

## THE APRIL MEETING IN CHICAGO

The four hundred twenty-fifth meeting of the American Mathematical Society was held in Eckhart Hall at the University of Chicago, Chicago, Illinois, on Friday and Saturday, April 25–26, 1947. Thus the Society returned to its traditional Chicago meeting place after an absence of four years. This meeting was the largest April meeting in Chicago in the history of the Society. The previous maximum occurred in 1939, with an attendance of about 250; this time the attendance was about 300, including the following 259 members of the Society:

W. R. Allen, E. W. Anderson, R. V. Andree, M. L. Anthony, K. J. Arrow, Max Astrachan, W. F. Atchison, H. C. Ayres, W. L. Ayres, Reinhold Baer, R. W. Ball, R. H. Bardell, R. C. F. Bartels, H. J. Barten, J. H. Bell, P. O. Bell, Arthur Bernhart, Herman Betz, S. F. Bibb, R. H. Bing, K. E. Bisshopp, H. L. Black, L. M. Blumenthal, D. G. Bourgin, A. J. Brandt, Foster Brooks, F. L. Brown, R. H. Bruck, P. B. Burcham, I. W. Burr, L. E. Bush, Lee Byrne, R. H. Cameron, J. W. Calkin, B. G. Carlson, R. E. Carr, P. W. Carruth, Abraham Charnes, E. W. Chittenden, A. M. Christiansen, R. V. Churchill, H. M. Clark, Nathaniel Coburn, R. H. Cole, L. A. Colquitt, B. H. Colvin, E. G. H. Comfort, N. B. Conkwright, J. A. Cooley, J. J. Corliss, Byron Cosby, H. S. M. Coxeter, H. J. Curtis, M. M. Day, H. F. DeBaggis, Flora Dinkines, J. M. Dobbie, C. L. Dolph, M. D. Donsker, J. L. Dorroh, Charlotte Dragstedt, John Dyer-Bennett, W. F. Eberlein, Beno Eckmann, R. H. Edwards, Samuel Eilenberg, J. H. Engel, Paul Erdős, M. H. M. Esser, H. P. Evans, G. M. Ewing, J. V. Finch, Harley Flanders, H. M. Fliess, L. R. Ford, R. S. Fouch, J. S. Frame, Evelyn Frank, Marianne Freundlich, C. G. Fry, Albert Furman, R. E. Fullerton, J. W. Gaddum, Wallace Givens, Michael Golomb, S. H. Gould, A. A. Grau, L. M. Graves, L. J. Green, Edison Greer, L. W. Griffiths, V. G. Grove, Marshall Hall, P. R. Halmos, O. H. Hamilton, W. L. Hart, G. E. Hay, C. T. Hazard, E. D. Hellinger, R. G. Helsel, Fritz Herzog, M. R. Hestenes, J. F. Heyda, E. H. C. Hildebrandt, R. C. Hildner, D. L. Holl, C. C. Hsiung, S. P. Hughart, H. K. Hughes, Rufus Isaacs, T. J. Jaramillo, Madeline Johnsen, H. F. S. Jonah, L. H. Kanter, Wilfred Kaplan, Irving Kaplansky, William Karush, J. L. Kelley, L. M. Kelly, J. F. Kenney, D. E. Kibbey, Lois Kiefer, W. M. Kincaid, S. C. Kleene, J. C. Koken, M. S. Kramer, W. C. Krathwohl, M. Z. Krzywoblocki, Joseph Landin, E. P. Lane, R. E. Lane, E. H. Larguier, J. P. LaSalle, C. G. Latimer, W. G. Leavitt, Harry Levy, S. L. Levy, D. J. Lewis, A. O. Lindstrum, B. J. Lockhart, A. T. Lonseth, Eugene Lukacs, C. T. McCormick, S. W. McCuskey, J. C. C. McKinsey, G. R. Magee, Morris Marden, W. S. Massey, M. S. Matchett, C. W. Matthews, H. F. Mathis, A. E. May, J. R. Mayor, L. K. Meals, B. E. Meserve, H. L. Meyer, Herman Meyer, E. J. Mickle, H. F. Mist, A. C. Moeller, J. T. Moore, M. G. Moore, F. V. E. Morfoot, D. R. Morrison, M. E. Munroe, J. R. Musselman, S. B. Myers, August Newlander, Ivan Niven, E. A. Nordhaus, M. J. Norris, J. I. Northam, Rufus Oldenburger, J. M. H. Olmsted, Isaac Opatowski, Morris Ostrofsky, E. H. Ostrow, L. J. Paige, Gordon Pall, H. C. Parrish, R. S. Pate, P. M. Pepper, Sam Perlis, H. P. Pettit, George Piranian, J. C. Polley, D. H. Potts, J. E. Powell, A. L. Putnam, Tibor Rado, E. D. Rainville, W. C. Randels, M. K. Rapp, M. O. Reade, O. W. Rechar, P. V. Reichelderfer, W. T. Reid, J. G. Renno, Haim Reingold, M. M. Resnikoff,

