

TWENTY-NINTH ANNUAL LIST OF PAPERS.

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

- ALEXANDER, J. W. Note on two three-dimensional manifolds with the same group. Read Sept. 2, 1919. *Transactions of the American Mathematical Society*, vol. 20, No. 4, pp. 339-342; Oct., 1919.
- A proof of Jordan's theorem about a simple closed curve. Read April 29, 1916. *Annals of Mathematics*, ser. 2, vol. 21, No. 3, pp. 180-184; March, 1920.
- Note on Riemann spaces. Read Feb. 28, 1920. *Bulletin of the American Mathematical Society*, vol. 26, No. 8, pp. 370-372; May, 1920.
- ALGER, P. L. See VEBLEN, O.
- ALTSHILLER-COURT (N.). On a pencil of nodal cubics. Read Dec. 31, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 5, pp. 203-211; Feb., 1920.
- On the orthocentric quadrilateral. Read Dec. 31, 1919. *American Mathematical Monthly*, vol. 27, No. 5, pp. 199-202; May, 1920.
- BARNETT, I. A. Integro-differential equations with constant limits of integration. Read Dec. 28, 1918. *Bulletin of the American Mathematical Society*, vol. 26, No. 5, pp. 193-203; Feb., 1920.
- BAUER, L. A. Geophysics at the Brussels meetings, July 18-28, 1919. Read Sept. 4, 1919. *Science*, new ser., vol. 50, No. 1296, pp. 399-403; Oct. 31, 1919.
- BELL, E. T. The twelve elliptic functions related to sixteen doubly periodic functions of the second kind. Read (San Francisco) April 10, 1920. *Messenger of Mathematics*, new ser., vol. 49, Nos. 5-6, pp. 78-84; Sept. and Oct., 1919.
- On the number of representations of $2n$ as a sum of $2r$ squares. Read (San Francisco) April 5, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 1, pp. 19-25; Oct., 1919.
- Sur les représentations propres par quelques formes quadratiques de Liouville. Read (San Francisco) Oct. 25, 1919. *Comptes Rendus de l'Académie des Sciences*, vol. 169, No. 17, pp. 711-712; Oct. 27, 1919.
- On the enumeration of proper and improper representations in homogeneous forms. Read (San Francisco) Oct. 25, 1919. *Annals of Mathematics*, ser. 2, vol. 21, No. 3, pp. 166-179; March, 1920.
- BENNETT, A. A. The sign of the distance in analytical geometry. Read Oct. 25, 1919. *American Mathematical Monthly*, vol. 26, No. 8, pp. 344-350; Oct., 1919.
- Poncelet polygons in higher space. Read Dec. 30, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 6, pp. 274-275; March, 1920.

- BIRKHOFF, G. D. Recent advances in dynamics. Read Dec. 30, 1919. *Science*, new ser., vol. 51, No. 1307, pp. 51-55; Jan. 16, 1920.
- BLISS, G. A. The use of adjoint systems in the problem of differential corrections for trajectories. Read March 29, 1919. *Journal of the United States Artillery*, vol. 51, No. 3, pp. 296-311; Sept., 1919.
- A method of computing differential corrections for a trajectory. Read March 29, 1919. *Journal of the United States Artillery*, vol. 51, No. 4, pp. 445-449; Oct., 1919.
- Differential equations containing arbitrary functions. Read Sept. 3, 1919. *Transactions of the American Mathematical Society*, vol. 21, No. 2, pp. 79-92; April, 1920.
- Functions of lines in ballistics. Read Sept. 3, 1919. *Transactions of the American Mathematical Society*, vol. 21, No. 2, pp. 93-106; April, 1920.
- Some recent developments in the calculus of variations. Read Dec. 30, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 8, pp. 343-361; May, 1920.
- BLUMBERG, H. On certain saltus equations. Read (Southwestern Section) Nov. 29, 1913, and Dec. 27, 1913. *American Journal of Mathematics*, vol. 41, No. 3, pp. 183-190; July, 1919.
- BORDEN, R. F. On the adjoint of a certain mixed equation. Read Dec. 30, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 9, pp. 408-412; June, 1920.
- BRINK, R. W. A new sequence of integral tests for the convergence and divergence of infinite series. Read April 29, 1916. *Annals of Mathematics*, ser. 2, vol. 21, No. 1, pp. 39-60; Sept., 1919.
- BUCHANAN, D. Asymptotic satellites near the equilateral-triangle equilibrium points in the problem of three bodies. Read Dec. 27, 1916. *Transactions of the Cambridge Philosophical Society*, vol. 22, No. 15, pp. 309-340; Oct., 1919.
- Periodic orbits on a surface of revolution. Read Dec. 26, 1913 and Sept. 5, 1918. *American Journal of Mathematics*, vol. 42, No. 1, pp. 47-75; Jan., 1920.
- CAIRNS, W. D. A derivation of the equation of the normal probability curve. Read Sept. 5, 1918. *Bulletin of the American Mathematical Society*, vol. 26, No. 3, pp. 105-108; Dec., 1919.
- Certain properties of binomial coefficients. Read Sept. 4, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 4, pp. 160-164; Jan., 1920.
- CARMICHAEL, R. D. On a general class of integrals of the form $\int_0^\infty \varphi(t)g(x+t)dt$. Read April 13, 1918. *Transactions of the American Mathematical Society*, vol. 20, No. 4, pp. 313-322; Oct., 1919.
- Note on convergence tests for series and on Stieltjes integration by parts. Read Sept. 4, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 3, pp. 97-102; Dec., 1919.
- Note on a physical interpretation of Stieltjes integrals. Read Sept. 4, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 3, pp. 102-105; Dec., 1919.

