

## THE SUMMER MEETING IN CHICAGO

The thirty-ninth summer meeting of the Society was held at the University of Chicago from Monday, June 19, to Saturday, June 24, in conjunction with meetings of the American Association for the Advancement of Science and the Mathematical Association of America. About five hundred persons attended the meeting, among whom were the following two hundred thirty-one members of the Society:

C. R. Adams, R. B. Adams, R. P. Agnew, A. A. Albert, E. S. Allen, R. B. Allen, N. L. Anderson, J. V. Atanasoff, F. L. Axen, R. W. Babcock, W. C. Babcock, R. W. Barnard, I. A. Barnett, Walter Bartky, W. D. Baten, H. L. Beard, E. F. Beckenbach, E. R. Beckwith, Theodore Bennett, B. A. Bernstein, H. R. Beveridge, G. D. Birkhoff, E. M. Blake, H. F. Blichfeldt, G. A. Bliss, H. F. Bohnenblust, J. W. Bower, C. F. Bowles, F. W. Boyce, H. R. Brahana, H. W. Brinkmann, W. E. Brooke, G. S. Bruton, C. T. Bumer, R. S. Burington, W. H. Bussey, W. D. Cairns, Helen Calkins, G. A. Campbell, J. W. Campbell, R. D. Carmichael, W. F. Cheney, R. V. Churchill, G. R. Clements, A. B. Coble, L. M. Coffin, L. W. Cohen, J. B. Coleman, J. T. Colpitts, E. G. H. Comfort, A. H. Copeland, Paul Cramer, A. R. Crathorne, D. R. Curtiss, E. H. Cutler, H. N. Davis, L. E. Dickson, L. L. Dines, B. F. Dostal, Arnold Dresden, W. L. Duren, R. L. Echols, W. E. Edington, M. C. Eide, E. B. Escott, H. P. Evans, H. S. Everett, F. J. Feinler, B. F. Finkel, C. H. Fischer, C. B. Fisher, A. H. Fox, T. C. Fry, M. G. Gaba, W. H. Garrett, H. H. Germond, Lachlan Gilchrist, B. P. Gill, D. C. Gillespie, Cornelius Gouwens, M. C. Graustein, W. C. Graustein, C. H. Graves, L. M. Graves, T. N. E. Greville, F. L. Griffin, B. L. Hagen, Harris Hancock, W. L. Hart, W. W. Hart, M. L. Hartung, O. C. Hazlett, E. R. Hedrick, M. R. Hestenes, E. H. C. Hildebrandt, T. H. Hildebrandt, F. H. Hodge, P. G. Hoel, T. F. Holgate, D. L. Holl, J. C. Hughes, E. V. Huntington, M. H. Ingraham, Dunham Jackson, Nathan Jacobson, R. D. James, C. M. Jensen, S. A. Joffe, Evan Johnson, M. M. Johnson, L. C. Karpinski, A. E. Kennelly, H. J. Kersten, J. M. Kinney, Alfred Korzybski, W. C. Krathwohl, W. D. Lambert, A. W. Landers, Jr., M. K. Landers, E. P. Lane, G. B. Lang, R. E. Langer, Lincoln LaPaz, G. A. Larew, C. G. Latimer, V. V. Latshaw, D. H. Lehmer, D. N. Lehmer, V. F. Lenzen, Tullio Levi-Civita, D. C. Lewis, F. P. Lewis, R. B. Lindsay, M. I. Logsdon, A. C. Lunn, Dorothy McCoy, E. A. McDougle, James McGiffert, W. D. MacMillan, J. D. Mancill, W. A. Manning, Morris Marden, William Markowitz, Anna Marm, R. G. Mason, A. E. May, J. R. Mayor, C. W. Mendel, W. I. Miller, E. C. Molina, E. I. Moody, C. N. Moore, T. W. Moore, E. M. Morenus, R. E. Moritz, C. B. Morrey, Jr., Richard Morris, T. A. Mossman, E. J. Moulton, C. O. Oakley, H. L. Olson, F. W. Owens, H. B. Owens, Gordon Pall, Z. M. Pirenian, E. C. Pixley, H. H. Pixley, Tibor Radó, W. R. Ransom, Nicholas Rashevsky, Francis Regan, W. T. Reid, C. E. Rhodes, R. G. D. Richardson,

