

NEWS AND NOTICES

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

Personal Items

Gordon R. Antelman has been a visiting research associate in the Department of Statistics, the Florida State University for the summer of 1965. During 1965-66, he will be on leave from his regular position at the University of Chicago and will hold a visiting appointment at the Institut for Matematisk Statistik, Copenhagen, Denmark.

Harald E. Bergstrom, Director of the Joint Mathematical Institute, Chalmers University of Technology and the University of Gothenburg, Sweden, will be Visiting Professor in the Department of Statistics, the Florida State University, Tallahassee, for the period January through August, 1966. Professor Bergstrom will offer advanced work in probability and continue his own research in this area.

Assistant Professor Theophilos Cacoullas has taken a position as Assistant Professor at the New York University in the School of Engineering and Science.

Dr. Milkos Csörgö is now at McGill University as an Assistant Professor in the Department of Mathematics.

George L. Edgett, Professor of Mathematics, Queen's University, Canada, has completed a summer visiting professorship appointment at the Department of Statistics, the Florida State University and resumed his duties at Queen's University.

Friedhelm Eicker, on leave from the University of Freiburg, will be a Visiting Professor during the academic year 1965-66 at the Department of Statistics, Columbia University.

Dr. E. Henze, as of September 1, 1965, assumed the position of Professor and Director of the Institute of Applied Mathematics at the Technical University of Braunschweig.

Myles Hollander has completed the doctorate in statistics at Stanford University and joined the Department of Statistics, the Florida State University, Tallahassee, as Assistant Professor of Statistics. At the Florida State University he will be engaged in teaching and research, the latter as co-director of a research project with Richard G. Cornell.

Naresh C. Jain has joined the Department of Mathematics, University of Minnesota, Minneapolis, as a Visiting Assistant Professor. He graduated in Mathematics from Stanford University in June, 1965.

Dr. Carl F. Kossack has been appointed Professor of Statistics and Head of the Department of Statistics at the University of Georgia. He was formerly Director of the Laboratory for Computer Sciences, Graduate Research Center of the Southwest, Dallas.

Associate Professor Charles Kraft has taken a position as Professor in the Math Department of the University of Montreal.

Professor A. G. Laurent has returned to his position as Professor of Statistics at Wayne State University after being on leave for two years in Cambodia where he was Professor at the Faculty of Law and statistical advisor to the Cambodian Government.

Dr. V. Mandrekar, Research Associate, has been appointed Assistant Professor in the Statistics Department, University of Minnesota.

Professor Herbert Robbins of Columbia University will spend the first half of the 1965-66 academic year as a Visiting Professor of Statistics at the University of Minnesota, and the second half year at Purdue.

Professor Murray Rosenblatt of the University of California, San Diego, will visit University College, London, during the academic year 1965-66.

Robert E. Serfling resigned his position with the U. S. Public Health Service to accept an appointment as Professor of Biostatistics, Department of Tropical Medicine and Public Health, Tulane University Medical School, New Orleans. During the next two years he will be engaged in research sponsored by Tulane University and the Division of General Medicine Science, NIH, at the University of Michigan.

Jesse M. Shapiro has been promoted from Assistant Professor of Mathematics to Professor of Mathematics at the Ohio State University.

Norman Starr, having completed his Ph.D. at Columbia University, has taken a position as Assistant Professor in the University of Minnesota Statistics Department.

Dr. Charlotte Striebel of Lockheed Missile and Space Company has taken a position as Associate Professor of Statistics at the University of Minnesota.

William A. Thompson, Jr., Department of Statistics, the Florida State University, will be a speaker on a symposium on bulk sampling scheduled for November 15-18 in Tokyo, Japan.

Associate Professor Constance van Eeden has taken a position as Associate Professor in the Math Department of the University of Montreal.

Dr. Marvin Zelen was awarded a Senior Fulbright Research award for study in England. He will be on leave of absence from the National Institutes of Health during the 1965-66 academic year.

Paul M. Blunk, of Fair Oaks, California, recently passed away.

New Members

Allingham, Richard Malcolm, B.S., (University of Toronto); Graduate Student, Department of Mathematical Statistics, University of Toronto; *15 Burnhamthorpe Pk. Blvd., 15 Lington, Ontario.*

Andrews, Jon I., Student, Harvey Mudd College, Claremont, California.

Bell, Jerry J., Student, University of Tennessee; *Apt. 136-D, Taliwa Courts, Knoxville, Tennessee.*

Borden, Stephen W., B.Eng.Phys., (Cornell University); Mathematics Teacher, Collegiate School, New York; *81 Horatio Street, New York, New York 10014.*

Chang, Gordon, M.S., (Virginia Polytechnical Institute); Assistant Instructor, Department of Statistics, University of Missouri.

Clement, Bernard, M.Sc., (University of Montreal); Graduate Student/Teaching Assistant, University of Montreal; *1027 Osborne, Verdun, Montreal 19, Quebec.*