P. R. Rider, R. F. Rinehart, D. H. Rock, G. F. Rose, E. H. Rothe, Herman Rubin, Hans Samelson, R. G. Sanger, L. J. Savage, Robert Schatten, O. F. G. Schilling, W. T. Scott, M. E. Shanks, A. S. Shapiro, L. W. Sheridan, Seymour Sherman, H. A. Simmons, D. M. Smiley, M. F. Smiley, A. H. Smith, F. C. Smith, G. W. Smith, W. S. Snyder, E. H. Spanier, R. D. Specht, Abraham Spitzbart, R. H. Stark, N. E. Steenrod, Rothwell Stephens, B. M. Stewart, W. M. Stone, E. B. Stouffer, L. W. Swanson, T. T. Tanimoto, H. P. Thielman, Leonard Tornheim, E. A. Trabant, E. F. Trombley, H. L. Turrittin, Henry Van Engen, J. I. Vass, H. E. Vaughan, Bernard Vinograde. R. D. Wagner, M. T. Wechsler, C. P. Wells, E. T. Welmers, George Whaples, N. A. Wiegmann, L. R. Wilcox, R. L. Wilder, J. E. Wilkins, C. O. Williamson, R. L. Wilson, R. S. Wolfe, G. S. Young, P. M. Young, J. W. T. Youngs, Daniel Zelinsky.

Professor N. E. Steenrod of the University of Michigan opened the sessions both mornings at 9:30 with the Symposium lectures, delivered under the title *Foundations of algebraic topology*. Professors Rado and Eilenberg presided at these lectures on Friday and Saturday respectively. On Friday at 1:45 P.M., with Professor Hestenes presiding, Professor Marcel Riesz of Lunds Universitets Matematiska Institution and the University of Chicago gave an hour address entitled *Lorentz transformations and Clifford numbers*.

Sessions for short research papers were held as follows (Presiding officers are indicated in parentheses): 10:45 A.M. Friday: Section I. Algebra (Professor Baer), Section II. Analysis (Professor Graves); 3:00 P.M. Friday: Section I. Topology (Professor Eilenberg), Section II. Applied Mathematics, Foundations and Analysis (Professor Kleene); 10:45 A.M. Saturday: Section I. Analysis (Professor Halmos), Section II. Algebra and Geometry (Professor Pall).

At the close of the Friday afternoon sessions afternoon tea was served in the Eckhart Hall Common Room and in the Library across the hall. Thanks are due to the Mathematics Department of the University of Chicago for their hospitality, and also to Dr. Irving Kaplansky who was in charge of the local arrangements.

An informal business meeting was held at 8:00 P.M. Friday, for the purpose of crystallizing opinion in regard to location of future midwestern Thanksgiving meetings. Although only thirty-six members attended, they represented the opinions of a much wider group, and the whole question of midwestern meetings was thoroughly discussed. Several resolutions were passed and these were telegraphed to Secretary Kline for consideration by the Council of the Society at its meeting in New York on Saturday, April 26.

Titles and cross references to the abstracts of papers read follow. Papers presented by title are indicated by the letter "t." Papers numbered 1 to 8 and 9 to 16 were presented Friday morning in Sections I and II respectively; papers 17 to 22 and 23 to 28, Friday after-

noon; papers 29 to 36 and 37 to 44, Saturday morning. Paper 1 was presented by Dr. Kaplansky, paper 7 by Professor Whaples, paper 10 by Professor Mickle, paper 12 by Mr. Rechard, paper 15 by Dr. Piranian, paper 19 by Professor Helsel, paper 27 by Professor McKinsey, and paper 43 by Professor Niven. Mr. Bearman and Mr. Ostrom were introduced by Professor Cameron.

