; *78 Roosevelt Street, Cresskill, New Jersey.*

Cogburn, Robert F., A.B. (Univ. of California), Student, University of California, Berkeley 4, California; *1716A Francisco, Berkeley 3, California.*

Copeland, Lewis C., Ph.D. (Duke Univ.), Acting Head of Dept. and Professor of Statistics, *Dept. of Statistics, University of Tennessee, Knoxville, Tenn.*

Corsten, Leo C. A., Dr. (Agr. Univ., Wageningen, Netherlands), Head, Statistical Dept., IVRO, Wagehingen, Netherlands; *400 Smith Ave., Chapel Hill, North Carolina.*

Current, James L., MAT (Indiana Univ.), Mathematician, National Security Agency, Washington 25, D. C.; *4521 29th Street, Mt. Rainier, Maryland.*

De Figueiredo, Djairo Guedes, C.E. (National School of Engineering, Rio de Janeiro, Brazil), fellowship from National Council of Researches (Brazil), New York University; *102-22 62nd Road, Forest Hills, 75, N. Y.*

Folks, John Leroy, Ph.D. (Iowa State College), Operations Research Engineer, Texas Instruments Incorporated, 13500 N. Central Expressway, Dallas, Texas; *P. O. Box 312, Dallas, Texas.*

Goldman, Herbert M., M.A. (Univ. of Illinois), Statistician, University of Illinois, Urbana, Illinois; *1111 S. Arbor Ave., Champaign, Ill.*

Foradori, George Thomas, M.S. (N. C. State College), Research Assistant, *Dept. of Experimental Statistics, N. C. State College, Raleigh, North Carolina.*

Gabriel, Kuno Ruben, Ph.D., (Hebrew Univ.), Instructor, *Hebrew University, Jerusalem, Israel.*

Hager, Frederick W., MS (Univ. of Delaware), Assistant Professor of Mathematics, *United States Naval Academy, Annapolis, Maryland.*

Hawthorne, George Boltz, Jr., M.S (Georgia Inst. of Tech.), Assistant Professor of E. E. and part-time student, *Georgia Institute of Technology; 225 North Avenue, Atlanta 13. Georgia.*

Hefner, Oscar V., B.S. (Georgia Inst. of Tech.), Graduate Student, Georgia Tech.; *Rich Electronic Computer Center, Ga. Tech., Atlanta 13, Ga.*

Hernandez, Antonio, Ingeniero Industrial, (Escuela Tecnica Superior de I.I.), Professor of Fundamental Statistics and Assistant to the Managing Director of G. E. Espanola, Escuela Tecnica Superior de I.I. and General Electrica Espanola, S.A., Campo de San Mames, Plaza de Federico Moyua 4, Bilbao, Spain; *Egana 14, Bilbao, Spain.*

Johnson, Linwood A., B.I.E., (Georgia Inst. of Tech.), Graduate Student, Georgia Institute of Technology, North Avenue, Atlanta, Ga.; *281 N. Colonial Homes Circle, N. W., Atlanta 9, Ga.*

Klotz, Jerome H., A.B., (Univ. of California), Research Assistant, University of California, Berkeley, California; *Dept. of Statistics, Univ. of California, Berkeley 4, California.*

Koenig, Robert A., M.S. (Rutgers Univ.), Statistician, National Lead Co., Titanium Division, P. O. Box 58, South Amboy, New Jersey; *4 Maple Avenue, Matawan, New Jersey.*

Larson, Harold J., M.S. (Iowa State College), General Electric Fellow in Statistics, Iowa State College; *Statistical Laboratory, Iowa State College, Ames, Iowa.*

Littell, Arthur S., Sc.D. (Johns Hopkins Univ.), Assistant Professor of Biostatistics, *Western Reserve University, School of Medicine, Cleveland 6, Ohio.*

McGahey, Mary B., B.S. (Radford College), Graduate Student in Statistics, V.P.I. Blacksburg, Va.; *Box 11—Station A, Radford, Virginia.*

Mallios, William S., B.S. (Purdue Univ.), Research Assistant, N. C. State College; *Box 5457, Raleigh, North Carolina.*