- Cohen, Ayala**, B.Sc., (The Hebrew University, Jerusalem); Graduate Student, The Johns Hopkins University; *3301 St. Paul, Baltimore 18, Maryland.*
- Curtis, E. Count**, Ph.D., (Dartmouth College); Associate, Daniel H. Wagner, Associates, Paoli, Pennsylvania; *Indian Run Farm, 200 S. Pottstown Pike, Exton, Pennsylvania 19341.*
- Fienberg, Stephen E.**, A. M., (Harvard University); Graduate Student, Department of Statistics, Harvard University.
- Geoffrion, Arthur M.**, Ph.D., (Stanford University); Assistant Professor of Business Administration, University of California, Los Angeles; *11933 Mayfield Avenue, Apt. 4, Los Angeles 49, California.*
- Grossman, Merlin, A.**, M.S., (University of Southern California); Project Manager, LEM-AGS Reliability, TRW Systems Group; *24011 Bessemer Street, Woodland Hills, California, 91364.*
- Harris, Carl M.**, M.S., (Polytechnic Institute of Brooklyn); Research Engineer, Western Electric Co.; *180 Franklin Corner Road, Trenton, New Jersey 08638.*
- Hedayat, Abdossamad**, M.S., (Tehran University); Graduate Student, Biometrics Unit, Cornell University.
- Horn, Susan Dadakis**, B.A., (Cornell University); Graduate Student, Department of Plant Breeding, Cornell University.
- Johnson, Bruce McK.**, Ph.D., (Cornell University); Assistant Professor, Department of Statistics, University of Connecticut.
- Johnson, Paul J.**, M.S., (Stanford University); Member of Technical Staff, Bellcomm, Inc., Washington, D.C.
- Johnston, James William**, M.S., (St. Mary's University); Graduate Student, Department of Statistics, Kansas State University.
- Merrington, Maxine Patricia Mary**, B.Sc., (University of London); Research Assistant and Demonstrator, Department of Statistics, University College, London.
- Mihram, George Arthur**, Ph.D., (Oklahoma State University); Mathematical Statistician, Operations Research Incorporated; *Flat 508, 5309 Riverdale Road, Riverdale, Maryland.*
- Moser, Joseph G.**, M.S., (Purdue University); Associate, Daniel H. Wagner, Associates, Paoli, Pennsylvania.
- Nixon, David E.**, Ph.D., (North Carolina State University); Assistant Professor of Mathematics, University of North Carolina, Charlotte; *4508 Thornwood Road, Charlotte, North Carolina.*
- Ortolani, Wayne B.**, B.S., (University of Houston); Analyst Programmer I, City of Houston; *2208 Jean, Houston, Texas 77023.*
- Oyelese, John Oyedokun**, B.Sc., (University of Birmingham); Graduate Student, Department of Statistics, University of California, Berkeley.
- Ozkan, Fuat**, M.S., (University of Minnesota); Statistician, Swift and Co., Research and Development, Packers and Exchange Avenue, Chicago.
- Pierce, David A.**, B.A., (Carleton College); Graduate Student, Department of Statistics, University of Wisconsin; *207 Bernard Court, Madison, Wisconsin 53715.*
- Prescott, Edward C.**, M.S., (Case Institute of Technology); Graduate Student, Carnegie Technical Institute; *6038 Jackson Street, Pittsburgh, Pennsylvania 15206.*
- Rubinovitch, Michael**, B.Sc., (Israel Institute of Technology); Graduate Student, Department of Industrial Engineering, Cornell University; *110 Stewart Avenue, Ithaca, New York 14850.*
- Scheaffer, Richard L.**, M.A., (Buchnell University); Graduate Student, Florida State University; *Route 4, Box 49A, Tallahassee, Florida 32301.*
- Schlaepfi, James E.**, A.B., (Harvard University); Graduate Student, University of Minnesota; *1941 Saunders Avenue, St. Paul, Minnesota 55116.*
- Shah, B. K.**, M.Sc., (University of Baroda); Graduate Student, Department of Statistics, Yale University.

- Shonick, William, M.A.**, (George Washington University); Graduate Student, University of California, Los Angeles; *1610 Greenfield Avenue, Los Angeles, California 90025*.
- Stong, Emily W., B.A.**, (Lawrence College); Research Assistant/Graduate Student, Department of Mathematical Statistics, Columbia University.
- Varahamurti, Raghavendra Krishnachar, M.A.**, (Karnatak University); Graduate Student/Research Assistant, Department of Mathematics, University of Alberta.
- van Bell, Gerald, M.A.**, (University of Toronto); Graduate Student, Department of Mathematics, University of Toronto.
- Woodworth, George G., B.A.**, (Carleton College); Graduate Student/Research Assistant, Department of Statistics, University of Minnesota.
- Yerman, Edwin A., M.A.**, (California State College, Los Angeles); Graduate Student/Research Assistant, Department of Statistics, Michigan State University.

ABSTRACT DEADLINES

All abstracts must be submitted in duplicate on abstract blanks to the Managing Editor, Paul L. Meyer, Department of Mathematics, Washington State University, Pullman, Washington 99163, at least 50 days before the first day of the meeting at which the paper is to be presented.

Specifically, the following deadline dates must be observed for the indicated meetings:

February 1, 1966 for the Central Regional meeting at Lafayette, Indiana;

March 8, 1966 for the Eastern Regional meeting at Brookhaven National Laboratories, Upton, Long Island, New York.

VISITING LECTURE PROGRAM IN STATISTICS

A visiting lecturer program in statistics has been organized for the third successive year. The program is sponsored jointly by the principal statistical organizations in the United States, the American Statistical Association, the Biometric Society and the Institute of Mathematical Statistics. The National Science Foundation provides financial support. Leading teachers and research workers in statistics—from universities, industry and government—have agreed to participate as lecturers. Lecture topics include subjects in experimental and theoretical statistics, as well as in such related areas as probability theory, information theory and stochastic models in the physical, biological, and social sciences. Inquiries should be addressed to: Visiting Lecturer Program in Statistics, Department of Statistics, 315 Phillips Hall, University of North Carolina, Chapel Hill, N. C. 27515.

The participating lecturers are: T. W. Anderson (Columbia University), C. A. Bennett (General Electric Co.), Z. W. Birnbaum (University of Washington), R. A. Bradley (Florida State University), H. Chernoff (Stanford University), W. G. Cochran (Harvard University), C. Daniel (Consultant), A. P. Dempster (Harvard University), W. J. Dixon (University of California, Los Angeles), S. Ehrenfeld (New York University), B. Epstein (Consultant), T. S. Ferguson (University of California, Los Angeles), J. L. Folks (Oklahoma State University), S. G. Ghurye (Indiana University), F. A. Graybill (Colorado State University), S. S. Gupta (Purdue University), R. V. Hogg (University of Iowa), L. Katz

(Michigan State University), L. H. Koopmans (University of New Mexico), R. M. Kozelka (Williams College), F. C. Leone (Case Institute of Technology), L. E. Moses (Stanford University), J. Neyman (University of California Berkeley), I. Olkin (Stanford University), F. Proschan (Boeing), J. R. Rosenblatt (National Bureau of Standards), J. Rosenblatt (University of New Mexico), I. R. Savage (Florida State University), M. Sobel (University of Minnesota), W. L. Smith (University of North Carolina), M. E. Terry (Bell Telephone Laboratories), G. S. Watson (Johns Hopkins University), O. Wesler (North Carolina State University), W. J. Youden (George Washington University), J. Wolfowitz (Cornell University).