1. Irving Kaplansky and R. F. Arens: *Topological representation of algebras*. (Abstract 53-5-174.)
2. M. J. Norris: *Indeterminates over a universal algebra*. (Abstract 53-5-177.)
3. R. L. Wilson: *A finite method for the determination of the Galois group of an equation with an application to the problem of reducibility*. (Abstract 53-5-188.)
4. L. J. Paige: *Neofields*. Preliminary report. (Abstract 53-5-178.)
5. P. W. Carruth: *Generalized power series fields*. (Abstract 53-3-114.)
6. M. F. Smiley: *Alternative regular rings without nilpotent elements*. (Abstract 53-5-181.)
7. C. J. Everett and George Whaples: *Representation of classes of finite sets*. (Abstract 53-5-170.)
8. H. S. M. Coxeter: *Continuity in real projective geometry*. (Abstract 53-5-256.)
9. Tibor Rado: *On two-dimensional concepts of bounded variation and absolute continuity*. (Abstract 53-3-131.)
10. Tibor Rado and E. J. Mickle: *A new geometrical interpretation of the Lebesgue area of a surface*. (Abstract 53-5-223.)
11. P. V. Reichelderfer: *The effect of a lipschitzian transformation on the area of a continuous surface*. (Abstract 53-5-225.)
12. O. W. Rechard and P. V. Reichelderfer: *A new criterion for the extension of rectangle functions*. (Abstract 53-5-224.)
13. W. G. Leavitt: *A normal form for matrices whose elements are holomorphic functions*. (Abstract 53-5-213.)
14. L. H. Kanter: *On the roots of orthogonal polynomials and the related Christoffel numbers*. (Abstract 53-5-211.)
15. Paul Erdős and George Piranian: *Over-convergence on the circle of convergence*. (Abstract 53-5-201.)
16. Wilfred Kaplan: *The level curves of a harmonic function*. (Abstract 53-5-212.)
17. M. E. Shanks: *Decomposition homology groups*. Preliminary report. (Abstract 53-5-282.)
18. Beno Eckmann: *On infinite complexes with automorphisms*. Preliminary report. (Abstract 53-5-272.)

19. R. G. Hesel and Tibor Rado: *On the Cauchy area of a Fréchet surface.* (Abstract 53-5-207.)
20. O. H. Hamilton: *A fixed point theorem for upper semi-continuous transformations on  $n$ -cells for which the images of points are non-acyclic.* (Abstract 53-5-274.)
21. R. H. Bing: *A homogeneous indecomposable plane continuum.* (Abstract 53-5-268.)
22. R. L. Wilder: *Recognition of manifolds by accessibility properties.* (Abstract 53-5-287.)
23. Rufus Isaacs: *Recent progress in the theory of compressible fluids.* (Abstract 53-5-249.)
24. J. W. Calkin: *Incipient shock waves in one dimension.* (Abstract (53-5-242).)
25. M. Z. Krzywoblocki: *On the two-dimensional steady flow of a compressible viscous fluid far behind a solid symmetrical body.* (Abstract 53-5-251.)
26. Isaac Opatowski: *Application of a theorem of Jacobi to compressible and rotational flows.* (Abstract 53-5-252.)
27. J. C. C. McKinsey and Alfred Tarski: *Some theorems about the sentential calculi of Lewis and Heyting.* (Abstract 53-5-263.)
28. J. E. Wilkins: *Neumann series of Bessel functions.* (Abstract 53-5-241.)
29. G. M. Ewing: *Variation problems formulated in terms of the Weierstrass integral.* (Abstract 53-5-202.)
30. E. H. Rothe: *Extrema of functions in Banach spaces.* Preliminary report. (Abstract 53-5-226.)
31. J. E. Bearman: *Rotations in the product of two Wiener spaces.* Preliminary report. (Abstract 53-5-189.)
32. C. W. Mathews: *Cauchy type double integral representations for functions of a complex variable.* (Abstract 53-5-218.)
33. T. G. Ostrom: *The solution of linear integral equations by means of Wiener integrals.* (Abstract 53-5-222.)
34. R. H. Stark: *Some classes of monotone functions.* (Abstract 53-5-232.)
35. W. F. Eberlein: *A note on ergodic theory.* (Abstract 53-5-199.)
36. M. R. Hestenes: *Sufficient conditions for isoperimetric multiple integral problem in the calculus of variations.* (Abstract 53-5-208.)
37. Marshall Hall: *Cyclic projective planes.* (Abstract 53-3-152.)
38. B. M. Stewart: *Left associated matrices with elements in an algebraic domain. II.* (Abstract 53-5-183.)
39. V. G. Grove: *On the Darboux tangents.* (Abstract 53-5-258.)

