

## THIRTY-SECOND ANNUAL LIST OF PAPERS

READ BEFORE THE AMERICAN MATHEMATICAL SOCIETY AND  
SUBSEQUENTLY PUBLISHED, INCLUDING REFERENCES  
TO THE PLACES OF PUBLICATION

- ALEXANDER, J. W. A proof and extension of the Jordan-Brouwer separation theorem. Read April 29, 1916. *Transactions of this Society*, vol. 23, No. 4, pp. 333-349; June, 1922.
- Invariant points of a surface transformation of given class. Read Dec. 28, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 173-184; April, 1923.
- BARNETT, I. A. Differential equations with a continuous infinitude of variables. Read Dec. 28, 1918. *American Journal of Mathematics*, vol. 44, No. 3, pp. 172-190; July, 1922.
- Linear partial differential equations with a continuous infinitude of variables. Read Dec. 28, 1918, and April 24, 1920. *American Journal of Mathematics*, vol. 45, No. 1, pp. 42-53; Jan., 1923.
- BELL, E. T. On restricted systems of higher indeterminate equations. Read (San Francisco) June 18, 1920. *Transactions of this Society*, vol. 22, No. 4, pp. 483-488; Oct., 1921.
- Anharmonic polynomial generalizations of the numbers of Bernoulli and Euler. Read (San Francisco) April 9, 1921. *Transactions of this Society*, vol. 24, No. 2, pp. 89-112; Sept., 1922.
- Periodicities in the theory of partitions. Read (San Francisco) April 8, 1922. *Annals of Mathematics*, (2), vol. 24, No. 1, pp. 1-22; Sept., 1922.
- Relations between the numbers of Bernoulli, Euler, Genocchi, and Lucas. Read (San Francisco) April 8, 1922. *Messenger of Mathematics*, vol. 52, No. 4, pp. 56-64, and No. 5, pp. 65-68; Aug. and Sept., 1922.
- Euler algebra. Read (San Francisco) Oct. 22, 1921, and April 7, 1923. *Transactions of this Society*, vol. 25, No. 1, pp. 135-154; Jan., 1923.
- Singly infinite class number relations. Read (San Francisco) Oct. 23, 1920. *Quarterly Journal of Mathematics*, vol. 49, No. 4, pp. 322-337; March, 1923.
- Applications of analysis to the arithmetic of higher forms. Read (San Francisco) Oct. 21, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 185-189; April, 1923.
- Square-partition congruences. Read (San Francisco) April 7, 1923. *This Bulletin*, vol. 29, No. 8, pp. 349-355; Oct., 1923.
- Analogies between the  $u_n, v_n$  of Lucas and elliptic functions. Read (San Francisco) Sept. 18, 1923. *This Bulletin*, vol. 29, No. 9, pp. 401-406; Nov., 1923.
- BENNETT, A. A. Normalized geometric systems. Read Oct. 30, 1920. *Proceedings of the National Academy of Sciences*, vol. 7, No. 3, pp. 84-89; March, 1921.
- Some algebraic analogies in matrix theory. Read Feb. 28, 1920. *Annals of Mathematics*, (2), vol. 23, No. 1, pp. 91-96; Sept., 1921.
- Tables for interior ballistics. Read Feb. 26, 1921. *Ordnance Department Document*, No. 2039. Washington, Government Printing Office, 1923. 80 pp.

- BERNSTEIN, B. A. On the complete independence of Hurwitz's postulates for abelian groups and fields. Read (San Francisco) Oct. 22, 1921, *Annals of Mathematics*, (2), vol. 23, No. 4, pp. 313-316; June, 1922.
- BIRKHOFF, G. D. Circular plates of variable thickness. Read Sept. 8, 1921. *Philosophical Magazine*, ser. 6, vol. 43, No. 5, pp. 953-962; May, 1922.
- BIRKHOFF, G. D., and LANGER, R. E. The boundary problems and developments associated with a system of ordinary linear differential equations of the first order. Read Feb. 25, 1922. *Proceedings of the American Academy of Arts and Sciences*, vol. 58, No. 2, pp. 51-128; April, 1923.
- BLISS, G. A. The reduction of singularities of plane curves by birational transformation. Read Dec. 28, 1922. *This Bulletin*, vol. 29, No. 4, pp. 161-183; April, 1923.