The organizing committee consists of: Herbert T. David, W. J. Hall (Chairman), Allyn W. Kimball, L. H. Koopmans, and George J. Resnikoff.

DOCTORAL DISSERTATIONS

Readers are invited to submit information about doctorates received during 1965 for inclusion in the list to appear in the April issue. The list gives the doctor's name, institution, major subject and title of dissertation. To be included, the information should reach the Editor by February 1, 1966.

REPORT OF THE PRESIDENT FOR 1965

During the past year the Institute of Mathematical Statistics continued a forward stride in the development of its professional activities. Publication of the *Annals of Mathematical Statistics* is our most important activity by far and one which receives the most attentions. This year the *Annals* is published bi-monthly for the first time and the annual volume will contain almost 2000 pages. The report of the Editor contains specific remarks and details.

The role of the Society in other professional activities continues and increases. The Visiting Lecturer program is now ending its second year. This is financed by the National Science Foundation (NSF) and its operation is coordinated with the Committee of Presidents of Statistical Societies (COPSS). Recently we were informed of a continuation of the program for the one-year period ending August 1966. This was made possible by a new grant from NSF in the amount of \$13,900. W. Jackson Hall is now Director of the program. He succeeds Jack Kiefer who served as director since its inception. Several years ago summer institutes supported by NSF assumed an important place in our program. Funds totalling \$14,000 have been received for an institute in Probabilistic Methods in Potential Theory. This was scheduled for this summer, but it has been postponed until 1966. The lateness of the news that a grant was available and prior commitments of senior participants caused this delay.

Other news of special interest from committee reports follows:

- (1) Plans are under way for the Institute to sponsor the publication of mathematical and statistical tables.
- (2) Plans are under way to study methods by which a consortium of universities in a region can pool their resources and share their problems so that stronger training programs in Statistics can follow. This should be of value to those uni-

versities which are either initiating departments of statistics or which, by plan, will remain small.

(3) More participation by statisticians in the mathematics advisory panels in NSF training programs has occurred mainly through representations made to that Agency by a special committee and officers of the Institute. The number of traineeships and fellowships in statistics should respond in a favorable way to this exposure.

All these activities suggest a strong, viable, and healthy professional society. The size of the Institute and the magnitude of our efforts suggest that we are no longer a small society. We are now some 2,600 strong and our annual operating budget is nearing \$100,000. Each year the Institute has business negotiations with government agencies such as NSF, and coordinates several enterprises with the Conference Board of Mathematical Sciences, and COPSS. With the positive contributions we are making there come the woe and travail of maintaining and administering these programs and insuring their continuing vigor. We are not organized and equipped to do this at present. Insuring that the officers of the Institute are kept aware of their responsibilities and insuring that the work of committees goes forward in an effective manner has become a burden which we are not handling too well.

Professor Z. W. Birnbaum, in his President's Report last year, stated that our mode of operating should not be continued indefinitely and that a salaried executive is necessary in order for the officers of the Institute to cope with its size and complexity. Other officers have alluded to this and I would like to endorse this move. The Executive Committee and Council require your understanding and encouragement to take this action. I am confident that this modification of our structure will permit us to grow and yet not sustain losses in our contributions to scholarship and the profession of statistics.

This year two members of the Executive Committee relinquished their assignments and have been succeeded in office. In November 1964 Gerald Lieberman was replaced by George Resnikoff as Treasurer. Joan Rosenblatt replaced Dorothy Gilford as Program Secretary in May 1964. Dorothy Gilford and Gerald Lieberman have served the Institute well for long periods. We are happy for this service and we are fortunate that Joan Rosenblatt and George Resnikoff have come forward and taken hold of their responsibilities so quickly and so firmly.

The Institute held a number of successful meetings. Five Regional Meetings have taken place since the Annual Meeting at Amherst in August 1964. This included a European Regional Meeting at the University of Berne in Switzerland in September 1964 at which 78 IMS members participated out of a total audience of 202.

Under the IMS Constitution it is the duty of the retiring president to appoint a Nominating Committee and to announce the names at the Annual Meeting. The Nominating Committee is H. Rubin, chairman, S. Greenhouse, T. Kitigawa, C. Kossack, H. Levene, Y. Linnik, G. Nicholson, M. Peisakoff, and J. Rustagi.

HERBERT SOLOMON

REPORT OF THE TREASURER FOR 1965

This report covers the year ending December 31, 1964. During this year the Institute of Mathematical Statistics had 1556 U.S./Canada members, 411 members from other countries, 407 student members, 31 life members, and 53 Institutional members. These figures include only those members whose dues had been paid by the end of the calendar year.

The statement of financial operations attached to this report shows a deficit of expenses over income amounting to \$10,067.61. The present Treasurer took office at almost the very end of 1964 so that this deficit can not be construed as resulting from any change in operating procedure. The *Annals of Mathematical Statistics* increased in size from 1662 pages in 1963 to 1880 pages in 1964. All other costs continued to rise.

There will most certainly be another substantial deficit during 1965. There have been deficits in six of the past seven years. As a result the surplus cash of the Institute is nearing depletion.

In the opinion of the Treasurer a rise in dues and subscription rates is absolutely necessary to avert financial disaster, and the Treasurer so recommends to the Council and to the membership of the Institute.

GEORGE RESNIKOFF

We have examined the attached financial statements of the Institute of Mathematical Statistics, consisting of the following:

Exhibit A—Balance Sheet, December 31, 1964

Exhibit B—Statement of Operations for the Year Ended December 31, 1964

Exhibit C—Statement of Changes in Surplus for the Year Ended December 31, 1964

Our examination was conducted in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances, except that equipment and supplies are expended in the year of purchase as normal accounting procedure and our examination of these items was limited to an audit of acquisitions of the current year.

In our opinion, subject to the comments aforementioned, the accompanying balance sheet, statement of operations, and statement of changes in surplus, together with the notes to financial statements, present fairly the financial position of the Institute of Mathematical Statistics at December 31, 1964 and the results of operations for the period then ended in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

DILLON, CURRY AND HARRINGTON
Certified Public Accountants.

