THE SUMMER MEETING IN WELLESLEY

The fiftieth Summer Meeting of the Society and the twenty-sixth Colloquium were held at Wellesley College, Wellesley, Massachusetts, on Sunday and Monday, August 13–14, 1944. The Mathematical Association of America met on Saturday, August 12, and the Institute of Mathematical Statistics met on Saturday and Sunday, August 12–13. About three hundred persons attended the meetings among whom were the following two hundred thirty-two members of the Society:

C. R. Adams, Louise Adams, R. B. Adams, R. P. Agnew, E. J. Akutowicz, Warren Ambrose, T. W. Anderson, R. F. Arens, H. E. Arnold, K. J. Arnold, L. A. Aroian, S. P. Avann, D. H. Ballou, Ruth Bari, J. L. Barnes, J. J. Barron, H. P. Beard, Stefan Bergman, Lipman Bers, Garrett Birkhoff, G. D. Birkhoff, M. L. Boas, R. P. Boas, H. W. Bode, A. H. Bowker, J. G. Bowker, J. V. Breakwell, R. H. Breusch, H. W. Brinkmann, E. T. Browne, R. E. Bruce, R. C. Buck, Leonarda Burke, W. D. Cairns, R. H. Cameron, B. H. Camp, M. E. Carlen, W. B. Carver, W. F. Cheney, S. S. Chern, M. D. Clement, I. S. Cohen, Nancy Cole, J. B. Coleman, Esther Comegys, T. F. Cope, L. P. Copeland, Richard Courant, A. P. Cowgill, J. H. Curtiss, M. D. Darkow, M. M. Day, F. F. Decker, C. E. Dimick, Arnold Dresden, William H. Durfee P. S. Dwyer, J. E. Eaton, Samuel Eilenberg, Paul Erdös, H. S. Everett, W. H. Fagerstrom, E. E. Fedder, Will Feller, R. M. Foster, J. S. Frame, C. W. Franklin, Philip Franklin, R. E. Fullerton, D. G. Fulton, A. S. Galbraith, C. A. Garabedian, H. A. Garabedian, R. E. Gaskell, H. M. Gehman, Abe Gelbart, B. H. Gere, Michael Goldberg, R. O. Goodman, W. H. Gottschalk, Lewis Greenwald, V. G. Grove, E. J. Gumbel, P. R. Halmos, M. G. Harrison, G. E. Hay, K. E. Hazard, O. C. Hazlett, G. A. Hedlund, A. E. Heins, M. R. Hestenes, T. H. Hildebrandt, Einar Hille, D. L. Holl, T. R. Hollcroft, Harold Hotelling, S. E. Hotelling, E. M. Hull, M. G. Humphreys, C. C. Hurd, Witold Hurewicz, B. M. Ingersoll, R. N. Johanson, A. W. Jones, B. W. Jones, F. B. Jones, H. A. Jordan, G. K. Kalisch, Wilfred Kaplan, M. E. Kellar, J. L. Kelley, L. M. Kelley, D. E. Kibbey, S. H. Kimball, J. R. Kline, M. E. Ladue, Rafael Laguardia, A. L. Lanckton, R. E. Lane, J. A. Larrivee, Joseph Lehner, Norman Levinson, Jaime Lifshitz, Charles Loewner, L. H. Loomis, E. R. Lorch, W. S. Loud, N. H. McCoy, E. A. McDougle, P. H. McGrath, E. J. McShane, C. C. MacDuffee, Saunders MacLane, Ingo Maddaus, M. G. Malti, R. J. Marcou, Morris Marden, W. T. Martin, P. R. Masani, A. E. Meder, B. E. Meserve, D. S. Miller, R. v. Mises, E. B. Mode, C. N. Moore, R. K. Morley, G. D. Mostow, C. A. Nelson, Otto Neugebauer, P. B. Norman, L. R. Norwood, C. O. Oakley, R. E. O'Connor, Rufus Oldenburger, P. S. Olmstead, Glynn Owens, Gordon Pall, R. S. Pate, R. S. Phillips, Everett Pitcher, Harry Pollard, A. L. Putnam, J. F. Randolph, C. H. Rawlins, Mina Rees, C. F. Rehberg, Eric Reissner, H. J. Riblet, Harris Rice, R. G. D. Richardson, C. E. Rickart, E. K. Ritter, H. A. Robinson, S. L. Robinson, R. E. Root, P. C. Rosenbloom, L. L. Runge, H. G. Russell, Raphael Salem, F. E. Satterthwaite, Henry Scheffé, O. F. G. Schilling, C. H. W. Sedgewick, R. W. Sedgewick, Abraham Seidenberg, H. S. Sharp, Seymour Sherman, W. A. Shewhart, Max Shiffman, D. M. Smiley, M. F. Smiley, Andrew Sobczyk, A. H. Sprague, E. R. Stabler, M. E. Stark, E. P. Starke, H. W. Steinhaus, R. W. Stokes, R. R. Stoll, M. H. Stone, D. J. Struik, J. S. Stubbe, M. M. Sullivan, Otto Szász, J. D. Tamarkin, G. B. Thomas, M. M. Torrey,