D. E. Richmond, H. L. Rietz, J. F. Ritt, H. P. Robertson, Selby Robinson, A. E. Ross, W. E. Roth, D. A. Rothrock, L. L. Runge, R. G. Sanger, H. E. Schoonmaker, Henry Schultz, W. A. Shewhart, R. C. Shook, Grace Shover, E. B. Skinner, H. E. Slaughter, M. M. Slotnick, C. H. Smiley, Burke Smith, W. M. Smith, E. S. Sokolnikoff, I. S. Sokolnikoff, A. A. Stafford, M. E. Stark, R. C. Stephens, Guy Stevenson, E. C. Stokes, E. B. Stouffer, C. J. Stowell, D. J. Struik, M. M. Sullivan, W. D. Tallman, M. E. Taylor, V. B. Teach, H. P. Thielman, E. W. Titt, W. J. Trjitzinsky, P. L. Trump, A. W. Tucker, B. M. Turner, H. L. Turrittin, A. M. Tuttle, E. B. Van Vleck, G. W. Walker, R. J. Walker, H. S. Wall, M. J. Weiss, W. L. G. Williams, E. B. Wilson, E. W. Wilson, L. A. Wolf, Y. K. Wong, F. E. Wood, B. F. Yanney, C. H. Yeaton, E. I. Yowell.

The chief feature of the meeting was the number of invited addresses by European and American mathematicians. Of these addresses, four, namely those by Professors G. D. Birkhoff, L. E. Dickson, and Lipót Fejér, and the first address by Professor Tullio Levi-Civita were an hour in length and each was a report on achievement in some field of mathematics. The other invited addresses were somewhat shorter. The Society is indebted to the Century of Progress for making possible the participation of Professor Lipót Fejér of Budapest and Professors Tullio Levi-Civita and Enrico Bompiani of Rome.

On Tuesday afternoon Professor Levi-Civita and Professor G. D. Birkhoff gave addresses on *Some mathematical aspects of the new mechanics*, and *Quantum mechanics and asymptotic series*, respectively. This was a joint meeting of the Society and Section A of the A.A.A.S. at which members of the American Physical Society were guests of the mathematicians. About five hundred attended this session. President Coble presided. Professor Levi Civita's address has appeared in the August issue of this Bulletin; Professor Birkhoff's address will appear in the October issue.

A second session of the Society and Section A was held on Wednesday morning at which Professor Fejér spoke on *The infinite sequences arising in the theories of harmonic analysis, of interpolation, and of mechanical quadratures*. This was followed by papers entitled *On the use of Cesàro means in determining criteria for Fourier's constants* by Professor C. N. Moore, and *Certain problems of closest approximation* by Professor Dunham Jackson. President Coble presided. Professor Fejér's address has appeared in the August issue of this Bulletin; the addresses

of Professors Moore and Jackson will appear in early issues of this Bulletin.

On Wednesday afternoon the Society and Section A held a symposium on geometry at which the following addresses were delivered: *Nets on a surface and extension of trigonometry* by Professor Levi-Civita, *Invariant methods in differential geometry* by Professor W. C. Graustein, and *Deformations of higher species of surfaces and manifolds* by Professor Bompiani. Professor C. N. Moore presided.

The Friday afternoon session was devoted to number theory. Professor L. E. Dickson spoke on *Recent progress in additive number theory*. This address, to be published in the October issue of this Bulletin, was followed by a number of contributed papers. President Coble presided.

The sessions on Monday afternoon, Thursday morning, and Friday morning were devoted to short contributed papers.

The Mathematical Association met on Tuesday morning and Thursday afternoon. On Saturday afternoon the Society met in a joint session with Section A and the Mathematical Association at Northwestern University where Professor T. F. Holgate gave an illustrated talk on *Mathematical reminiscences of the World's Fair of 1893*. Professor H. E. Slaught presided.