Maloney, Richard C., M.S., (Univ. of Southern California), Supervisor, Statistical Analysis Unit, Reliability Gp., Rocketdyne, 6633 Canoga Blvd., Canoga Park, California; *7112 Delco Ave., Canoga Park, California.*

Maxwell, William L., B.M.E. (Cornell Univ.), Graduate Student, Cornell University, Ithaca, New York; *Upson Hall, Cornell University, Ithaca, New York.*

Mendelsohn, Jay, B.A., (New York Univ.), Research Engineer, Grumman Aircraft Engineering Corporation, Bethpage, Long Island, New York; *150-40 71st Avenue, Flushing 67, New York.*

Mikhail, Wadie Fultas, M.Sc. (Univ. of Cairo, Egypt), Graduate Student, Dept. of Statistics, Univ. of North Carolina; *210 Phillips Hall, Chapel Hill, North Carolina.*

Neathammer, Robert D., M.A. (Univ. of Illinois), Mathematician, U. S. Navy Ammunition Depot, Quality Evaluation Laboratory, Crane, Indiana; *518 Cedar Street, Centralia, Illinois.*

Olson, Milton P., B.S. (Stanford Univ.), Student, Stanford University; *405 Park Street, Turlock, California.*

Patil, Ganapati P., M.Sc. (Univ. of Poona, India), Teaching Fellow, *Dept. of Mathematics, University of Michigan, Ann Arbor, Michigan.*

Ray, Santosh Kumar, M.Sc. (Lucknow Univ., India), Graduate Student and Research Assistant, *Dept. of Mathematical Statistics, Columbia University, New York 27, New York.*

Rhodes, Benjamin T., Jr., M.A. (Univ. of Texas), Graduate Assistant, Oklahoma State University, Stillwater, Oklahoma; *Unit 31, Apt. 1; North University Place, Stillwater, Oklahoma.*

Rivers, Joye Boring, MEd., (Univ. of Florida), Research Assistant and Student, Radar Development Branch, Engineering Experiment Station, Georgia Institute of Technology, 225 North Ave., Atlanta 13, Ga.; *4725 E. Conway Dr., N.W., Atlanta 5, Georgia.*

Rothstein, Marvin, M.S. (New York Univ.), Mathematician, Service Bureau Corp., 635 Madison Ave., New York, N. Y.; *66 West 53rd Street, New York, N. Y.*

Roy, Jagabrata, D.Phil. (Univ. of Calcutta), Lecturer, *Research and Training School, Indian Statistical Institute, 203 B.T. Rd., Calcutta 35, India.*

Shuford, Emir H., Jr., Ph.D. (Univ. of Illinois), Assistant Professor, Dept of Psychology, University of North Carolina, Chapel Hill, N. C.; *Psychometric Laboratory, University of North Carolina, Chapel Hill, N. C.*

Siniff, Donald B., M.S. (Michigan State Univ.), 2nd Lt., USAF, Student Mail Room, Box 5840, Harlingen AFB, Harlingen, Texas; *Box 432, Grafton, Ohio.*

Sowinski, John J., S.B. (Depaul Univ.), Research Statistician, The Toni Company, Division of the Gillette Company, *456 Merchandise Mart, Chicago, Ill.*

Starr, Selig, M.A., (George Washington Univ.), Head, Applied Mathematics and Statistics Group, Research and Development Dept., U.S. Naval Propellant Plant, Indian Head, Maryland; *812 University Blvd., E., Silver Spring, Md.*

Stiassny, Simon, M.A., (Univ. of California), Statistician, I.B.M. Research Center, *Box 218, Yorktown Heights, New York.*

Sullivan, Rebecca J., B.A. (Michigan State Univ.), Graduate Research Assistant, Dept. of Statistics, Michigan State University, East Lansing, Michigan; *2209 Alpha St., Lansing, Mich.*

Tsao, Rhett F.S., M.A. (Oklahoma State Univ.), Graduate Assistant in Statistics, Oklahoma State University, Stillwater, Oklahoma; *Statistical Laboratory Dept. of Mathematics, Oklahoma State University, Stillwater, Oklahoma.*