J. I. Tracey, W. J. Trijitzinsky, A. W. Tucker, J. W. Tukey, H. S. Vandiver, Andrew Vazsonyi, J. H. Van Vleck, Abraham Wald, G. L. Walker, R. M. Walter, S. E. Warschawski, A. H. Wheeler, M. E. White, W. F. Whitmore, Hassler Whitney, D. V. Widder, V. A. Widder, E. W. Wilson, Jacob Wolfowitz, H. A. Wood, M. M. Young, S. D. Zeldin, J. A. Zilber, M. F. Zucker, Antoni Zygmund.

The Colloquium Lectures on the subject *Selected topics in the theory of semi-groups* were delivered by Professor Einar Hille of Yale University on Sunday and Monday mornings and afternoons. President M. H. Stone, Professor G. D. Birkhoff, Professor C. C. MacDuffee and Professor J. D. Tamarkin presided at the lectures.

On Sunday at 3:15 P.M., Professor C. C. MacDuffee gave an address entitled *On the composition of algebraic forms of higher degree.* Professor T. H. Hildebrandt presided.

Presiding officers at the sessions for contributed papers were: Probability and Statistics, Sunday morning, Professor B. H. Camp; Analysis, Sunday morning, Professor R. P. Agnew; General Session, Monday morning, Professor M. R. Hestenes; Algebra and Applied Mathematics, Monday afternoon, Professor Gordon Pall and Dean R. G. D. Richardson; Geometry and Topology, Monday afternoon, Professor A. W. Tucker and Professor P. R. Halmos.

Headquarters for the meeting were in Tower Court. Rooms in the dormitory were made available for those attending the meeting.

On Saturday evening, Wellesley College received the mathematicians and their guests in the Recreation Building.

Tea was served Saturday and Monday afternoons in the Great Hall of Tower Court.

A photograph was taken on Sunday at 1:15 P.M.

On Sunday evening there was a dinner for members of the Society, Association, and Institute and their guests. Professor D. V. Widder was toastmaster! Miss Mildred McAfee, President of Wellesley College and Captain, United States Naval Reserve, welcomed the guests. Professor M. H. Stone spoke on American mathematics in the present war. Professor J. S. Frame presented a resolution of thanks to President McAfee, the local committee and all who assisted them for their excellent arrangements and cordial hospitality. Following the dinner, Professor David Barnett of Wellesley College gave a piano recital.

The Council met at 9:20 P.M. on August 13, 1944, in Great Hall, Tower Court.

The Secretary announced the election of the following nineteen persons to membership in the Society (the address given is that of the member at the time of his application):

Dr. Louise Belai, Our Lady of Cincinnati College;