Following this final session, tea was served by the ladies of the Department of Mathematics of Northwestern University.

The meeting on Wednesday afternoon was held in the Italian Building of the Century of Progress Exposition. With the exception of the Saturday session at Northwestern University, all other sessions were held at the University of Chicago.

On Friday evening a joint dinner of the Society and Mathematical Association was held in Judson Court. Two hundred forty-four mathematicians and their guests attended this dinner. Professor G. A. Bliss acted as toastmaster and called upon Professor Fejér who extended his greeting to the Society in Hungarian, after which this was translated by Mr. Medgyesy, the Hungarian Consul General. Professor Levi-Civita spoke in Italian, and Professor Bompiani translated his talk. Then Professor Bompiani spoke. Professor Niels Bohr spoke on the situation of mathematicians and physicists in Central Europe. Talks by Presidents Arnold Dresden and A. B. Coble concluded the program of the evening.

On Monday evening members of the Society were guests of the Century of Progress at a reception given by the Century of Progress and the A.A.A.S. to the foreign guests.

Most of the visiting mathematicians were housed in Judson Court, residence hall for men of the University of Chicago. Meals were served here. This building and the Common Room in Eckhart Hall served as social centers for the meeting. The ladies of the Department of Mathematics of the University of Chicago served tea daily at Eckhart Hall. This added much to the pleasure of the meetings. The arrangements made by the local members for the meetings and for the comfort of the visitors were carried through with great success. In spite of a heavy program and the attractions of the Century of Progress Exposition, fine facilities for social contacts were afforded. The gratitude of the Society to those making these arrangements was voiced by Professor C. R. Adams at the meeting on Friday when a rising vote of thanks to the local committee and others was unanimously passed.

The Council met on the evening of Tuesday, June 22.

The following fourteen persons were elected to membership in the Society:

Mrs. Jean Fleming Brown, Hunter College High School, New York City;  
Professor Herman Kyle Fulmer, Georgia School of Technology;  
Mr. Norman L. Haight, Sperry Gyroscope Company, Brooklyn;  
Professor Paul Laurence Hasty, Wilberforce University;  
Mr. Junius John Hayes, University of Utah;  
Miss Ethel Marie Hove, Wayne State Teachers College;  
Miss Mary Catherine Strain, Park College;  
Dr. M. O. Thomas, Annamalai University;  
Miss Margaret Elizabeth Waldron, Rhode Island College of Education;  
Mr. James Fletcher Wardwell, Johns Hopkins University;  
Mr. Berthold R. Wicker, St. Mary's College, Winona, Minnesota;

As nominees of Yale University:

Mr. Howard Carl Frantz; Mr. Saunders MacLane; Mr. John Cochran Montgomery.

The titles and cross references to abstracts of the papers read at the sessions follow below. The papers were read as follows: papers numbered 1 to 15 on Monday afternoon, Professor G. D. Birkhoff presiding; papers numbered 16 to 32 on Thursday morning, Professor W. C. Graustein presiding; papers num-

bered 33 to 54 on Friday morning, Professor E. B. Stouffer presiding; and papers numbered 55 to 58 on Friday afternoon, President A. B. Coble presiding. Miss Newton was introduced by Professor E. P. Lane, Mr. Peek by Dr. T. C. Fry, Mr. Lyle and Mr. Sharpe by Professor H. M. Gehman, Professor Creedy by Professor Tomlinson Fort, Mr. Alden by Professor F. R. Bamforth, and Mr. Oberg by Professor Dunham Jackson. The paper of the late Professor Kellogg was transmitted by Dr. J. J. Gergen, and that of the late Dr. Paley by Professor J. D. Tamarkin. Papers whose abstract numbers are followed by *t* were read by title.