Vithayasai, Chitra, B.S. (Chulalongkorn Univ. of Thailand), Rice Statistician, Rice Dept., Ministry of Agriculture, Bangkok, Thailand; *Dept. of Plant Breeding, Cornell University, Ithaca, New York.*

Wagner, Harvey, M., M.S. (Stanford Univ.), Assistant Professor, *Industrial Engineering and Statistics, Stanford University, Stanford, California.*

West, Del L., B.S. (Southeastern State College), Graduate Assistant, Oklahoma State University, Stillwater, Oklahoma; *645 Bennett Dr., Stillwater, Okla.*

Wheatley, Thomas V., M.S. (Illinois Inst. of Tech.), Quality Control Engineer, Convair, A Division of General Dynamics, Pomona, California; *P. O. Box 884, Pomona, California.*

Woo, Jae Lin, M.S. (Massachusetts Inst. of Tech.), Instructor, Textile Eng'g., College of Engineering, Seoul National University, Seoul, Korea; *403 Beacon Street, Box 15, Massachusetts.*

Woo, Juo Chuan, M.S. (N. C. State College), Assistant Director of Processing Research, *The Textile Research Center, School of Textiles, N. C. State College, Raleigh, North Carolina.*

Yamane, Taro, Ph.D., (Univ. of Wisconsin), Assistant Professor, *New York University, School of Commerce, Dept. of Economics, Washington Square, New York 3, New York.*

Yamamoto, Sumiyasu, M.S. (Hiroshima Univ.), Professor of Statistics, *Dept. of Statistics, Nara Medical College Kashihara, Nara, Japan.*

Zadeh, Lofti A., Ph.D. (Columbia Univ.), Professor of Electrical Engineering, Columbia University, New York 27, New York; *850 James Street, Pelham Manor, New York.*

Zilmer, Delbert E., Ph.D. (Univ. of Wisconsin), Mathematician, U.S. Naval Ordnance Test Station, China Lake, California; *701-B Lexington Ave., China Lake, California*

SUMMER OFFERINGS IN STATISTICS AT IOWA STATE COLLEGE

The Department of Statistics at Iowa State College will offer six applied courses in statistical theory and methods in its two 1959 summer sessions. These courses are planned primarily for graduate students or research workers with limited mathematical backgrounds who wish to use statistical techniques intelligently for application to other fields. In addition, a course on special topics in theoretical or applied statistics may be studied at the graduate level. Senior staff members will be available during most of the summer for consultations on research or special problems.

Students may register for either or both of the six-week summer sessions: June 8–July 15 and July 15–August 21. The complete list of statistics offerings for the first session is as follows: Stat. 401, "Statistical Methods for Research Workers" (at the level of Snedecor's *Statistical Methods*): Stat. 447, "Statistical Theory for Research Workers" (mainly theory of experimental statistics at the level of Anderson and Bancroft's *Statistical Theory in Research*); Stat. 599, "Special Topics"; and Stat. 699, "Research." In the second session will be offered Stat. 402, a continuation of 401; Stat. 448, a continuation of 447; two courses in applied methods which are more specialized, Stat. 411, "Experimental Designs for Research Workers," and Stat. 421, "Survey Designs for Research Workers"; and finally Stat. 599 and 699. Additional information may be obtained from T. A. Bancroft, Department Head and Director, Statistical Laboratory, Iowa State College.

INTERDISCIPLINARY CONFERENCE ON SELF-ORGANIZING SYSTEMS

An Interdisciplinary Conference on Self-Organizing Systems will be held on May 5th and 6th, 1959, at the Museum of Science and Industry, Chicago, Illinois. The conference is to be co-sponsored by the Information Systems Branch of the Office of Naval Research and the Armour Research Foundation. The purpose of this conference is to bring together research workers in all fields of science who are concerned either with the development of self-adaptive information systems or with the conduct of research which may contribute to an improved understanding of cognitive, learning, and growth processes. Particular emphasis will be placed on theoretical models of systems which are capable of spontaneous classification, identification, and symbolization of their inputs.