Mr. John Valentine Breakwell, Tufts College;
Mr. Richard Harland Brown, United States Navy Department;
Mr. Paul D'Arco, DePaul University;
Mr. Edward William Hazleton, Illinois Institute of Technology;
Mr. Russell Frederick Heckman, Ingwersen Manufacturing Company, Inc., Denver, Colo.;
Major William Hodgkinson, Jr., Army Air Forces, Washington, D. C.;
Mr. James Mann Hurt, University of Texas;
Mr. Phillip Sanford Jones, University of Michigan;
Miss Margaret Elizabeth Kellar, American Mathematical Society, New York, N. Y.;
Professor Rafael Laguardia, Instituto de Matematicas de la Facultad de Ingeniería, Montevideo, Uruguay;
Mr. Paul Ellis Meadows, Cranbrook School, Bloomfield Hills, Mich.;
Miss Alice E. Andrews Priestley, Lafayette College, Easton, Pa.;
Ida Roettinger (Mrs. Wilfred Kaplan), University of Michigan;
Professor Helen Adams Rouce, Langston University, Langston, Okla.;
Mr. John Lawson Senior, Jr., Glenn L. Martin Co., Middle River, Md.;
Mr. Jules H. Sreb, Johns Hopkins University;
Dr. Andrew Vazsonyi, Graduate School of Engineering, Harvard University;
Professor Shu-Chi Wu, National Hunan University, China;
Rev. Alfred John Zanolar, St. Joseph's College, Collegeville, Ind.;
Sister M. Claudia Zeller, College of St. Francis, Joliet, Ill.

It was reported that the following had been elected as nominees on the Institutional Membership of the institution indicated:

California Institute of Technology: Messrs. Robert Francis Koeber Benton and Albert George Wilson.

The following appointments by President M. H. Stone were reported: as representative of the Society at the inauguration of Harry S. Devore as President of Central College (Fayette, Missouri) on May 25, 1944, Professor G. E. Wahlin; as a Committee on Arrangements for the 1944 Annual Meeting in Chicago on November 24–25, Professors L. R. Ford (Chairman), T. R. Hollcroft, A. S. Householder, B. W. Jones, R. G. Sanger, and H. S. Wall; as a committee to study certain problems in connection with the future of Mathematical Reviews, Professors Oswald Veblen (Chairman), G. D. Birkhoff, Dr. Warren Weaver, and Secretary J. R. Kline (ex officio); as a committee to study the role of the Society in the publication of mathematical research, Professors R. L. Wilder (Chairman), Garrett Birkhoff, R. E. Langer, J. D. Tamarkin, A. E. Taylor, Oscar Zariski and Secretary J. R. Kline (ex officio).

Times and places of meetings during 1945 were set as follows: February 24 in New York City; April 27–28 in New York City; April 27–28 in Chicago; April 28 in Stanford University; October 27 in New York City.

Certain invitations to give hour addresses were announced: Professor S. M. Ulam for the April, 1945, meeting in Chicago; Professor Gabor Szegö and Dr. František Wolf for the November, 1944, meeting in Los Angeles.

The Council adopted the following resolution on the death of Professor David Eugene Smith:

David Eugene Smith, professor emeritus of mathematics at Teachers College in Columbia University, died on 29 July, 1944, aged 84 years. Probably no other member of the Society had as many friends in this country and where he had personally visited in almost every country of the world. His special studies were in the fields of Pedagogy and History of Mathematics, and his attractive personality, coupled with exceptional gifts of facile and interesting exposition, made him an ideal lecturer. The special Library which he accumulated contains books, pamphlets, scores of medals and medallions, and thousands of portraits of mathematicians, as well as thousands of manuscripts and tablets, and it will long be a source for research. He was a prolific and popular writer, and mathematical editor of many encyclopedias. Millions of copies of his books were sold.

The Society is indebted to him for service as a member of the Editorial Committee of its Bulletin, and for the extraordinary development of its Library while Librarian during a period of nineteen years. He was also one of our Vice Presidents. We salute the memory of one with whom contact always left a beautiful memory. Resolved that this minute be spread on the records and that a copy be sent to his family.

President Stone, as Chairman of the War Policy Committee, presented a report on the activities of his Committee as prepared for the Rockefeller Foundation. As announced previously, the Rockefeller Foundation made a grant of $2,500 to the War Policy Committee for its activities during the period August 5, 1943, to August 1, 1944. Of this amount, $1,500 has been contributed to the support of the Office of Scientific Personnel in Washington. This Office, which is subsidized by several leading scientific societies, has been of great aid to the mathematicians in a number of problems, including those of deferment. The War Policy Committee now has three subcommittees: Committee on Available Teachers of Collegiate Mathematics; a Subcommittee on War Training Programs; a Subcommittee to advise the Examinations Staff of the United States Armed Forces Institute.