- BLUMBERG, H. New properties of all real functions. Read March 29, 1919, and Dec. 30, 1920. *Transactions of this Society*, vol. 24, No. 2, pp. 113-128; Sept., 1922.
- BRAY, H. E. Proof of a formula for an area. Read Dec. 27, 1922. *This Bulletin*, vol. 29, No. 6, pp. 264-270; June, 1923.
- BRINKMANN (H. W.). On Riemann spaces conformal to euclidean space. Read Dec. 27, 1922. *Proceedings of the National Academy of Sciences*, vol. 9, No. 1, pp. 1-3; Jan., 1923.
- On Riemann spaces conformal to Einstein spaces. Read April 28, 1923. *Proceedings of the National Academy of Sciences*, vol. 9, No. 5, pp. 172-174; May, 1923.
- BUCHANAN, D. Asymptotic planetoids. Read Dec. 31, 1919. *Transactions of this Society*, vol. 23, No. 4, pp. 409-431; June, 1922.
- BUSSEY, W. H. A note on the problem of eight queens. Read March 28, 1919. *American Mathematical Monthly*, vol. 29, No. 7, pp. 252-253; Aug., 1922.
- CAJORI, F. Origin of the names arithmetical and geometrical progression and proportion. Read (San Francisco) Oct. 21, 1922. *School Science and Mathematics*, vol. 22, No. 8, pp. 734-737; Nov., 1922.
- Mathematical signs of equality. Read Dec. 27, 1922. *Isis*, vol. 5, No. 1, pp. 116-125; 1923.
- The origin of the symbols for "degrees, minutes, and seconds." Read (San Francisco) Oct. 21, 1922. *American Mathematical Monthly*, vol. 30, No. 2, pp. 65-66; Feb., 1923.
- Recent symbolisms for decimal fractions. Read (San Francisco) April 8, 1922. *Mathematics Teacher*, vol. 16, No. 3, pp. 183-187; March, 1923.
- Varieties of minus signs. Read (San Francisco) April 7, 1923. *Mathematics Teacher*, vol. 16, No. 5, pp. 295-301; May, 1923.
- The evolution of our exponential notation. Read (San Francisco) April 7, 1923. *School Science and Mathematics*, vol. 23, No. 6, pp. 573-581; June, 1923.
- Grafting of the theory of limits on the calculus of Leibniz. Read Dec. 28, 1922. *American Mathematical Monthly*, vol. 30, No. 5, pp. 223-234; July-Aug., 1923.
- CAMP, C. C. Expansions in terms of solutions of partial differential equations. First paper: Multiple Fourier series expansions. Read Sept. 7, 1922. *Transactions of this Society*, vol. 25, No. 1, pp. 123-134; Jan., 1923.

- CANDY, A. L. Cyclic operations on determinants. Read (Southwestern Section) Dec. 2, 1922. *American Mathematical Monthly*, vol. 30, No. 3, pp. 113-120; March-April, 1923.
- CARMICHAEL, R. D. Boundary value and expansion problems: oscillation, comparison, and expansion theorems. Read April 10, 1920. *American Journal of Mathematics*, vol. 44, No. 2, pp. 129-152; April, 1922.
- CARVER, W. B. Systems of linear inequalities. Read Dec. 29, 1920. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 212-220; March, 1922.
- CHITTENDEN, E. W. On a theorem in general analysis and the interrelations of eight fundamental properties of classes of functions. Read April 21, 1916. *American Journal of Mathematics*, vol. 44, No. 2, pp. 153-162; April, 1922.
- COBLE, A. B. Associated sets of points. Read Dec. 29, 1922. *Transactions of this Society*, vol. 24, No. 1, pp. 1-20; July, 1922.
- Geometric aspects of the abelian modular functions of genus four (III). Read Dec. 31, 1919. *Proceedings of the National Academy of Sciences*, vol. 9, No. 6, pp. 183-187; June, 1923.
- COOLIDGE, J. L. The Gaussian law of error for any number of variables. Read Dec. 27, 1922. *Transactions of this Society*, vol. 24, No. 2, pp. 135-143; Sept., 1922.
- CRAIG, C. F. On the Riemann zeta function. Read Dec. 27, 1922. *This Bulletin*, vol. 29, No. 8, pp. 337-340; Oct., 1923.