Interested individuals may receive further information and a preliminary conference program when available by writing to Mr. Scott Cameron, ICSOS Conference Secretary, Armour Research Foundation, 10 West 35th Street, Chicago 16, Illinois.

A NEW JOURNAL OF STATISTICS

The Statistical Society of New South Wales, founded in 1947, is the only Society in Australia concerned with all aspects of statistics and related fields. Among its activities are general and section meetings and symposia. The latter have been attended by people from all over Australia. It has also published a Bulletin; the present editor is H. S. Konijn.

The Society has now been enabled to issue a printed Journal, to be called *The Australian Journal of Statistics*, and to be issued three times a year. The Editorial Board consists of H. S. Konijn, H. O. Lancaster and R. S. G. Rutherford (address: The University of Sydney, Sydney, Australia). The Journal expects to have contributions from Australia and abroad in the field of statistical theory and applications. Prospective authors are requested to send for a list of

instructions regarding the form of the manuscripts. Issues will be available to non-members at 10 shillings a copy.

NATIONAL SCIENCE FOUNDATION BULLETINS

The National Science Foundation announces a new series of bulletins which, when completed, will represent an inventory listing of all significant scientific information sources or activities within the Federal Government. The primary objective of this program is to make unclassified, unpublished scientific research information easily accessible and readily available to all U. S. scientists and engineers, both in and out of the Government.

An earlier NSF report, "Organization of the Federal Government for Scientific Activities", describes the pattern according to which the various Government agencies are organized for the conduct of basic research, applied research, development, and other scientific activities including scientific information. The documents in this series will present, for these same Government branches, information on general subject fields in which scientific reports are prepared, categories of scientific reports issued, policies regarding the announcement and availability of these reports to the scientific community, and locations and policies of the agencies' libraries and information centers, etc.

Bulletin No. 1, October 1958, gives information on the Department of Agriculture. Further information may be obtained from the URI Program Director, National Science Foundation, Science Information Service, Washington 25, D. C.

VISITING FOREIGN MATHEMATICIANS

The following list (dated October 27, 1958) of visiting foreign mathematicians has been received from the Division of Mathematics, National Academy of Sciences, National Research Council. The information given is, in order, the name, home country, host institution, and period of visit; AY stands for academic year. The names of persons whose visit terminates before May, 1959, have not been included.

ALVAREZ DE ARAYA, JORGE, Chile, University of Washington, Sept. 1958–Sept. 1959; AUSTIN, M., U. K., University of Wisconsin, Sept. 1958–Sept. 1959; BAAYEN, PIETER C., Netherlands, University of California, Berkeley, AY 1957–59; BESICOVITCH, A. S., England, University of Pennsylvania, Sept. 1958–June 1959; BIALYNICKI, ANDRZEJ, Poland, University of California, Berkeley, AY 1958–59; BLAKERS, ALBERT, Australia, Princeton University, Sept. 1958–August 1959; BOFINGER, VICTOR, Australia, North Carolina State College, June 1957–June 1959; CHAPMAN, SYDNEY, England, University of Michigan, 1958–59; CHARTRES, BRUCE A., Australia, Brown University and Massachusetts Institute of Technology, Sept. 1958–May 1959; CHWE, BYOUNG-SONG, Korea, University of California, Berkeley, AY 1957–59; CRAGGS, JAMES W., U. K., Brown University, Sept. 1958–Sept. 1959; DRAZIN, PHILIP G., England, Massachusetts Institute of Technology, Sept. 16, 1958–June 15, 1959; DUGUID, A. M., Australia, Brown University, Aug. 15. 1958–May 31, 1959; FLOR,