Exhibit A

INSTITUTE OF MATHEMATICAL STATISTICS

Balance Sheet

December 31, 1964

Assets

Current Assets:	
Cash in bank—checking accounts.....	\$21,990.65
Cash in bank—savings accounts.....	38,793.13
Investments, U.S. Government bonds at cost.....	7,000.00
Receivables:	
Dues.....	\$20,764.00
Subscriptions.....	23,041.80
Back issues of <i>Annals</i>	1,483.03
Sale of indexes and miscellaneous.....	1,084.75
Total receivables.....	46,373.58
Inventory—at cost:	
<i>Annals</i>	39,738.36
Index.....	5,189.24
Total inventory.....	44,927.60
Balance due on N.S.F. Grants—Note 1.....	20,345.44
Deferred agency charges.....	1,302.25
Total assets.....	<u>\$180,732.65</u>
<i>Liabilities, Deferred Income, Unexpended Grant and Surplus</i>	
Current Liabilities:	
Accounts payable.....	\$18,428.23
Dues advanced by members for future years.....	708.45
Collections for <i>Biometrika</i>	1,829.00
Wald royalties and other payables.....	107.90
Total.....	\$21,073.58
Deferred income—advance billings for 1965.....	64,796.50
Unexpended Grant from National Science Foundation—Note 1.....	24,444.44
Surplus—Exhibit C.....	70,418.13
Total liabilities, deferred income, unexpended grant and surplus.....	<u>\$180,732.65</u>

Exhibit B

INSTITUTE OF MATHEMATICAL STATISTICS

Statement of Operations

For the Year Ended December 31, 1964

Income:	
Dues.....	\$31,981.95
Subscriptions.....	24,256.82
Sales of back issues of <i>Annals</i>	\$8,548.60
Less cost of back issues sold.....	4,431.51
Net.....	4,117.09

Sales of indexes.....	2,248.70	
Less cost of indexes sold.....	853.44	
	<hr/>	
Net.....		1,395.26
Advertising.....		445.08
Page charges.....		11,787.50
Interest on investments and savings accounts.....		2,050.20
Miscellaneous income.....		980.06
		<hr/>
Total income.....		\$77,013.96
Expenses:		
Publication Expense:		
Printing of <i>Annals</i>	47,484.66	
Maintenance and shipping of <i>Annals</i>	3,689.55	
Binding.....	285.50	
Editorial expense.....	7,347.38	
Maintenance and shipping of indexes.....	95.58	
	<hr/>	
Total.....		58,902.67
Treasurer and Secretary's Office:		
Salaries.....	8,268.74	
Bookkeeping.....	2,353.81	
Stationary and supplies.....	1,446.41	
Postage.....	2,329.60	
Telephone and cable.....	1,517.13	
IBM charges.....	2,053.99	
Miscellaneous.....	551.02	
	<hr/>	
Total.....		18,520.70
General Expense:		
Agency charges.....	1,330.60	
Special printing and mailings.....	2,054.79	
Travel.....	641.07	
Accounting.....	2,250.00	
Contributions to other organizations.....	1,600.00	
Meeting expense.....	1,437.82	
Miscellaneous.....	343.92	
	<hr/>	
Total.....		9,658.20
Total expenses.....		<hr/> 87,081.57
Operating loss—to Exhibit C.....		<u><u>\$ (10,067.61)</u></u>

Exhibit C

INSTITUTE OF MATHEMATICAL STATISTICS

*Statement of Changes in Surplus**For the Year Ended December 31, 1964*

Surplus, January 1, 1964.....	\$80,485.74
Less operating loss for the year ended December 31, 1964—Exhibit B.....	(10,067.61)
	<hr/>
Surplus, December 31, 1964—Exhibit A.....	<u><u>\$70,418.13</u></u>

Changes in Allocated Surplus

	Reserve for Life Members	Reserve for Replacement of <i>Annals</i>	Reserve for General Purposes
Balance, January 1, 1964.....	\$2,757.50	\$17,612.51	\$60,115.73
Operating loss.....			(10,067.61)
Reduction to reserve for replacement of <i>Annals</i> —Note 2.....		(1,644.67)	1,644.67
Balance, December 31, 1964.....	<u>\$2,757.50</u>	<u>\$15,967.84</u>	<u>\$51,692.79</u>

INSTITUTE OF MATHEMATICAL STATISTICS

*Notes to Financial Statements**December 31, 1964*

Note 1. The Visiting Scientist grant covers a three year period beginning on 9/1/63. Expenditures to 12/31/64 were as follows:

Honorarium.....		\$8,387.50
Travel.....		8,874.48
Other direct costs:		
Printing.....	\$1,108.44	
Mailing.....	176.64	
Other.....	150.50	1,435.58
Total.....		<u>18,697.56</u>
Less contributions from participating schools.....		<u>3,142.00</u>
Net.....		<u>\$15,555.56</u>

To date, \$19,654.56 has been received from N.S.F.

The balance due of \$20,345.44 is computed as follows:

Original grant.....	\$40,000.00
Less cash received.....	19,654.56
Balance.....	<u>\$20,345.44</u>

The liability of \$24,444.44 is computed as follows:

Original grant.....	\$40,000.00
Less expenditures.....	15,555.56
Unexpired grant.....	<u>\$24,444.44</u>

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

Estimated cost to reprint 300 copies each Volume 1 through 35.....	\$55,706.20
Less inventory of back issues at December 31, 1964 (see Exhibit A) which is covered by insurance.....	39,738.36
Reserve necessary at December 31, 1964.....	<u>\$15,967.84</u>

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, 1964 even though there is some indication that the group policy coverage furnished by Waverly Press, Inc., might base its reimbursement on expected sales value.

REPORT OF THE PROGRAM SECRETARY FOR 1964-1965

The 27th annual meeting of the Institute was held at Amherst, Massachusetts, on the campus of the University of Massachusetts, 26-29 August 1964, in conjunction with the summer meetings of the American Mathematical Society, The Mathematical Association of America, and The Society for Industrial and Applied Mathematics. There were five regional meetings during the year, which have been or will be reported in the *Annals*.