1. *Non-commutative polynomials and cyclic algebras*, by Mr. Nathan Jacobson. (Abstract No. 39-5-191.)
2. *Fundamental regions for the simple group of order 168 in  $S_4$* , by Dr. W. I. Miller. (Abstract No. 39-7-192.)
3. *On algebraic rings and Abelian groups*, by Professor H. S. Vandiver. (Abstract No. 39-7-193-*t*.)
4. *Degree and class of multiply transitive groups*, by Professor W. A. Manning. (Abstract No. 39-3-113.)
5. *Every large number is a sum of nine values of a cubic polynomial in  $x$* , by Professor L. E. Dickson. (Abstract No. 39-7-194.)
6. *A set of four postulates for Boolean algebra in terms of the "implicative" operation*, by Professor B. A. Bernstein. (Abstract No. 39-7-195.)
7. *A system of independent mathematical postulates for Dirac's quantum mechanics*, by Mr. A. M. Tuttle. (Abstract No. 39-7-196.)
8. *The problem of Lagrange with finite side conditions*, by Dr. J. W. Bower. (Abstract No. 39-7-237.)
9. *Summary of results and proofs on Fermat's last theorem* (seventh paper), by Professor H. S. Vandiver. (Abstract No. 39-7-197-*t*.)
10. *Integral domains of rational generalized quaternion algebras*, by Professor A. A. Albert. (Abstract No. 39-7-198-*t*.)
11. *A second set of independent postulates for the informal Principia Mathematica*, by Professor E. V. Huntington. (Abstract No. 39-7-235-*t*.)

12. *Postulates for logic*, by Mr. T. P. Palmer. (Abstract No. 39-7-232-t.)

13. *Groups in which every operator has at most a prime number of conjugates*, by Professor G. A. Miller. (Abstract No. 39-7-233-t.)

14. *Positive quaternary quadratic forms representing all but a finite number of integers*, by Dr. A. E. Ross (National Research Fellow). (Abstract No. 39-7-228-t.)

15. *The sum of like powers of a series of numbers forming an arithmetical progression and the Bernoulli numbers*, by Professor I. J. Schwatt. (Abstract No. 39-7-236-t.)

16. *Bilinear correspondences in two and in three dimensions*, by Professor H. L. Olson. (Abstract No. 39-7-199.)

17. *Consecutive covariant configurations at a point of a space curve*, by Miss A. V. Newton. (Abstract No. 39-7-200.)

18. *Consistency of the conditions determining Kollektivs*, by Professor A. H. Copeland. (Abstract No. 39-7-201.)

19. *Invariance of the property of admissibility under certain general types of transformations*, by Mr. T. N. E. Greville. (Abstract No. 39-7-202-t.)

20. *The application of the theory of admissible numbers to time series with variable probability*, by Dr. Francis Regan. (Abstract No. 39-7-203.)

21. *Some new theorems on limits of variation*, by Mr. R. L. Peek, Jr. (Abstract No. 39-5-183.)

22. *The probability law for the sum of  $n$  independent variables when each is subject to the law  $(1/(2h)) \operatorname{sech}(\pi x/(2h))$* , by Professor W. D. Baten. (Abstract No. 39-5-184.)

23. *On Finsler spaces*, by Professor M. S. Knebelman. (Abstract No. 39-5-186-t.)

24. *A canonical form for a set of vectors*, by Professor M. S. Knebelman. (Abstract No. 39-5-185-t.)

25. *A neighborhood treatment of general topological spaces*, by Mr. W. O. Gordon. (Abstract No. 39-5-187-t.)

26. *Points of connectivity*, by Professor H. M. Gehman. (Abstract No. 39-7-204-t.)

27. *Some theorems on triodic continua*, by Dr. N. E. Rutt. (Abstract No. 39-7-205-t.)

28. *A type of homogeneity for continuous curves*, by Mr. C. H. Wheeler, III. (Abstract No. 39-7-206-t.)

29. *Centers and axes of symmetry*, by Mr. R. R. Lyle. (Abstract No. 39-7-207-t.)

30. *Arcs of symmetry*, by Mr. B. B. Sharpe. (Abstract No. 39-7-208-t.)