- Conditions necessary and sufficient for the existence of a Stieltjes integral. Read Sept. 4, 1919. *Proceedings of the National Academy of Sciences*, vol. 5, No. 12, pp. 551-555; Dec., 1919.
- On sequences of integers defined by recurrence relations. Read Dec. 29, 1917. *Quarterly Journal of Mathematics*, vol. 48, No. 4, pp. 343-372; Jan., 1920.
- On the convergence of certain classes of series of functions. Read Oct. 25, 1919. *American Journal of Mathematics*, vol. 42, No. 2, pp. 77-90; April 1920.
- CARVER, W. B., and KING, E. F. A property of permutation groups analogous to multiple transitivity. Read Dec. 31, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 7, pp. 319-322; April, 1920.
- CHAO, Y. R. A note on "continuous mathematical induction." Read (San Francisco) April 5, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 1, pp. 17-18; Oct., 1919.
- CHITTENDEN, E. W., and PITCHER, A. D. On the theory of developments of an abstract class in relation to the calcul fonctionnel. Read March 22, 1913, April 6, 1917 and March 28, 1919. *Transactions of the American Mathematical Society*, vol. 20, No. 3, pp. 213-233; July, 1919.
- COBLE, A. B. The ten nodes of the rational sextic and of the Cayley symmetroid. Read March 28, 1919. *American Journal of Mathematics*, vol. 41, No. 4, pp. 243-265; Oct., 1919.
- COOLIDGE, J. L. The geometry of hermitian forms. Read Dec. 30, 1919. *Transactions of the American Mathematical Society*, vol. 21, No. 1, pp. 44-51; Jan., 1920.
- CURTIS, M. F. On the rectifiability of a twisted cubic. Read Dec. 31, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 6, pp. 275-277; March, 1920.
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- EIESLAND, J. Flat-sphere geometry, third paper. Read Sept. 4, 1916. *Tôhoku Mathematical Journal*, vol. 16, Nos. 3-4, pp. 185-235; Nov., 1919.
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- EMCH, A. On a certain class of rational ruled surfaces. Read Dec. 28, 1918. *Proceedings of the National Academy of Sciences*, vol. 5, No. 6, pp. 222-224; June, 1919.