Since the inauguration of the War Policy Committee, the office of the Secretary of the Society has continued its policy of supplying to chairmen of departments of mathematics throughout the country, as quickly as possible, certain information regarding the proper use of mathematicians in the war effort and of regulations from Selective Service affecting the mathematicians. In this connection, nine memoranda have been distributed to some three hundred fifty chairmen of departments of mathematics. It is hoped that the information has helped chairmen in the solution of their personnel problems and

has contributed to the most effective use of mathematicians in the war effort.

The Committee on Available Teachers of Collegiate Mathematics, with headquarters in the Secretary's office, was appointed in order to aid department chairmen in securing teachers for the Army and Navy programs. Since the inauguration of the Committee's work in April, 1943, two hundred seventy-four persons have registered. The Committee has answered requests from one hundred four different institutions. It is hoped that this Committee has been providing a worth while service in connection with the problem of the proper allocation of teachers of mathematics. Until the curtailment of the Army Specialized Training Program, there was an acute shortage of teachers of mathematics and department chairmen have taken advantage of the service and have found it valuable. This Committee will also be of service in aiding department chairmen in the solution of their postwar problems.

At the request of Dr. Ralph W. Tyler, Chief of the Examinations Staff of the Armed Forces Institute, a subcommittee of the War Policy Committee was appointed in June, 1944, to advise Dr. Tyler's staff. Members of this Committee are: Professors W. T. Reid (Chairman), Ralph Beatley, L. L. Dines, W. L. Hart, and C. C. MacDuffee. As colleges and universities will face the problem, after the war, of the proper credit to be assigned to courses taken under the auspices of the Armed Forces Institute, this subcommittee will perform a vital service to mathematicians in this connection.

The Subcommittee on War Training Programs has prepared careful analyses of the mathematical portions of the various service programs, including the College Training Program (Aircrew) of the Army Air Forces, the Army Specialized Training Program, the Navy College Training Program. Copies of the latter two reports were distributed by the Secretary's office to chairmen of departments of mathematics and a selected list of other interested persons. The Navy Program report contained some specific recommendations which, it is hoped, will be of aid in making certain improvements in the Program.

Titles and cross references to the abstracts of papers read are given below. The papers were read as follows: papers 1–6 in the section for Probability and Statistics, Sunday morning; papers 7–11 in the section for Analysis, Sunday morning; papers 12–16 in the general session, Monday morning; papers 17–22 in the session for Algebra and Applied Mathematics, Monday afternoon; papers 23–27 in the section for Geometry and Topology, Monday afternoon; and papers 28–77, whose abstract numbers are followed by the letter *t*, were read

by title. Professor P. L. Hsu was introduced by Professor Will Feller, Mr. Hsiung by Professor J. A. Shohat, Sister Ingonda von Mezynski by Professor H. P. Pettit. Paper 1 was read by Dr. Wolfowitz, paper 4 by Professor Feller, paper 6 by Mr. Churchman, paper 8 by Professor Cameron, paper 19 by Dr. Sherman, paper 22 by Dr. Pate, paper 24 by Professor Eilenberg.

1. Abraham Wald and Jacob Wolfowitz: *Statistical tests based on permutations of the observations.* (Abstract 50-9-253.)

2. F. E. Satterthwaite: *Error control in matrix calculation.* (Abstract 50-9-251.)

3. Abraham Wald: *On cumulative sums of random variables.* (Abstract 50-9-252.)

4. P. L. Hsu: *The approximate distribution of the mean and of the variance of independent variates.* (Abstract 50-9-250.)

5. E. J. Gumbel: *Ranges and midranges.* (Abstract 50-9-249.)

6. C. W. Churchman and Benjamin Epstein: *Statistics of sensitivity data.* II. Preliminary report. (Abstract 50-9-248.)

7. P. C. Rosenbloom: *Interpolation and extremal problems for absolutely monotonic functions.* (Abstract 50-9-224.)

8. R. H. Cameron and W. T. Martin: *Evaluation of various Wiener integrals by use of certain Sturm-Liouville differential equations.* (Abstract 50-9-212.)

9. Otto Szász: *On the generalized jump of a function and Gibbs' phenomenon.* (Abstract 50-9-225.)

10. B. M. Ingersoll: *On singularities of solutions of linear partial differential equations.* II. (Abstract 50-9-217.)

11. Harry Pollard: *One-sided boundedness as a condition for the unique solution of certain heat equations.* (Abstract 50-9-223.)