- CRUM, W. L. The use of the median in determining seasonal variation. Read Oct. 28, 1922. *Journal of the American Statistical Association*, vol. 18, No. 141, pp. 607-614; March, 1923.
- The resemblance between the ordinate of the periodogram and the correlation coefficient. Read April 28, 1923. *Journal of the American Statistical Association*, vol. 18, No. 143, pp. 889-899; Sept., 1923.
- Note on the reliability of a test, with special reference to the examinations set by the College Entrance Board. Read Oct. 28, 1922. *American Mathematical Monthly*, vol. 30, No. 6, pp. 296-301; Sept.-Oct., 1923.
- CURTISS, D. R. A note on the preceding paper (by J. L. Walsh). Read April 14, 1922. *Transactions of this Society*, vol. 24, No. 3, pp. 181-184; Oct., 1922.
- On Kellogg's diophantine problem. Read Dec. 28, 1921. *American Mathematical Monthly*, vol. 29, No. 10, pp. 380-387; Nov.-Dec., 1922.
- Relations between kindred Riemannian  $P$  and  $Q$  functions. Read April 14, 1922. *This Bulletin*, vol. 29, No. 4, pp. 154-160; April, 1923.
- DAUS, P. H. Normal ternary continued fraction expansions for the cube roots of integers. Read (San Francisco) April 9, 1921. *American Journal of Mathematics*, vol. 44, No. 4, pp. 279-296; Oct., 1922.
- DICKSON, L. E. Algebras and their arithmetics. Read April 17, 1923. Chicago, University of Chicago Press, 1923.
- Integral solutions of  $x^2 - my^2 = zw$ . Read (Southwestern Section) Dec. 1, 1923. *This Bulletin*, vol. 29, No. 10, pp. 464-467; Dec., 1923.
- DINES, L. L. A primary classification of projective transformations in function space. Read Sept. 3, 1919. *American Journal of Mathematics*, vol. 44, No. 2, pp. 87-101; April, 1922.
- DOUGLAS, J. On certain two-point properties of general families of curves. Read April 28, 1917. *Transactions of this Society*, vol. 22, No. 3, pp. 289-310; July, 1921.
- Determination of all systems of  $\infty^4$  curves in space in which the sum of the angles of every triangle is two right angles. Read April 28, 1923. *This Bulletin*, vol. 29, No. 8, pp. 356-366; Oct., 1923.

- DRESDEN, A. On the second derivatives of an extremal-integral with an application to a problem with variable end points. (Supplementary paper.) Read Dec. 28, 1914. *Transactions of this Society*, vol. 25, No. 2, pp. 190-192; April, 1923.
- DUSHMAN, S. Some recent applications of the quantum theory of spectral series. Read Dec. 29, 1921. *Journal of the Optical Society of America*, vol. 6, No. 3, pp. 235-250; May, 1922.
- EDINGTON, W. E. Abstract group definitions and applications. Read Dec. 29, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 193-210; April, 1923.
- EISENHART, L. P. Orthogonal systems of hypersurfaces in a general Riemann space. Read April 28, 1923. *Transactions of this Society*, vol. 25, No. 2, pp. 259-280; April, 1923.
- Symmetric tensors of the second order whose first covariant derivatives are zero. Read April 28, 1923. *Transactions of this Society*, vol. 25, No. 2, pp. 297-306; April, 1923.
- EMCH, A. On plane algebraic curves which are invariant under a quadratic transformation. Read Dec. 28, 1921. *Tôhoku Mathematical Journal*, vol. 21, Nos. 3-4, pp. 310-326; Oct., 1922.
- ETTLINGER, H. J. Cauchy's paper of 1814 on definite integrals. Read Sept. 2, 1919. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 255-270; March, 1922.
- An elementary proof of a fundamental lemma concerning the limit of a sum. Read Sept. 7, 1922. *This Bulletin*, vol. 29, No. 5, pp. 219-223; May, 1923.
- EVANS, G. C. Fundamental points of potential theory. Read Sept. 4, 1919, and Dec. 30, 1920. *The Rice Institute Pamphlet*, vol. 7, No. 4, pp. 252-329; Oct., 1920.