40. R. D. Wagner: *The generalized Laplace equations in a function theory for commutative algebras.* (Abstract 53-3-119.)
41. C. C. Hsiung: *Differential geometry of a surface at a parabolic point.* (Abstract 53-5-259.)
42. B. J. Lockhart: *Covariants of a valence correspondence on an algebraic curve.* (Abstract 53-5-261.)
43. Paul Erdős and Ivan Niven: *On the roots of a polynomial and its derivative.* (Abstract 53-5-169.)
44. Arthur Bernhart: *Quantitative analysis of rings in minimal maps.* (Abstract 53-5-166.)
45. R. H. Bing: *Extending a metric.* (Abstract 53-5-269-t.)
46. W. F. Eberlein: *A nonlinear differential equation.* (Abstract 53-5-198-t.)
47. W. F. Eberlein: *A note on spheroidal wave functions.* (Abstract 53-5-245-t.)
48. Benjamin Epstein: *On the mathematical description of certain breakage mechanisms.* (Abstract 53-5-246-t.)
49. Rufus Isaacs: *Inverse iterates.* (Abstract 53-5-209-t.)
50. G. K. Kalisch: *On extensions of topological fields.* (Abstract 53-5-173-t.)
51. S. C. Kleene: *Analysis of lengthening of modulated repetitive pulses.* (Abstract 53-5-250-t.)
52. D. H. Lehmer: *On the Tarry-Escott problem.* (Abstract 53-5-175-t.)
53. E. J. Mickle: *Metric foundations of continuous transformations.* (Abstract 53-5-219-t.)
54. M. J. Norris: *A note on regular and completely regular topological spaces.* (Abstract 53-5-275-t.)
55. M. J. Norris: *On the representation of real numbers by sequences of integers.* (Abstract 53-5-276-t.)
56. A. E. Ross: *On continuous transformations of a continuous closed curve.* (Abstract 53-3-161-t.)
57. H. M. Schaerf: *Generalization of the theory of distance sets to topological groups.* Preliminary report. (Abstract 53-5-277-t.)
58. H. M. Schaerf: *On A. Weil's condition M.* Preliminary report. (Abstract 53-5-278-t.)
59. H. M. Schaerf: *On sets of the form  $B^{-1}A$  in topological groups.* Preliminary report. (Abstract 53-5-279-t.)
60. H. M. Schaerf: *On the continuity of measurable mappings of neighborhood spaces.* (Abstract 53-5-280-t.)
61. H. M. Schaerf: *Properties of measures biinvariant under a composition law.* Preliminary report. (Abstract 53-5-228-t.)

62. H. M. Schaerf: *Two theorems on measure spaces with a composition law*. Preliminary report. (Abstract 53-5-229-t.)
63. G. E. Schweigert and G. S. Young: *Remarks concerning invariants for certain finite transformations*. II. (Abstract 53-5-281-t.)
64. M. F. Smiley: *Binary systems which are almost loops*. (Abstract 53-5-182-t.)
65. C. F. Stephens: *Concerning linear and nonlinear difference equations*. (Abstract 53-5-233-t.)
66. E. A. Trabant: *The Riemannian geometry of the symmetric top*. (Abstract 53-5-255-t.)
67. S. M. Ulam and John von Neumann: *On the group of homeomorphisms of the surface of the sphere*. (Abstract 53-5-283-t.)
68. N. A. Wiegmann: *Some theorems on normal matrices with analogs of the generalized principal axis transformation*. (Abstract 53-5-187-t.)

R. H. BRUCK,  
Associate Secretary