- FORD, W. B. A brief account of the life and work of the late Professor Ulisse Dini. Read Sept. 3, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 4, pp. 173-177; Jan., 1920.
- FRANKLIN, P. Computation of the complex zeros of the function $P(z)$ complementary to the incomplete gamma function. Read April 26, 1919. *Annals of Mathematics*, ser. 2, vol. 21, No. 1, pp. 61-63; Sept., 1919.
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- GABA, M. G. A set of completely independent postulates for the linear order η . Read Sept. 4, 1917. *Bulletin of the American Mathematical Society*, vol. 26, No. 4, pp. 158-159; Jan., 1920.
- GLENN, O. E. On a new treatment of theorems of finiteness. Read Dec. 27, 1917 and Sept. 5, 1918. *Transactions of the American Mathematical Society*, vol. 20, No. 3, pp. 203-212; July, 1919.
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- GRONWALL, T. H. On the influence of keyways on the stress distribution in cylindrical shafts. Read Feb. 26, 1916. *Transactions of the American Mathematical Society*, vol. 20, No. 3, pp. 234-244; July, 1919.
- HALLETT, G. H. Linear order in three dimensional euclidean and double elliptic spaces. Read April 27, 1918. *Annals of Mathematics*, ser. 2, vol. 21, No. 3, pp. 185-202; March, 1920.
- HANCOCK, H. Les fondements de la théorie des fonctions elliptiques. Read Dec. 28, 1918. *Bulletin de la Société Mathématique de France*, vol. 47, Nos. 1-2, pp. 37-42; 1919.
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- HAZLETT, O. C. A theorem on modular covariants. Read Dec. 28, 1918. *Transactions of the American Mathematical Society*, vol. 21, No. 2, pp. 247-254; April, 1920.
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- HUNTINGTON, E. V. Mathematics and statistics, with an elementary account of the correlation coefficient and the correlation ratio. Read Sept. 4, 1919. *American Mathematical Monthly*, vol. 26, No. 10, pp. 421-435; Dec., 1919.
- JAMES, G. On the theory of summability. Read Dec. 22, 1916. *Annals of Mathematics*, ser. 2, vol. 21, No. 2, pp. 120-127; Dec., 1919.
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- KLINE, J. R. Concerning sense on closed curves in non-metrical plane analysis situs. Read April 26, 1919. *Annals of Mathematics*, ser. 2, vol. 21, No. 2, pp. 113-119; Dec., 1919.
- LOVE, C. E. Note on a class of singular integral equations of the second kind. Read Dec. 30, 1919. *Annals of Mathematics*, ser. 2, vol. 21, No. 2, pp. 104-112; Dec., 1919.
- LUNN, A. C. Some functional equations in the theory of relativity. Read April 26, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 1, pp. 26-34; Oct., 1919.
- A principle of duality in thermodynamics. Read Dec. 31, 1919. *Physical Review*, ser. 2, vol. 15, No. 4, pp. 269-276; April, 1920.
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- MACNEISH, H. F. The sum of the face angles of certain polyhedrons in n -space. Read Dec. 30, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 9, pp. 398-399; June, 1920.
- MATHEWSON, L. C. On the groups of isomorphisms of a system of abelian groups of order p^m and type $(n, 1, 1, \dots, 1)$. Read Sept. 5, 1918. *American Journal of Mathematics*, vol. 42, No. 2, pp. 119-128; April, 1920.
- MICHAEL, E. L. See MC EWEN, G. F.
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- MOORE, C. L. E. Surfaces of rotation in a space of four dimensions. Read April 27, 1918. *Annals of Mathematics*, ser. 2, vol. 21, No. 2, pp. 81-93; Dec., 1919.
- Rotation surfaces of constant curvature in space of four dimensions. Read April 24, 1920. *Bulletin of the American Mathematical Society*, vol. 26, No. 10, pp. 454-460; July, 1920.
- MOORE, C. L. E., and PHILLIPS, H. B. Rotations in space of even dimensions. Read Dec. 30, 1919. *Proceedings of the American Academy of Arts and Sciences*, vol. 55, No. 4, pp. 155-188; March, 1920.
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- MOULTON, F. R. On the stability of direct and retrograde satellite orbits. Read April 11, 1914. *Monthly Notices of the Royal Astronomical Society*, vol. 75, No. 2, pp. 40-57; Dec., 1914.
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- See MOORE, C. L. E.
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- RIETZ, H. L. On functional relations for which the coefficient of correlation is zero. Read March 29, 1919. *Quarterly Publications of the American Statistical Association*, new ser., vol. 16, No. 127, pp. 472-476; Sept., 1919.
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- SAFFORD, F. H. Reduction of the elliptic element to the Weierstrass form. Read April 26, 1919. *Bulletin of the American Mathematical Society*, vol. 26, No. 1, pp. 13-16; Oct., 1919.
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- SHUGERT, S. P. The resolvents of König and other types of symmetric functions. Read Sept. 3, 1919. Author's dissertation. Lancaster, 1919. 19 pp.

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