- A simple theory of competition. Read Sept. 7, 1922. *American Mathematical Monthly*, vol. 29, No. 10, pp. 371-380; Nov.-Dec., 1922.
- A Bohr-Langmuir transformation. Read Sept. 7, 1922. *Proceedings of the National Academy of Sciences*, vol. 9, No. 7, pp. 230-236; July, 1923.
- EVERETT, H. S. Determination of all general homogeneous polynomials expressible as determinants whose elements are homogeneous polynomials. Read Dec. 28, 1921. *Transactions of this Society*, vol. 24, No. 3, pp. 185-194; Oct., 1922.
- FELDSTEIN, M. M. Invariants of the linear group modulo  $p^k$ . Read April 13, 1923. *Transactions of this Society*, vol. 25, No. 2, pp. 223-238; April, 1923.
- FISCHER, C. A. The kernel of the Stieltjes integral corresponding to a completely continuous transformation. Read April 23, 1921. *American Journal of Mathematics*, vol. 44, No. 4, pp. 237-246; Oct., 1922.
- FITE, W. B. Properties of the solutions of certain functional differential equations. Read April 26, 1919, and Dec. 31, 1919. *Transactions of this Society*, vol. 22, No. 3, pp. 311-319; July, 1921.
- FRANKLIN, P. A qualitative definition of the trigonometric and hyperbolic functions. Read Dec. 27, 1922. *This Bulletin*, vol. 29, No. 2, pp. 56-64; Feb., 1923.
- Tensors of given type in Riemann space. Read Dec. 27, 1922. *Philosophical Magazine*, ser. 6, vol. 45, No. 5, pp. 998-1009; May, 1923.
- GABA, M. G. A set of axioms for line geometry. Read (Southwestern Section) Nov. 27, 1920. *This Bulletin*, vol. 29, No. 3, pp. 128-138; March, 1923.

- GOKHALE, V. D. Concerning compact Kürschák fields. Read April 15, 1922. *American Journal of Mathematics*, vol. 44, No. 4, pp. 297-316; Oct., 1922.
- GRAUSTEIN, W. C. Parallel maps of surfaces. Read Dec. 31, 1919, and Dec. 28, 1920. *Transactions of this Society*, vol. 23, No. 3, pp. 298-332; April, 1922.
- Note on a certain type of ruled surface. Read April 28, 1923. *This Bulletin*, vol. 29, No. 8, pp. 341-344; Oct., 1923.
- GRONWALL, T. H. Differential variations in ballistics, with applications to the qualitative properties of the trajectory. Read Oct. 25, 1919. *Transactions of this Society*, vol. 22, No. 4, pp. 505-525; Oct., 1921.
- Summation of a double series. Read Feb. 26, 1921. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 282-285; June, 1922.
- On power series with positive real part in the unit circle. Read Sept. 8, 1921. *Annals of Mathematics*, (2), vol. 23, No. 4, pp. 317-332; June, 1922.
- GUMMER, C. F. The relative distribution of the real roots of a system of polynomials. Read Sept. 7, 1920. *Transactions of this Society*, vol. 23, No. 3, pp. 265-282; April, 1922.
- HART, W. L. Functionals of summable functions. Read Dec. 30, 1920. *Annals of Mathematics*, (2), vol. 24, No. 1, pp. 23-38; Sept., 1922.
- HAZLETT, O. C. Annihilators of modular invariants and covariants. Read Sept. 7, 1920. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 198-211; March, 1922.
- HILDEBRANDT, T. H. On uniform limitedness of sets of functional operations. Read March 26, 1921. *This Bulletin*, vol. 29, No. 7, pp. 309-315; July, 1923.
- HILLE, E. Zeros of Legendre functions. Read Dec. 29, 1920. *Arkiv för Matematik, Astronomi och Fysik*, vol. 17, No. 22, pp. 1-16; 1922.
- Oscillation theorems in the complex domain. Read Oct. 28, 1922. *Transactions of this Society*, vol. 23, No. 4, pp. 350-385; June, 1922.
- HITCHCOCK, F. L. A method for the numerical solution of integral equations. Read Dec. 28, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 2, pp. 88-104; March, 1923.
- HOLLCROFT, T. R. Plane involutions of order four. Read April 24, 1920. *American Journal of Mathematics*, vol. 44, No. 3, pp. 163-171; July, 1922.