PETER, Australia, Duke University, July 1958–June 1959; FOGUEL, SHAUL R., Israel, University of California, Berkeley, Sept. 1958–June 1959; FUHRKEN, GEBHARD, Germany, University of California, Berkeley, AY 1957–59; GANI, JOSEPH M., Australia, Columbia University, Feb. 1959–Feb. 1960; GREWE, RUDOLF, Spain, University of California, Berkeley, AY 1957–59; GRIBBEN, RONALD J., England, Massachusetts Institute of Technology, Sept. 16, 1958–June 15, 1959; HA, KWANG CHUL, Korea, University of North Carolina, Sept. 15, 1958–June 30, 1959; HANO, JUN-ICHI, Japan, University of Chicago, Sept. 1, 1958–Aug. 31, 1959; HELMBERG, GILBERT M., Austria, Institute of Int. Education and Tulane University, July 1958–Sept. 1959; HELMS, HANS, Denmark, Tufts University, Sept. 1958–June 1959; HILTON, PETER, England, Cornell University, Sept. 1958–Sept. 1959; HULL, T. E., Canada, California Institute of Technology, Sept. 1, 1958–Aug. 31, 1959; IRMAY, SHRAGGA, Israel, Institute of Mathematical Sciences, New York University, Sept. 1958–August 1959; KLINGEN, HELMUT, Germany, University of California, Sept. 1958–June 1959; KRISTENSEN, LEIF, Denmark, Yale University, Aug. 1958–Aug. 1959; KRZYWICKI, A., Poland, University of Kansas, Oct. 1958–July 1959; LAHA, RADHA G., India, Catholic University, Sept. 1957–May 1959; LEIS, ROLF, Germany, Institute of Mathematical Sciences, New York University, Sept. 1958–Aug. 1959; LEVY, AZRIEL, Israel, Massachusetts Institute of Technology, Sept. 16, 1958–June 15, 1959; MATUSITA, KAMEO, Japan, Princeton University, AY 1958–59; MITCHELL, A. R., Scotland, California Institute of Technology, Mar. 1, 1959–Sept. 30, 1959; MORLAND, L. W., England, Brown University, Sept. 1, 1958–May 31, 1959; MOSTOWSKI, ANDRZEJ, Poland, University of California, Berkeley, Sept. 1958–June 1959; MUKI, R., Japan, Brown University, Sept. 15, 1958–June 30, 1959; MUNN, W. D., Scotland, Tulane University, Sept. 1958–Sept. 1960; NAGAO, HIROSI, Japan, University of Michigan, 1958–1959; NAGATA, MASAYOSHI, Japan, Harvard University, Sept. 1, 1958–June 30, 1959; NANNINI, AMOS, Italy, University of Minnesota, Sept. 1958–June 1959; OBATA, MORIO, Japan, University of Illinois, Sept. 1958–Sept. 1959; ODEH, FAROUK J. S., Jordan, University of California, Berkeley, AY 1956–59; OGAWA, JUNJIRO, Japan, University of North Carolina, August 1958–June 30, 1959; OHTSUKA, M., Japan, University of Kansas, March 1959–May 1959; OIKAWA, KOTARO, Japan, University of California, Los Angeles, July 1, 1958–June 30, 1959; O'KEEFFE, JEREMIAH, Ireland, Institute of Mathematical Sciences, New York University, Sept. 1958–August 1959; OKUBO, TANJIRO, Japan, State College of Washington, Sept. 16, 1958–June 10, 1959; PEDERSEN, FLEMMING PER, Denmark, University of Southern California, July 1958–July 1959; PLEIJEL, A., Sweden, University of Kansas, March 1959–May 1959; PLIS, ANDRZEJ, Poland, Institute of Mathematical Sciences, New York University, Sept. 1958–Aug. 1959; PROUDMAN, IAN, U. K., California Institute of Technology, Sept. 1958–Sept. 1959; ROHRL, HELMUT, Germany, University of Chicago, Oct. 1, 1958–June 30, 1959; RUBEN, HAROLD, England, Columbia University, AY 1957–59; RUTOVITZ, DENIS, So. Africa, University of California, Berkeley, Sept. 1958–June 1959; SABHARWAL, RANJIT SINGH, India, University of California, Berkeley, AY 1958–59; SABIDUSSI, GERT O., Austria, Tulane University, Sept. 1955–Sept. 1959; SAKURAI, AKIRA, Japan, Institute of Mathematical Sciences, New York University, Sept. 1958–Aug. 1959; SCHAEFER, HELMUT, W. Germany, State College of Washington, Mar. 19, 1958–July 1959; SCHMIDT, PALLE FROSIG, Denmark, University of Minnesota, Sept. 1958–Sept. 1959; SCHOPF, ANDREAS, Switzerland, American University and National Bureau of Standards, Oct. 1957–June 1959; SCRIBA, J. CRISTOPH, Germany, University of Massachusetts, Aug. 1958–Sept. 1959; SHISHA, OVED, Israel, Technion-Israel Institute, Sept. 1, 1958–June 30, 1959; SIOSON, FREDERICO M., Philippines, University of California, Berkeley, AY 1956–59; SKOVGAARD, H., Denmark, California Institute of Technology, Jan. 1, 1959–June 30, 1960; SZARSKI, J., Poland, University of Kansas, Oct. 1958–July 1959; VERMA, G. R., India, Institute of Mathematical Sciences, New York University, Sept. 1958–August 1959; VOGEL, WALTER, Germany, University of Chicago, Oct. 1958–June 1959; WALLACE, DAVID, U. K., Princeton University, Sept. 1958–Sept. 1959; WALTER, WOLFGANG, Germany, University of Maryland, Sept. 1, 1958–June 30, 1959; WATSON, GEOFFREY, Australia, Princeton University,