The Wald Memorial Lectures were delivered by E. L. Lehmann, University of California, Berkeley, on "Topics in Non-Parametric Statistics", at the Amherst meeting.

The Associate Program Secretaries during this year were:

Eastern Region: S. W. Greenhouse, National Institutes of Health,

Central Region: S. S. Gupta, Purdue University,

Western Region: R. F. Tate, University of Washington,

European Region: A. Hald, Institute of Mathematical Statistics, Copenhagen.

It is a pleasure to acknowledge the indebtedness of the Institute to the host institutions, to the Associate Secretaries, and also to the Program Chairmen and Assistant Secretaries whose names appear in the list of Institute committee members that is published each year. Meetings are possible only with the wholehearted cooperation of all these individuals, and of the Managing Editor.

During most of this year, the Program Secretary was Dorothy M. Gilford, Office of Naval Research. I took office nominally on May 1, 1965, although there was a period of overlap.

JOAN RAUP ROSENBLATT

REPORT OF THE EDITOR FOR 1965

Submission of papers to the *Annals* continues to accelerate. From July 1, 1964, to June 30, 1965, the first year in office of the present Editorial Board, the *Annals* received 369 papers. This is a 20 percent increase over the number received during the previous year, which in turn was a 16 percent increase over the year before that.

Notwithstanding the heavy burden of evaluating nearly 400 papers a year, the Editorial Board is making every effort to handle papers as promptly and efficiently as possible. Of the 182 papers published during 1965, 115, or approximately 63 percent, appeared within one year of the original date of submission,

many within six to eight months. As has been true for several years, no backlog exists. Almost all papers accepted for publication appear within four to six months after acceptance. The printing and mailing process currently requires approximately four months and the two months between consecutive issues adds an additional month on the average.

Dozens of scholars share the work of refereeing and editing papers for the *Annals*. The quality of the *Annals* is heavily dependent on their setting high standards for authors and themselves and their promptness and efficiency. The list of referees for the year ending August 31, 1965, is appended. Many of those listed have refereed three or more papers during the year. The major part of the editorial work, as well as some of the refereeing, is done by the Associate Editors. The *Annals* is fortunate to have the services of these outstanding scholars.

I am indebted to the former Editor, J. L. Hodges, Jr., for his help in maintaining a smooth transition from his term of office to mine, to the University of Illinois for its cooperation and support, and to Mrs. Carolyn Bloemker for expert editorial assistance.

D. L. BURKHOLDER

Addelman, S.	Clatworthy, W. H.	Gleser, Leon
Aggarwal, Om P.	Cohen, A. C., Jr.	Gokhale, D.
Alpert, Lewis	Cohen, Arthur	Goldman, J.
Anderson, R. L.	Connor, W. S.	Goodman, Leo A.
Anderson, T. W.	Constantine, A. G.	Govindarajulu, Z.
Anscombe, F. J.	Corsten, L. C. A.	Graves, Robert
Ashenhurst, R. L.	Crasswell, Keith J.	Greenberg, B. G.
Banerjee, K. S.	Daniels, H. E.	Grenander, U.
Bartholomew, D. J.	Darling, D.	Gross, L.
Bartlett, M. S.	Das Gupta, Somesh	Guenther, William C.
Baum, L.	David, Herbert T.	Gumbel, E. J.
Bell, C. B.	DeGroot, Morris H.	Gundy, R.
Bennett, B. M.	Derman, Cyrus	Gupta, S. S.
Berlekamp, E. R.	Doney, R.	Haggstrom, G.
Berman, Simeon M.	Draper, N. R.	Hájek, Jaroslav
Bhapkar, V. P.	Dwass, Meyer	Hall, W. J.
Bhattacharyya, G.	Efron, Bradley	Halperin, Max
Bickel, Peter J.	Ewens, W. J.	Hannan, J. F.
Billingsley, Patrick	Farrell, Roger H.	Hanson, D. L.
Birnbaum, Allan	Federer, W. T.	Har, Chien-Pai
Blackwell, David	Feller, W.	Harris, T. E.
Brillinger, D. R.	Ferguson, Thomas S.	Harter, H. Leon
Brunk, H. D.	Flehinger, Betty J.	Hartigan, John
Burr, E. J.	Fraser, D. A. S.	Herzberg, A.
Capon, Jack	Freedman, David A.	Heyde, C. C.
Carlborg, Frank	Furstenberg, H.	Hill, Bruce
Chakravarti, I. M.	Gabriel, K. R.	Hoel, Paul
Chambers, John	Gans, Daniel	Howard, R. A.
Chover, J.	Gastwirth, J. L.	Hudson, Derek J.
Chow, Y. S.	Ghosh, J. K.	Hultquist, R. A.
Chung, K. L.	Giri, N.	Hunt, G. A.

Hunter, J. S.	Moser, Joseph M.	Saw, John G.
Ifram, Adnan	Mosteller, Frederick	Schatzoff, M.
Iglehart, D. L.	Moy, S. C.	Schaufele, Ronald A.
Ionescu Tulcea, A.	Mudholkar, G. S.	Scheffe, Henry
Isaac, R.	Mullikin, T. W.	Schwartz, Lorraine
John, Floyd I.	Nash, Stanley W.	Scott, A.
John, Peter W. M.	Nelson, W.	Seiden, Esther
Johns, M. V., Jr.	Neuts, M. F.	Sethuraman, J.
Johnson, N. L.	Norman, F.	Shapiro, J. M.
Kallianpur, G.	Olkin, Ingram	Shepp, L. A.
Katz, Melvin L.	Owen, D. B.	Singer, B.
Kaufman, S.	Parker, E. T.	Singh, R.
Kesten, Harry	Pathak, P. K.	Skibinsky, M.
Kielson, Julian	Patil, G. P.	Sobel, M.
Klotz, Jerome	Paulson, Edward	Stein, Charles M.
Knight, Frank	Pinkham, Roger	Stone, Charles
Kraft, Charles	Press, S. J.	Strassen, V.
Krishnaiah, P. R.	Proschan, Frank	Strauch, R. E.
Krishnamoorthi, B.	Puri, M. L.	Stribel, C. T.
Kruskal, W.	Raiffa, Howard	Switzer, Paul
Kshirsagar, A. M.	Raghavachari, M.	Teicher, H.
Kullback, S.	Raj, Des	Thompson, Donovan J.
Laha, R. G.	Raktoe, B. L.	Truax, Donald R.
Leadbetter, Ross	Ramachandran, B.	van Eeden, Constance
LeCam, Lucien	Rao, C. R.	Van Elteren, P. H.
Linnik, Y. V.	Rao, M. M.	Van Ness, J.
Lorden, G.	Reich, Edgar	Van Ryzin, J.
Madansky, A.	Reiffen, B.	Varadarajan, V. S.
Madow, W. G.	Resnikoff, G.	Venter, J.
Mallows, C. L.	Robbins, H.	Wallace, David
Mannion, D.	Roeloffs, R.	Watson, G. S.
Marshall, A. W.	Rosenblatt, Judah	Weiner, H.
Masani, P.	Rosenblatt, Murray	Weiss, Lionel
McCullough, R. S.	Ruben, Harold	Welch, Peter D.
McGregor, J.	Rubin, H.	Whittle, P.
Mehra, Krishen L.	Sacks, Jerome	Wishart, D. M. G.
Mesner, Dale M.	Sakaguchi, Minoru	Yarnold, J. K.
Mickey, Ray	Samuel, Esther	Yen, E. H.
Mikulski, P. W.	Savage, I. R.	Ylvisaker, D.
Millar, P. W.	Savage, L. J.	Zyskind, George
Miller, R. G., Jr.		