- Singularities of curves of given order. Read April 28, 1923. *This Bulletin*, vol. 29, No. 9, pp. 407-414; Nov., 1923.
- HURWITZ, W. A. An expansion theorem for a system of linear differential equations of the first order. Read Sept. 5, 1917. *Transactions of this Society*, vol. 22, No. 4, pp. 526-543; Oct., 1921.
- JACKSON, D. Note on a class of polynomials of approximation. Read Sept. 8, 1920. *Transactions of this Society*, vol. 22, No. 3, pp. 320-326; July, 1921.
- Note on quartiles and allied measures. Read Oct. 28, 1922. *This Bulletin*, vol. 29, No. 1, pp. 17-20; Jan., 1923.
- Note on the convergence of weighted trigonometric series. Read Dec. 30, 1920. *This Bulletin*, vol. 29, No. 6, pp. 259-263; June, 1923.
- KARPINSKI, L. C. Two twelfth century algorithms. Read Sept. 9, 1914. *Isis*, vol. 3, No. 3, pp. 396-413; 1921.
- KAKEYA, S. Maximum modulus of some expressions of limited analytic functions. Read Feb. 24, 1923. *Transactions of this Society*, vol. 22, No. 4, pp. 489-504; Oct., 1921.

- KELLOGG, O. D. An example in potential theory. Read Sept. 8, 1922. *Proceedings of the American Academy of Arts and Sciences*, vol. 58, No. 14, pp. 527-533; June, 1923.
- KEMPNER, A. J. Polynomials and their residue systems (continued). Read Dec. 30, 1920. *Transactions of this Society*, vol. 22, No. 3, pp. 267-288; July, 1921.
- KENDALL, C. Congruences determined by a given surface. Read (Southwestern Section) Nov. 26, 1921. *American Journal of Mathematics*, vol. 45, No. 1, pp. 25-41; Jan., 1923.
- KLINE, J. R. Closed connected point sets which are disconnected by the removal of a finite number of points. Read April 23, 1921. *Proceedings of the National Academy of Sciences*, vol. 9, No. 1, pp. 7-12; Jan., 1923.
- LANE, E. P. A general theory of conjugate nets. Read March 26, 1921. *Transactions of this Society*, vol. 23, No. 3, pp. 283-297; April, 1922.
- Ruled surfaces with generators in one-to-one correspondence. Read April 15, 1922, and Dec. 29, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 281-296; April, 1923.
- LANGER, R. E. Developments associated with a boundary problem not linear in the parameter. Read Feb. 25, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 155-172; April, 1923.
- See BIRKHOFF, G. D.
- LEFSCHETZ, S. On certain numerical invariants of algebraic varieties with application to abelian varieties. Read (Southwestern Section) Nov. 27, 1920. *Transactions of this Society*, vol. 22, No. 3, pp. 327-406, and No. 4, pp. 407-482; July and Oct., 1921.
- Continuous transformations of manifolds. Read April 13, 1923. *Proceedings of the National Academy of Sciences*, vol. 9, No. 3, pp. 90-93; March, 1923.
- Report on curves traced on algebraic surfaces. Read April 13, 1923. *This Bulletin*, vol. 29, No. 6, pp. 242-258; June, 1923.
- LINFIELD, B. Z. On certain polar curves with their application to the location of the roots of the derivatives of a rational function. Read Oct. 28, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 239-258; April, 1923.
- LIPKA, J. On Hamilton's canonical equations and infinitesimal contact transformations. Read Dec. 28, 1921. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 1, pp. 31-46; Dec., 1922.
- On irreversible dynamical systems. Read Dec. 27, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 2, pp. 73-87; March, 1923.
- On conformal parallelism. Read Dec. 27, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 3, pp. 175-194; May, 1923.
- Trajectory surfaces and a generalization of the principal directions in any space. Read April 28, 1923. *Proceedings of the American Academy of Arts and Sciences*, vol. 59, No. 3, pp. 51-77; Sept., 1923.
- On the relative curvature of two curves in  $V_n$ . Read Feb. 24, 1923. *This Bulletin*, vol. 29, No. 8, pp. 345-348; Oct., 1923.
- LOGSDON, M. I. Equivalence and reduction of pairs of hermitian forms. Read March 25, 1921. *American Journal of Mathematics*, vol. 44, No. 4, pp. 247-260; Oct., 1922.