Sept. 1958–June 1959; WONG, YUNG-CHOW, Hong Kong, Institute for Advanced Study, Sept.–Dec. 1958, University of Chicago, Feb. 1–June 30, 1959; Sept. 1958–June 30, 1959; WOODS, A. C., England, Tulane University, Sept. 1957–Sept. 1959; YASUHARA, MITSURU, Japan, University of California, Berkeley, AY 1957–59; YEVDJEVICH, V. M., Yugoslavia, American University and National Bureau of Standards, Feb. 1958–June 1959; YOUNG, EUTIQUIO, Philippines, University of Maryland, Sept. 1958–Sept. 1959; ZADUNAISKY, PEDRO, Argentina, Princeton University, 1957–1959; ZASSENHAUS, H. J., Canada, California Institute of Technology, Sept. 1, 1958–Aug. 31, 1959.

SOUTHERN REGIONAL GRADUATE SUMMER SESSION IN STATISTICS AT NORTH CAROLINA COLLEGE, 1959

The 1959 session of the Southern Regional Graduate Summer Session in Statistics will be held at North Carolina State College, Raleigh, from June 8 to July 17, 1959.

North Carolina State College, Virginia Polytechnic Institute, University of Florida, and Oklahoma State University have agreed to operate a continuing program of graduate summer sessions in statistics to be held at each institution in rotation; the program was instituted at Virginia Polytechnic Institute in the summer of 1954.

The 1959 session, like previous sessions under this program, is intended to serve: 1) teachers of introductory statistical courses who want formal training in modern statistics; 2) research and professional workers who want intensive instruction in basic statistical concepts and modern statistical methodology; 3) professional statisticians who wish to keep informed about advanced specialized theory and methods; 4) prospective candidates for graduate degrees in statistics; and 5) graduate students in other fields who desire supporting work in statistics.

The session will last six weeks and courses will carry three semester hours of credit. Not more than two courses may be taken for credit at any one session. The summer work in statistics may be applied as residence credit at any of the cooperating institutions, as well as certain other universities, in partial fulfillment of the requirements for a graduate degree. The program may be entered at any session, and consecutive courses will follow in successive summers so that it would be possible for a student to complete the course work in statistics for a Master's degree in three summers. Students must satisfy the remaining requirements for course work and thesis at the institution where they are to be admitted to candidacy. The advanced courses may be accepted as part of the Ph.D. program of the participating institutions.

The National Science Foundation is offering grants to college teachers of introductory statistics who wish to attend the 1959 session. Stipends of $75 per week for the six weeks of the session plus $15 per week per dependent (up to four) will be made available for a maximum of 30 applicants; in addition, there will be a travel allowance of 4 cents per mile, round trip. Tuition and fees will be paid

by the National Science Foundation. Participants will normally be enrolled in classes for graduate credit.