REPORT OF THE MANAGING EDITOR FOR 1965

Because of the increasingly high cost of printing the *Annals* various steps were taken during 1965 to reduce this cost. In particular, the following stylistic changes were adopted whenever no reduction in the clarity of presentation was involved:

- (i) use of a 12 point (instead of 24 point) integral sign;
- (ii) use of a smaller symbol for the binomial coefficient;
- (iii) different positioning of the indices of summation;
- (iv) different placement of the number in a numbered formula;

(v) different positioning of exponents relative to subscripts (a_i^2 instead of a_i^2).

All of the above changes have the effect of reducing the number of hand-set formulas. And it is the large number of hand-set formulas which makes mathematical composition so expensive. It is estimated that these changes will reduce our total printing costs by about 7 percent. A major part of this saving is due to the fact that in using the new style we shall require less vertical space for printing the same amount of material. The estimated saving is about 6 percent. Thus, 1,000 pages using the new style would have required about 1,064 pages using the old style.

The possibility of overseas composition work was seriously considered and a comparative estimate was obtained from one printer in England. Although this possibility will be under continuous consideration, it was decided, for the time being, to continue our composition and printing arrangements with Waverly Press in Baltimore.

P. L. MEYER

REPORT OF THE PHILADELPHIA, PENNSYLVANIA MEETING OF THE INSTITUTE OF MATHEMATICAL STATISTICS

The 28th annual meeting, and 107th meeting, of the Institute of Mathematical Statistics, was held at the Bellevue Stratford Hotel, Philadelphia, Pennsylvania on September 8–11, 1965 in conjunction with the 125th annual meeting of the American Statistical Association and the annual meeting of the Biometric Society, Eastern North American Region.

J. Wolfowitz, Cornell University, delivered the Wald Memorial Lectures on *Some Recent Results*: I. *on the Efficiency of Estimates*, II. *on the Information Theory* and III. *on the Design of Experiments*.

J. L. Doob, Institute for Advanced Study and University of Illinois, delivered the Rietz Lecture on *Applications of Probability to Classical Function Theory*.

R. R. Bahadur, University of Chicago, presented a Special Invited Paper on *Convergence of Tests and Estimates*.

A total of 1420 persons registered for the meetings. Of this number, 444 were members of the Institute, constituting one of the best attended meetings held by the Institute.

Program

Wednesday, September 8, 1965

9:00 a.m.–10:30 a.m.—Contributed Papers I

Chairman: T. A. WILLKE, National Bureau of Standards

1. *The Log-O-Poisson Distribution*, S. K. KATTI, Florida State University.
2. *Probability Distributions for Subgraphs of Random Graphs*, C. T. ABRAHAM and S. P. GHOSH, International Business Machines Corp.
3. *The Moments of a Doubly Non-Central t -Distribution*, M. KRISHNAN, State University of New York at Buffalo.

4. *Linear Combinations of Non-Central Chi-Squared Variates*, S. J. PRESS, The RAND Corporation.
5. *The Moments of Uniform Order Statistics*, J. S. WHITE, General Motors Research Laboratories.

9:00 a.m.—10:30 a.m.—Contributed Papers II

Chairman: H. ROSENBLATT, Bureau of the Census

1. *A Statistical Design with a Bounded Statistic*, E. H. INSELMANN, Pitman-Dunn Research Laboratories.
2. *The Exact Evaluation of the Operating Characteristic Function and the Average Sample Number of Truncated Sequential Tests*, L. A. AROIAN, TRW., Inc.
3. *A Test for Goodness of Fit Based on Discriminatory Information*, B. K. KALE, Iowa State University.
4. *The Effect of Truncation on the F-Test for a Class of PBIB Designs*, P. V. RAO, University of Florida.
5. *Asymptotic Theory of Tests Based on Bivariate Admissible Points*, G. G. WOODWORTH, University of Minnesota (Introduced by M. Sobel).

10:40 a.m.—11:50 a.m.—Wald Lecture I

Chairman: W. G. MADOW, Stanford Research Institute

Some Recent Results on the Efficiency of Estimates, J. WOLFOWITZ, Cornell University.

1:45 p.m.—2:50 p.m.—Statistics I

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

1. *The Outer Needle of Some Bayes Sequential Continuation Regions*, J. W. PRATT, Harvard University.
2. *On Some Problems Related to Sufficiency and Invariance*, D. BASU, University of Chicago and Indian Statistical Institute.

3:00 p.m.—3:50 p.m.—Special Invited Address

Chairman: T. W. ANDERSON, Columbia University

Convergence of Tests and Estimates, R. R. BAHADUR, University of Chicago.