31. *Note on Riemannian function space geometry*, by Dr. H. P. Thielman. (Abstract No. 39-7-227-t.)

32. *The completely symmetric rational self-dual septimic*, by Dr. D. C. Duncan. (Abstract No. 39-7-230-t.)

33. *The clock problem in relativity* (second paper), by Professor J. W. Campbell. (Abstract No. 39-7-209.)

34. *A hyperbolic vector diagram and symbolic method*, by Professor Frederick Creedy. (Abstract No. 39-7-210.)

35. *Certain problems in the theory of closest approximation*, by Dr. P. G. Hoel. (Abstract No. 39-7-211.)

36. *Discontinuous solutions of the non-parametric problem of Mayer in the calculus of variations*, by Dr. W. T. Reid. (Abstract No. 39-7-212.)

37. *Sufficient conditions for the problem of Bolza in the calculus of variations*, by Dr. M. R. Hestenes. (Abstract No. 39-7-213.)

38. *Asymptotic solutions of certain ordinary differential equations associated with multiple roots of the characteristic equation* (preliminary report), by Mr. H. L. Turrittin. (Abstract No. 39-7-214.)

39. *Functional invariants of integro-differential equations*, by Professor I. A. Barnett. (Abstract No. 39-7-215.)

40. *Cauchy's problem for systems of second order partial differential equations*, by Dr. E. W. Titt (National Research Fellow). (Abstract No. 39-7-216.)

41. *On the location of the critical points of Green's function for a plane region*, by Professor J. L. Walsh. (Abstract No. 39-5-182-t.)

42. *On the element of decomposition of a doubly periodic function of the second kind*, by Professor M. A. Basoco. (Abstract No. 39-5-189-t.)

43. *On the arithmetized Fourier developments of certain doubly periodic functions of the second kind*, by Mr. G. D. Nichols. (Abstract No. 39-5-190-t.)

44. *Properties of differential equations arising from properties of the solution curves*, by Mr. H. H. Alden. (Abstract No. 39-7-217-t.)

45. *Converses of Gauss' theorem on the arithmetic mean*, by Professor O. D. Kellogg. (Abstract No. 39-7-218-*t.*)

46. *Derivatives, difference quotients, and Taylor's formula*, by Dr. Hassler Whitney (National Research Fellow). (Abstract No. 39-7-219-*t.*)

47. *Systems of algebraic difference equations*, by Professor J. F. Ritt and Dr. J. L. Doob (National Research Fellow). (Abstract No. 39-7-220-*t.*)

48. *The general case of non-homogeneous linear differential equations*, by Dr. W. J. Trjitzinsky. (Abstract No. 39-7-221-*t.*)

49. *On mechanical quadratures*, by Professor J. A. Shohat and Dr. Clement Winston. (Abstract No. 39-7-222-*t.*)

50. *A note on the Jacobi condition for parametric problems in the calculus of variations*, by Dr. M. R. Hestenes. (Abstract No. 39-7-223-*t.*)

51. *A special integral function*, by Dr. R. E. A. C. Paley. (Abstract No. 39-7-231-*t.*)

52. *The approximate solution of integral equations*, by Mr. E. N. Oberg. (Abstract No. 39-7-238-*t.*)

53. *The generalized Bernoulli polynomial and its relation to the Riemann zeta function*, by Dr. B. F. Kimball. (Abstract No. 39-7-229-*t.*)

54. *Concerning the equilibrium point of Green's function for an annulus*, by Professor A. J. Maria. (Abstract No. 39-7-234-*t.*)

55. *Franklin magic squares*, by Professor D. N. Lehmer. (Abstract No. 39-7-224.)

56. *A generalization of a theorem of Dirichlet*, by Professor A. A. Albert. (Abstract No. 39-7-225.)

57. *Note on the invariants of the class group of a cyclic field*, by Professor C. G. Latimer. (Abstract No. 39-7-226.)

58. *On imaginary quadratic fields whose class number is unity*, by Dr. D. H. Lehmer. (Abstract No. 39-5-188.)

M. H. INGRAHAM, *Associate Secretary*