- MACDUFFEE, C. C. On transformable systems and covariants of algebraic forms. Read Dec. 28, 1922. *This Bulletin*, vol. 29, No. 1, pp. 26-33; Jan., 1923.

- MACNEISH, H. F. Euler squares. Read Dec. 28, 1921. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 221-227; March, 1922.
- MANNEBACK, C. An integral equation for skin effect in parallel conductors. Read Feb. 25, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 1, No. 3, pp. 123-146; April, 1922.
- MILLER, G. A. Substitution groups whose cycles of the same order contain a given number of letters. Read April 14, 1922. *American Journal of Mathematics*, vol. 44, No. 2, pp. 122-128; April, 1922.
- I-conjugate operators of an abelian group. Read Dec. 30, 1920. *Transactions of this Society*, vol. 24, No. 1, pp. 70-78; July, 1922.
- Contradictions in the literature of group theory. Read Dec. 28, 1921. *American Mathematical Monthly*, vol. 29, No. 9, pp. 319-328; Oct., 1922.
- Groups in which the number of operators in a set of conjugates is equal to the order of the commutator subgroup. Read Sept. 7, 1922. *This Bulletin*, vol. 29, No. 2, pp. 64-70; Feb., 1923.
- Same left co-set and right co-set multipliers for any finite group. Read April 13, 1923. *This Bulletin*, vol. 29, No. 9, pp. 394-398; Nov., 1923.
- MOORE, C. L. E. Note on the vanishing of the determinant of the second fundamental form of a hypersurface. Read Dec. 27, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 2, pp. 125-130; March, 1923.
- MOORE, C. N. Generalized limits in general analysis, first paper. Read Dec. 28, 1918. *Transactions of this Society*, vol. 24, No. 2, pp. 79-88; Sept., 1922.
- Sur les séries de Fourier généralisées des fonctions non intégrables. Read Sept. 9, 1921. *Comptes Rendus de l'Académie des Sciences*, vol. 176, No. 22, pp. 1536-1537; May 23, 1923.
- Sur la sommabilité de Cesàro pour la série double de Fourier. Read Dec. 28, 1922. *Comptes Rendus de l'Académie des Sciences*, vol. 176, No. 24, pp. 1691-1693; June 11, 1923.
- MOORE, R. L. Concerning continuous curves in the plane. Read Oct. 29, 1921. *Mathematische Zeitschrift*, vol. 15, Nos. 3-4, pp. 254-260; Dec., 1922.
- On the generation of a simple surface by means of a set of equi-continuous curves. Read Feb. 23, 1918. *Fundamenta Mathematicæ*, vol. 4, pp. 106-117; 1923.
- An uncountable, closed and non-dense point set each of whose complementary intervals abuts on another one at each of its ends. Read Dec. 29, 1922. *This Bulletin*, vol. 29, No. 2, pp. 49-50; Feb., 1923.
- Concerning the cut-points of continuous curves and of other closed and connected point sets. Read April 14, 1922. *Proceedings of the National Academy of Sciences*, vol. 9, No. 4, pp. 101-106; April, 1923.
- Report on continuous curves from the viewpoint of analysis situs. Read (Southwestern Section) Dec. 2, 1922. *This Bulletin*, vol. 29, No. 7, pp. 289-302; July, 1923.
- MORDELL, L. J. An introductory account of the arithmetical theory of algebraic numbers and its recent development. Read Sept. 6, 1923. *This Bulletin*, vol. 29, No. 10, pp. 445-463; Dec., 1923.
- MORITZ, R. E. Ueber gewisse Infinitesimaloperationen der höheren Operationsstufen. Teil III. Read (San Francisco) Oct. 22, 1921. *Tôhoku Mathematical Journal*, vol. 22, Nos. 3-4, pp. 223-240; May, 1923.

- MULLIKIN, A. M. Certain theorems relating to plane connected point sets. Read Oct. 25, 1919, Dec. 28, 1920, and Feb. 26, 1921. *Transactions of this Society*, vol. 24, No. 2, pp. 144-162; Sept., 1922.
- MURRAY, F. H. On certain linear differential equations of the second order. Read Dec. 28, 1922. *Annals of Mathematics*, (2), vol. 24, No. 1, pp. 69-88; Sept., 1922.