4:00 p.m.—5:50 p.m.—Statistical Methods for Data Analysis

Chairman: J. CORNFIELD, National Institutes of Health

1. *Probability Plotting Methods for the Analysis of Data*, M. B. WILK and R. GNANADESIKAN, Bell Telephone Labs., Inc.
2. *The Analysis of Trend in a Series of Events*, D. R. COX, Birkbeck College, London and Bell Telephone Labs., Inc.

Discussion:

O. KEMPTHORNE, Iowa State University.

7:30 p.m.—1965 Council Meeting—Institute of Mathematical Statistics

Thursday, September 9, 1965

8:30 a.m.—10:00 a.m.—Contributed Papers III

Chairman: M. DAVIS, Johns Hopkins University

1. *Pseudoestimates Versus Pseudo-Inverses for Singular Sample Covariance Matrices*, T. J. HARLEY, JR., Philco Corporation (Introduced by L. Kanal).

2. *Admissible Minimax Estimation of the Mean of a Multivariate Normal Random Variable*, A. J. BARANCHIK, Columbia University.
3. *A Secondarily Bayes Approach to the Two-Means Problem*, M. B. BROWN, Princeton University.
4. *Maximum Likelihood Estimation of Two Stochastically Ordered Distributions*, H. D. BRUNK, W. E. FRANCK, D. L. HANSON, University of Missouri and R. V. HOGG, University of Iowa.
5. *Regression Analysis When the Least-Squares Estimate is not Asymptotically Efficient* (Preliminary Report), H. R. RICHARDSON, Daniel H. Wagner, Associates.
6. *Tests of Linear Hypotheses Using a Generalized Inverse Matrix*, S. R. SEARLE, Cornell University.
7. *Some Parametric Empirical Bayes Techniques*, R. G. KRUTCHKOFF and J. R. RUTHERFORD, Virginia Polytechnic Institute.
8. *Empirical Bayes Estimation of Prior and Posterior Distributions*, J. R. RUTHERFORD and R. G. KRUTCHKOFF, Virginia Polytechnic Institute.

9:00 a.m.—10:30—Probability I

Chairman: L. TAKACS, Columbia University

Representation Theory for Markov Chains, J. G. KEMENY, Dartmouth College.

10:40 a.m.—11:50 a.m.—Wald Lecture II

Chairman: A. H. BOWKER, The City University of New York

Some Recent Results on Information Theory, J. WOLFOWITZ, Cornell University.

2:00 p.m.—2:50 p.m.—Statistics II

Chairman: O. WESLER, North Carolina State University

1. *All Admissible Linear Estimates of the Mean Vector*, A. COHEN, Rutgers-The State University.
2. *Some Further Results on Bayes Efficiency*, H. RUBIN, Michigan State University.

3:00 p.m.—3:50 p.m.—Statistics III

Chairman: R. GNANADESIKAN, Bell Telephone Labs., Inc.

1. *A Note on Estimation of Ratios by Quenouille's Method*, J. N. K. RAO, Texas A & M University.
2. *Bayesian Comparison of Means of a Mixed Model with Applications to Regression Analysis*, G. C. TIAO, University of Wisconsin.

2:00 p.m.—3:50 p.m.—Applied Probability

Chairman: S. BLUMENTHAL, Rutgers-The State University

1. *An Application of Coincidence Probabilities to a Nearest-Neighbor Problem*, J. I. NAUS, Rutgers-The State University.
2. *On the Method of Exclusion and Inclusion*, L. TAKACS, Columbia University.
3. *Priorities in Series Queues*, B. MCK. JOHNSON, Northwestern University.

4:00 p.m.—5:20 p.m.—General Session

Chairman: T. E. HARRIS, The RAND Corporation

Markovian Decision Processes, C. DERMAN, Columbia University and Stanford University.

5:30 p.m.—Business Meeting—Institute of Mathematical Statistics

Chairman: H. SOLOMON, Stanford University

Friday, September 10, 1965

8:30 a.m.—10:30 a.m.—Contributed Papers IV

Chairman: B. HARRIS, Mathematics Research Center, U.S. Army

1. *Correlation Between Ranks and Variate-Values in a Singly Truncated Bivariate Normal Distribution*, M. A. AITKIN and M. W. HUME, Virginia Polytechnic Institute.
2. *Some Distribution-Free Statistics and Their Application to the Selection Problem*, N. S. BARTLETT, The Standard Oil Company and Z. GOVINDARAJULU, Case Institute of Technology.
3. *Estimation of Non-Unique Quantiles*, D. FELDMAN, Michigan State University and H. G. TUCKER, University of California, Riverside.
4. *On One-Sample Nonparametric Test for the Location Parameter* (Preliminary Report), M. V. JOSHI, Z. GOVINDARAJULU, and RAMACHANDRAMURTY, Case Institute of Technology.
5. *On a Class of c -Sample Weighted Rank-Sum Tests for Location and Scale*, P. K. SEN, University of California, Berkeley and Z. GOVINDARAJULU, Case Institute of Technology.
6. *On a Sequential Nonparametric Estimation Procedure* (Preliminary Report), E. H. YEN, The Catholic University.
7. *Estimation of the Cauchy Location and Gamma Scale Parameter*, J. K. GHOSH and R. SINGH, University of Illinois.
8. *Tests for the Dispersion, and the Modal Vector, of a Unimodal Distribution on a Sphere*, M. A. STEPHENS, McGill University.

8:30 a.m.—10:30 a.m.—Problems in Stochastic Control Theory

Chairman: D. GAVER, Carnegie Institute of Technology

1. *Markovian Representation of Second-Order Processes*, R. E. KALMAN, Stanford University.
2. *Linear and Non-Linear Filtering*, R. S. BUCY, University of Colorado and the RAND Corporation.
3. *Stochastic Problems in Control*, M. WONHAM, Brown University.

10:40 a.m.—11:50 a.m.—Wald Lecture III

Chairman: K. J. ARNOLD, Michigan State University

Some Recent Results in the Design of Experiments, J. WOLFOWITZ, Cornell University.