12. A. W. Tucker: *Antipodal-point theorems proved by an elementary lemma.* (Abstract 50-9-259.)

13. R. P. Agnew: *Convergence fields of methods of summability.* (Abstract 50-7-180.)

14. W. J. Trjitzinsky: *Singular elliptic and hyperbolic partial differential equations.* (Abstract 50-9-226.)

15. Gordon Pall: *Note on factorization in quadratic fields.* (Abstract 50-9-205.)

16. C. N. Moore: *Convergence factors in general analysis.* I. (Abstract 50-9-221.)

17. Andrew Vazsonyi: *An existence theorem in the theory of compressible fluids.* Preliminary report. (Abstract 50-9-234.)

18. R. R. Stoll: *Primitive semigroups.* (Abstract 50-9-206.)

19. Seymour Sherman, Jane DiPaola, and H. F. Frissel: *Routh's discriminant, flutter, and ground resonance*. Preliminary report. (Abstract 50-7-190.)

20. B. W. Jones: *A canonical quadratic form for the ring of 2-adic integers*. (Abstract 50-9-203.)

21. Eric Reissner: *On the theory of bending of elastic plates*. (Abstract 50-9-232.)

22. R. J. Duffin and R. S. Pate: *Structure elements of quasigroups. III.* (Abstract 50-7-175.)

23. W. H. Gottschalk: *Totally disconnected sets and almost periodic properties*. (Abstract 50-9-257.)

24. Samuel Eilenberg and N. E. Steenrod: *Axiomatic approach to homology*. (Abstract 50-9-254.)

25. A. H. Wheeler: *One-sided polyhedra from the five regular solids*. (Abstract 50-7-193.)

26. Abraham Seidenberg: *Valuation ideals in polynomial rings*. (Abstract 50-7-192.)

27. Warren Ambrose: *Structure theorems for a special class of normed rings*. (Abstract 50-9-198.)

28. R. P. Agnew: *A family of bounded sequences summable M*. (Abstract 50-7-179-t.)

29. R. P. Agnew: *A genesis for Cesàro methods*. (Abstract 50-9-208-t.)

30. R. P. Agnew: *Criteria for completeness of orthonormal sets and summability of Fourier series*. (Abstract 50-9-209-t.)

31. R. P. Agnew: *Abel transforms of Tauberian series*. (Abstract 50-9-207-t.)

32. E. F. Beckenbach and R. H. Bing: *Concerning the vertex mean-value property of harmonic polynomials*. (Abstract 50-9-210-t.)

33. E. T. Bell: *Separable diophantine equations*. (Abstract 50-9-199-t.)

34. Stefan Bergman: *A class of nonlinear partial differential equations and their properties*. (Abstract 50-9-211-t.)

35. L. M. Blumenthal: *Note concerning an extension of the notion of matrix rank*. (Abstract 50-9-200-t.)

36. Herbert Busemann: *Local metric geometry*. (Abstract 50-9-235-t.)

37. R. H. Cameron and W. T. Martin: *The Wiener measure of Hilbert neighborhoods in the space of real continuous functions*. (Abstract 50-9-213-t.)

38. Claude Chevalley: *Intersections of algebraic and algebroid varieties*. (Abstract 50-9-236-t.)

39. Nathaniel Coburn: *The Kármán-Tsien pressure-volume relation in the two-dimensional supersonic flow of compressible fluids.* (Abstract 50-9-229-*t.*)

40. A. J. Coleman: *Phase space in Eddington's theory.* (Abstract 50-9-230-*t.*)

41. A. J. Coleman: *Red-shift in the sun.* (Abstract 50-9-231-*t.*)

42. John DeCicco: *Conformal maps with isothermal systems of scale curves.* (Abstract 50-9-237-*t.*)

43. J. J. Dennis: *Some points in the theory of positive definite J-fractions.* (Abstract 50-9-214-*t.*)

44. R. J. Duffin and R. S. Pate: *Structure elements of quasigroups.* II. (Abstract 50-7-174-*t.*)

45. Nelson Dunford and Einar Hille: *The differentiability and uniqueness of continuous solutions of addition formulas.* (Abstract 50-9-215-*t.*)