- Periodic solutions in the problem of three bodies. Read Sept. 8, 1922. *This Bulletin*, vol. 29, No. 1, pp. 15-16; Jan., 1923.
- MUSSELMAN, J. R. Spurious correlation applied to urn schemata. Read Sept. 9, 1921. *Journal of the American Statistical Association*, vol. 18, No. 143, pp. 908-911; Sept., 1923.
- NÖRLUND, N. E. Sur certaines équations aux différences finies. Read April 28, 1923. *Transactions of this Society*, vol. 25, No. 1, pp. 13-98; Jan., 1923.
- OSGOOD, W. F. On the gyroscope. Read April 23, 1921. *Transactions of this Society*, vol. 23, No. 3, pp. 240-264; April, 1922.
- PHILLIPS, H. B. Mathematical aspects of quantum theory. Read Dec. 29, 1921. *Journal of the Optical Society of America*, vol. 6, No. 3, pp. 229-234; May, 1922.
- PHILLIPS, H. B., and WIENER, N. Nets and the Dirichlet problem. Read Dec. 28, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 2, pp. 105-124; March, 1923.
- PIERPONT, J. Geometric aspects of Einstein's theory. Read Sept. 7, 1921. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 228-254; March, 1922.
- PORITSKY, H. On curves kinematically related to a given curve. Read Dec. 28, 1922. *This Bulletin*, vol. 29, No. 2, pp. 71-78; Feb., 1923.
- PORTER, M. B. The second mean value theorem for summable functions. Read (San Francisco) Sept. 18, 1923. *This Bulletin*, vol. 29, No. 9, pp. 399-400; Nov., 1923.
- RAINICH, G. Y. Tensor analysis without coordinates. Read April 28, 1923. *Proceedings of the National Academy of Sciences*, vol. 9, No. 6, pp. 179-183; June, 1923.
- RAYNOR, G. E. Dirichlet's problem. Read Dec. 28, 1922. *Annals of Mathematics*, (2), vol. 23, No. 3, pp. 183-197; March, 1922.
- RICHARDSON, R. G. D. On the reality of the zeros of a lambda determinant. Read Oct. 27, 1923. *This Bulletin*, vol. 29, No. 10, pp. 467-469; Dec. 1923.
- RIETZ, H. L. Frequency distributions obtained by certain transformations of normally distributed variates. Read (Southwestern Section) Nov. 27, 1920. *Annals of Mathematics*, (2), vol. 23, No. 4, pp. 292-300; June, 1922.
- RITT, J. F. On algebraic functions which can be expressed in terms of radicals. Read Oct. 30, 1920, and Oct. 29, 1921. *Transactions of this Society*, vol. 24, No. 1 pp 21-30; July, 1922.
- Sur les fonctions rationnelles permutables. Read Feb. 24, 1923. *Comptes Rendus de l'Académie des Sciences*, vol. 176, No. 2, pp. 60-61; Jan. 8, 1923.
- On the integrals of elementary functions. Read Feb. 25, 1922. *Transactions of this Society*, vol. 25, No. 2, pp. 211-222; April, 1923.
- RUTLEDGE, G. The polynomial determined by  $2n + 1$  points. Read Dec. 28, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 1, pp. 47-62; Dec., 1922.

- SHARPE, F. R., and Snyder, V. The  $(2, 1)$  correspondence associated with the cubic space involution of order two. Read Sept. 7, 1922. *Transactions of this Society*, vol. 25, No. 1, pp. 1-12; Jan., 1923.
- SHAW, J. B. General vector calculus. Read Nov. 27, 1909, Dec. 31, 1909, Jan. 2, 1913, Dec. 26, 1913, Dec. 31, 1915, and March 26, 1921. *Transactions of this Society*, vol. 24, No. 3, pp. 195-244; Oct., 1922.
- SNYDER, V. See SHARPE, F. R.
- TAYLOR, J. S. A four-space representation of complex plane analytics. Read Dec. 27, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 1, pp. 1-30; Dec., 1922.
- TOLMAN, R. C. Review of the present status of the two forms of quantum theory. Read Dec. 29, 1921. *Journal of the Optical Society of America*, vol. 6, No. 3, pp. 211-228; May, 1922.