1:30 p.m.—2:50 p.m.—Contributed Papers V

Chairman: D. F. MORRISON, University of Pennsylvania

1. *The Application of Functions of Finite-State Markov Chains to Communication Channels with Memory* (Preliminary Report), B. D. FRITCHMAN, Philco Corporation (Introduced by L. Kanal).
2. *Non-Preemptive Priorities in Machine Interference*, V. HODGSON, Florida State University.
3. *The Integral of an Invariant Unimodal Function Over an Invariant Convex Set—An Inequality and Applications*, G. S. MUDHOLKAR, University of Rochester.

4. *Bounds and Rates of Convergence for the Extended Compound Estimation Problem in the Sequence Case*, D. D. SWAIN, U.S. Naval Academy.
5. *Higher Moments of Randomly Stopped Sums*, H. TEICHER, Purdue University.

1:30 p.m.—2:50 p.m.—Contributed Papers VI

Chairman: H. PETTIGREW, National Institutes of Health

1. *Bayes and Minimax Procedures for Estimating Mean of a Population with Two-Stage Sampling*, O. P. AGGARWAL, Iowa State University.
2. *Central Confidence Intervals for the Minor Means in Large Samples* N. NORRIS, Hunter College.
3. *Sufficient Statistic and the Complete Class of Decision Functions* K. TAKEUCHI, University of Tokyo and H. KUDO, University of California, Berkeley and Osaka City University.
4. *Replicated (or Interpenetrating) Samples of Unequal Sizes*, J. C. KOOP, North Carolina State University.
5. *Admissibility and Bayes Estimation in Sampling Finite Populations*, V. P. GODAMBE, Dominion Bureau of Statistics.

3:00 p.m.—3:50 p.m.—Reitz Lecture

Chairman: H. E. ROBBINS, Columbia University

Applications of Probability to Classical Function Theory, J. L. DOOB, Institute for Advanced Study and University of Illinois.

4:00 p.m.—5:50 p.m.—Fisher Memorial Lecture

Chairman: W. M. HAENSZEL, National Cancer Institute

Some Aspects of Experimental Inference, O. KEMPTHORNE, Iowa State University.

8:00 p.m.—1966 Council Meeting—Institute of Mathematical Statistics

Saturday, September 11, 1965

8:30 a.m.—10:30 a.m.—Topics in Inference

Chairman: H. T. DAVID, Iowa State University

1. *Sequential Composite-Hypothesis Testing*, W. J. HALL, University of North Carolina.
2. *Sequential Search Procedures*, M. C. CHEW, JR., Carnegie Institute of Technology.
3. *Stochastic Programming*, M. HANSON, Florida State University and University of New South Wales.

9:00 a.m.—10:00 a.m.—Probability II

Chairman: D. BURKHOLDER, University of Illinois

Application of Mobius Inversion on an Ordered Set, G. C. ROTA, The Rockefeller Institute.

10:30 a.m.—12:30 p.m.—Reliability

Chairman: F. PROSCHAN, Boeing Scientific Research Labs.

1. *Unbiased Estimation of Tails of Distributions*, I. OLKIN, Stanford University and S. G. GHURYE, Indiana University.

2. *Estimation Under Reliability Growth*, R. E. BARLOW, University of California, Berkeley, F. PROSCHAN, Boeing Scientific Research Labs. and E. M. SCHEUER, RAND Corporation.
3. *Efficient Confidence Bounds for Reliability*, M. V. JOHNS, JR., Stanford University.
4. *Nonparametric Life Test Sampling Plans*, R. E. BARLOW, University of California, Berkeley and S. S. GUPTA, Purdue University.

2:00 p.m.—3:30 p.m.—Contributed Papers VII

Chairman: J. A. LECHNER, Westinghouse Electric Company

1. *On a Class of Admissible Partitions*, T. CACOULLOS, University of Minnesota.
2. *On the Moments of Some One-Sided Stopping Rules*, Y. S. CHOW, Purdue University.
3. *On Confidence Limits for the Reliability of Systems*, J. M. MYHRE, Claremont Men's College and S. C. SAUNDERS, Boeing Scientific Research Laboratories.
4. *Maxima of Stationary Gaussian Processes*, J. PICKANDS, Virginia Polytechnic Institute.
5. *Maximum Likelihood Estimation for the Mixed Analysis of Variance Model*, H. O. HARTLEY and J. N. K. RAO, Texas A & M University.

Contributed Papers by Title

1. *Characterization Theorems for Extreme Value and Logistic Distributions*, S. D. DUBEY, Proctor and Gamble Company.
2. *Characterization Theorems for Beta and "FMEL" Distributions*, S. D. DUBEY, Proctor and Gamble Company.
3. *Split Subsamples vs. Independent Replicated Samples of Equivalent Size*, J. C. KOOP, North Carolina State University.
4. *A New Method of Estimating Treatment Effects or Treatment Differences in Balanced Incomplete Block Designs*, P. S. LEVY, Harvard Medical School and Peter Bent Brigham Hospital.
5. *A Non-Linear Optimum Stochastic Control Problem (Preliminary Report)*, C. STRIEBEL, University of Minnesota.
6. *Asymptotic Normality of Binomial Sequential Stopping Rules*, M. T. WASAN, Queen's University.
7. *Some Results on Lower Bounds for ASN (Preliminary Report)*, G. SIMONS, University of Minnesota.
8. *An Extension of Ferguson's Characterization of the Geometric Distribution*, V. K. MURTHY, Douglas Aircraft Company and V. R. RAO UPPULURI, Oak Ridge National Laboratory.
9. *On a Generalized Goal in Fixed-Sample Ranking and Selection Problems (Preliminary Report)*, D. M. MAHAMUNULU, University of Minnesota.

SAMUEL W. GREENHOUSE
Associate Secretary

PUBLICATIONS RECEIVED

- BOLSHEV, L. N. and SMIRNOV, V. N. (1965). *Mathematical Statistics Tables*. V. A. Steklova Mathematical Institute, Academy of Sciences, Moscow, USSR. 464 pp. + partial page of errata. 3 rub. 50 kop.
- CUNNINGHAM, JOHN (1965). *Complex Variable Methods in Science and Technology*. D. Van Nostrand Co., Princeton. viii + 178 pp. \$7.50.
- DETOUZOS, MICHAEL L. (1965). *Threshold Logic: A Synthesis Approach*. M.I.T. Press, Cambridge. xii + 256 pp. \$6.00.