46. H. W. Eves: *Applications of some new matrix products to geometry.* (Abstract 50-9-238-*t.*)

47. H. W. Eves: *Skew curves setting up a null system in space.* (Abstract 50-9-239-*t.*)

48. H. W. Eves: *Some associated theorems on matrices and determinants.* (Abstract 50-9-201-*t.*)

49. Mariano Garcia: *Orbit-components and component orbits.* (Abstract 50-9-255-*t.*)

50. W. H. Gottschalk: *A note on pointwise nonwandering mappings.* (Abstract 50-9-256-*t.*)

51. W. H. Gottschalk: *Orbit-closure decompositions and almost periodic properties.* (Abstract 50-7-195-*t.*)

52. C. C. Hsiung: *A study on the theory of conjugate nets.* (Abstract 50-9-240-*t.*)

53. C. C. Hsiung: *The contact of conics and quadrics with two surfaces in space of n dimensions.* (Abstract 50-9-242-*t.*)

54. W. H. Ingram: *On the integral equations of continuous dynamical systems.* (Abstract 50-9-218-*t.*)

55. Nathan Jacobson: *Structure theory of simple rings without finiteness assumptions.* (Abstract 50-9-202-*t.*)

56. Edward Kasner: *Conformal symmetry and satellite theory for algebraic curves.* (Abstract 50-9-243-*t.*)

57. R. E. Lane: *The convergence and values of periodic continued fractions.* (Abstract 50-11-273-*t.*)

58. A. N. Lowan and H. E. Salzer: *Formulas for complex interpolation.* (Abstract 50-7-187-*t.*)

59. Sister Ingonda von Mezynski: *Projective description of some*

plane sextic curves derived from conics as base curves. (Abstract 50-9-244-*t.*)

60. D. S. Miller: *Some properties of Carathéodory linearly measurable plane point sets.* (Abstract 50-9-220-*t.*)

61. S. B. Myers: *Arcs and geodesics in metric spaces.* (Abstract 50-9-258-*t.*)

62. E. N. Nilson and J. L. Walsh: *On functions analytic in a region: approximation in the sense of least pth powers.* (Abstract 50-9-222-*t.*)

63. Moses Richardson: *The pressure distribution on a body in shear flow.* (Abstract 50-9-233-*t.*)

64. H. E. Salzer: *Coefficients for mid-interval numerical integration with central differences.* (Abstract 50-7-188-*t.*)

65. H. E. Salzer: *Table of coefficients for differences in terms of the derivatives.* (Abstract 50-7-189-*t.*)

66. Peter Scherk: *On the number of certain singularities of differentiable curves of order $n+1$ in real projective n-space.* (Abstract 50-9-245-*t.*)

67. O. F. G. Schilling: *Automorphisms of fields of formal power series.* (Abstract 50-7-176-*t.*)

68. O. F. G. Schilling: *Noncommutative valuations.* (Abstract 50-7-177-*t.*)

69. A. R. Schweitzer: *On functional equations with solutions containing arbitrary functions.* VI. (Abstract 50-7-183-*t.*)

70. A. R. Schweitzer: *On functional equations representing abstract groups.* (Abstract 50-7-184-*t.*)

71. A. R. Schweitzer: *Functional relations valid in the domains of abstract groups and Grassmann's space analysis.* (Abstract 50-7-185-*t.*)

72. W. J. Thron: *A family of simple convergence regions for continued fractions.* (Abstract 50-7-186-*t.*)

73. S. M. Ulam and C. J. Everett; *On ordered groups.* (Abstract 50-7-178-*t.*)

74. H. S. Wall: *Note on the expansion of a power series into a continued fraction.* (Abstract 50-9-227-*t.*)

75. P. A. White: *On additive properties of compact sets.* (Abstract 50-7-196-*t.*)

76. Y. C. Wong: *Family of totally umbilical hypersurfaces in Einstein 4-space.* (Abstract 50-9-246-*t.*)

77. Y. C. Wong: *Quasi-orthogonal ennuple of congruences in Riemannian space.* (Abstract 50-9-247-*t.*)

T. R. HOLLCROFT,
Associate Secretary