The courses to be offered in statistics in 1959 at Raleigh are as follows: Statistical Methods I and II, Statistical Theory I, II, and III, Theory of Sampling Applied to Survey Design, Stochastic Processes and Their Applications, Methods of Operations Research, Advanced Topics in Statistical Methods.

A number of courses will, in addition, be available in the Mathematics Department. Courses to be offered during the June 8–July 17 period of the Summer Session in Statistics include: Differential Equations, Introduction to Determinants and Matrices, Introduction to Applied Mathematics, Numerical Analysis, Advanced Calculus I, Boundary Value Problems.

(For students interested in the regular 12-week summer session at North Carolina State College, additional Mathematics courses are available: Advanced Calculus II and Advanced Differential Equations will be offered in the second 6-week session beginning July 20; Complex Variable Theory and Vector Spaces and Matrices will be offered over the 12 weeks of both sessions.) The formal course offerings will be supplemented by seminars and special lectures.

Teachers under National Science Foundation grants will probably be interested primarily in the Statistical Methods and Statistical Theory sequences and in Sampling.

Applicants for National Science Foundation grants will be selected on the basis of interest in continued teaching of statistics, evidence of excellence as a teacher, previous academic record of the applicant, number of introductory statistics courses now teaching, and number of students contacted. Applications must be received not later than February 16, 1959 to be assured of full consideration. Applicants will be notified of the selection committee's action not later than March 16, 1959, and must accept (or decline) a fellowship award not later than April 1, 1959.

Requests for application blanks for the summer school and for National Science Foundation grants should be addressed to: F. E. McVay, Department of Experimental Statistics, North Carolina State College, Raleigh, North Carolina.

REPORT OF THE MONTEREY, CALIFORNIA, MEETING OF THE INSTITUTE OF MATHEMATICAL STATISTICS

The seventy-ninth meeting of The Institute of Mathematical Statistics, a Western Region Meeting, was held in Spanagel Hall on the campus of the United States Naval Postgraduate School at Monterey, California, on November 14–15, 1958.

The Chairman of the Program Committee was Richard Link. David Stoller acted as chairman in his absence.

Sixty-one people registered for the meeting. Forty-six members of the Institute attended.

The program for the meeting was as follows:

FRIDAY, NOVEMBER 14, 1958

Welcoming Remarks, Rear Admiral E. E. Yeomans, Superintendent, U. S. Naval Postgraduate School.

10:00–12:00 a.m. Special Topics (I)

Chairman: CHARLES B. BELL, San Diego State College.

1. *Multivariate Tchebycheff Inequalities*, INGRAM OLKIN, Michigan State University.
2. *Evaluation of Extreme Tail Probabilities*, DAVID BLACKWELL AND JOSEPH HODGES, University of California.

1:30–2:30 p.m. Multiple Comparisons and Decisions

Chairman: FRED C. ANDREWS, University of Oregon.

1. *Multiple Decision-Ranking Procedures*, ROBERT E. BECHHOFER, Cornell University.
2. *Estimation of the Means of Dependent Variables*, OLIVE JEAN DUNN, Iowa State College (now at University of California, Los Angeles).

2:45–4:00 p.m. Special Topics (II)

Chairman: OLIVE JEAN DUNN, Univ. of California, Los Angeles.

1. *Statistical Problems in Radio Wave Propagation*, WILLIAM C. HOFFMAN, RAND Corporation.
2. *Stochastic Models for the Electron Multiplier Tube*, HOWARD G. TUCKER, University of California, Riverside.
3. *On a Multicompartment Migration Model with Chronic Feeding—Preliminary Report*, D. WIGGINS, Hanford Laboratory.

SATURDAY, NOVEMBER 15, 1958

10:00–12:00 a.m. Experimental Design and Analysis

Chairman: DAVID S. STOLLER, The RAND Corporation.

1. *Sequential Design of Experiments*, HERMAN CHERNOFF, Stanford Univ.
2. *Tests Associated with Poisson Processes*, BENJAMIN EPSTEIN, Wayne State University.