- TURNER, J. S. A fundamental system of invariants of a modular group of transformations. Read April 15, 1922. *Transactions of this Society*, vol. 24, No. 2, pp. 129-134; Sept., 1922.
- VEBLEN, O. Projective and affine geometry of paths. Read Oct. 28, 1922. *Proceedings of the National Academy of Sciences*, vol. 8, No. 12, pp. 347-350; Dec., 1922.
- Geometry and physics. Read Dec. 28, 1922. *Science*, newser., vol. 57, No. 1466, pp. 129-139; Feb. 2, 1923.
- WAHLIN, G. E. The factorization of the rational primes in a cubic domain. Read Dec. 22, 1916. *American Journal of Mathematics*, vol. 44, No. 3, pp. 191-203; July, 1922.
- WALSH, J. L. A theorem on loci connected with cross-ratios. Read Oct. 29, 1921. *Rendiconti del Circolo Matematico di Palermo*, vol. 46, Nos. 2-3, pp. 236-248; May-Dec., 1922.
- On the location of the roots of the jacobian of two binary forms, and of the derivative of a rational function. Read Sept. 9, 1921. *Transactions of this Society*, vol. 24, No. 1, pp. 31-69; July, 1922.
- On the location of the roots of certain types of polynomials. Read Dec. 29, 1920, and April 23, 1921. *Transactions of this Society*, vol. 24, No. 3, pp. 163-180; Oct., 1922.
- A closed set of normal orthogonal functions. Read Feb. 25, 1922. *American Journal of Mathematics*, vol. 45, No. 1, pp. 5-24; Jan., 1923.
- A property of Haar's system of orthogonal functions. Read Feb. 24, 1923. *Mathematische Annalen*, vol. 90, Nos. 1-2, pp. 38-45; Sept., 1923.
- WEAVER, J. H. A generalization of the strophoid. Read Sept. 7, 1920. *American Mathematical Monthly*, vol. 29, No. 5, pp. 204-207; May, 1922.
- WEISNER, L. Groups whose maximal cyclic subgroups are independent. Read Dec. 28, 1922. Author's dissertation. New York, 1923. 17 pp.
- WHITE, H. S. The associated point of seven points in space. Read April 23, 1921. *Annals of Mathematics*, (2), vol. 23, No. 4, pp. 301-306; June, 1922.
- WHITTEMORE, J. K. Ruled surfaces with director planes. Read April 23, 1921. *This Bulletin*, vol. 29, No. 1, pp. 21-25; Jan., 1923.
- Total geodesic curvature and geodesic torsion. Read Oct. 29, 1921. *This Bulletin*, vol. 29, No. 2, pp. 51-54; Feb., 1923.
- WIENER, N. Differential-space. Read Dec. 27, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 3, pp. 131-174; May, 1923.
- See PHILLIPS, H. B.

- WILCZYNSKI, E. J. Some generalizations of geodesics. Read March 25, 1921. *Transactions of this Society*, vol. 23, No. 3, pp. 223-239; April, 1922.
- WILDER, C. E. Differential geometry of an  $m$ -dimensional manifold in a euclidean space of  $n$  dimensions. Read Dec. 28, 1921. *Transactions of this Society*, vol. 25, No. 1, pp. 99-122; Jan., 1923.
- WILLIAMS, K. P. The Laplace-Poisson mixed equation. Read April 15, 1922. *American Journal of Mathematics*, vol. 44, No. 3, pp. 217-224; July, 1922.
- WOOD, F. E. On certain relations between the projective theory of surfaces and the projective theory of congruences. Read March 26, 1921. *Transactions of this Society*, vol. 23, No. 4, pp. 386-408; June, 1922.
- A graphical treatment of mixtures. Read April 13, 1923. *American Mathematical Monthly*, vol. 30, No. 5, pp. 243-249; July-Aug., 1923.
- ZELDIN, S. D. On the structure of finite continuous groups with a single exceptional infinitesimal transformation. Read Dec. 31, 1919. *American Journal of Mathematics*, vol. 44, No. 3, pp. 204-216; July, 1922.
- Conformal transformations of linear homogeneous difference equations and their invariants. Read April 14, 1922. *Journal of Mathematics and Physics of the Massachusetts Institute of Technology*, vol. 2, No. 1, pp. 63-72; Dec., 1922.