1:30–3:30 p.m. Contributed Papers

Chairman: HERMAN RUBIN, University of Oregon

1. *On Computing Expectations in Sequential Analysis*, FRED C. ANDREWS, University of Oregon, and J. R. Blum, Indiana University.
2. *Exact Nonparametric Tests for Randomized Blocks*, JOHN E. WALSH, Systems Development Corporation. (By title)
3. *On the Determination of Joint Distributions from the Marginal Distributions of Linear Combinations*, THOMAS S. FERGUSON, University of California, Los Angeles.
4. *Approximation to the Probability Density of Zero—Crossing Intervals of a Gaussian Process*, SYLVAIN EHRENFELD, New York University. (By title)
5. *The Probability in the Extreme Tail of a Convolution*, DAVID BLACKWELL AND J. L. HODGES, JR., Univ. of California. (By title)
6. *Asymptotic Methods of Evaluating the Integral from a to* ∞ *of* $f(x)$, WYMAN RICHARDSON, Univ. of North Carolina. (By title)
7. *Some Properties of Binary Arrays which are Generated by Iterated Sequences and Reversals*, H. VON GUERARD, Lockheed Aircraft Corporation.

GERALD J. LIEBERMAN
Associate Secretary

FINAL REPORT OF THE EDITORS OF THE ANNALS FOR 1958

The *Annals* is indebted to the following people who have generously given refereeing assistance: G. Albert, T. W. Anderson, E. Barankin, G. A. Barnard, G. Baxter, V. E. Benes, A. Birnbaum, D. Blackwell, J. Blum, R. Blumenthal, C. Blyth, L. Breiman, R. Bradt, K. A. Bush, V. J. Chacko, D. Champernowne, H. Chernoff, A. Clarke, A. C. Cohen, W. S. Connor, J. Cornfield, D. R. Cox, H. David, K. Dawson, R. Dawson, L. E. Dubins, A. Duncan, Olive J. Dunn, J. Durbin, P. S. Dwyer, G. Elfving, B. Epstein, T. Ferguson, G. H. Freeman, S. G. Ghurye, I. J. Good, B. Greenberg, U. Glenander, F. Graybill, F. Grubbs, E. J. Gumbel, S. S. Gupta, J. Hannan, Nancy Lee Hannye, M. Hansen, J. L. Hodges, Jr., W. Hoeffding, H. Hotelling, S. Hunter, G. S. James, A. Joffee, G. M. Jenkins, V. Johns, M. Juncosa, L. Katz, E. S. Keeping, D. G. Kendall, S. Kullback, R. Laha, L. LeCam, R. A. Leibler, E. Lukacs, A. Madansky, W. Madow, C. Mallows, T. K. Matthes, J. McGregor, B. McMillan, D. Mesner, A. Mood, R. B. Murphy, P. E. Ney, I. Olkin, E. Parzen, M. P. Peisakoff, K. Pillai, J. W. Pratt, W. E. Pruitt, R. Pyke, C. R. Rao, E. Reich, J. Riordan, D. Robson, Joan Rosenblatt, M. Rosenblatt, S. N. Roy, H. Rubin, J. Sacks, I. R. Savage, L. J. Savage, Rosedith Sitgreaves, J. L. Snell, M. Sobel, C. M. Stein, Charlotte Striebel, J. C. Tanner, R. F. Tate, H. Teicher, D. Teichroew, A. J. Thomasian, D. R. Truax, S. Vajda, H. R. Van der Vaart, D. Votaw, D. L. Wallace, L. Wegner, B. L. Welch, O. Wesler, R. F. White, R. Wijsman, M. B. Wilk, E. Williams, D. G. Wishart, A. Wortham, Ying Yao, M. Zelen.

December 3, 1958

T. E. Harris, *Editor*
(before July 1, 1958)
William Kruskal, *Editor*
(after June 30, 1958)

PUBLICATIONS RECEIVED

Moore, Geoffrey H., *Measuring Recessions*, Occasional Paper 61, National Bureau of Economic Research, Inc., New York, 1958 (Reprinted from the June 1958 issue of the *Journal of the American Statistical Association*), $1.00.