

## THIRTIETH ANNUAL LIST OF PAPERS.

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

- ALEXANDER, J. W. On the equilibrium of a fluid mass at rest. Read Feb. 28, 1920. *Transactions of the American Mathematical Society*, vol. 21, No. 4, pp. 446-450; Oct., 1920.
- ALTSHILLER-COURT, N. Sur la cubique à point double. Read April 26, 1913. *Nouvelles Annales de Mathématiques*, ser. 4, vol. 20, No. 11, pp. 424-435; Nov., 1920.
- On a pencil of nodal cubics. Second paper. Read April 24, 1920. *Bulletin of the American Mathematical Society*, vol. 27, No. 3, pp. 114-115; Dec., 1920.
- BARNETT, I. A. Functionals invariant under one-parameter continuous groups of transformations in the space of continuous functions. Read April 24, 1920. *Proceedings of the National Academy of Sciences*, vol. 6, No. 4, pp. 200-204; April, 1920.
- BELL, E. T. Sur les représentations propres par quelques formes quadratiques de Liouville. Read (San Francisco) Oct. 25, 1919. *Journal de Mathématiques Pures et Appliquées*, ser. 8, vol. 2, pp. 249-271; 1919.
- Parametric solutions for a fundamental equation in the general theory of relativity, with a note on similar equations in dynamics. Read (San Francisco) April 10, 1920. *Philosophical Magazine*, ser. 6, vol. 39, No. 231, pp. 285-288; March, 1920.
- On a certain inversion in the theory of numbers. Read (San Francisco) Oct. 25, 1919. *Tôhoku Mathematical Journal*, vol. 17, Nos. 3-4, pp. 221-231; May, 1920.
- On the representations of numbers as sums of 3, 5, 7, 9, 11 and 13 squares. Read (San Francisco) April 5, 1919. *American Journal of Mathematics*, vol. 42, No. 3, pp. 168-188; July, 1920.
- On class number relations and certain remarkable sums relating to 5 and 7 squares. Read (San Francisco) April 10, 1920. *Quarterly Journal of Mathematics*, vol. 49, No. 1, pp. 45-51; Oct., 1920.
- Arithmetical paraphrases. Read (San Francisco) Dec. 14, 1918. *Transactions of the American Mathematical Society*, vol. 22, No. 1, pp. 1-30; Jan., 1921.
- An image in four-dimensional lattice space of the theory of the elliptic theta functions. Read (San Francisco) June 18, 1920. *Bulletin of the American Mathematical Society*, vol. 27, No. 4, pp. 153-160; Jan., 1921.
- Proof of an arithmetic theorem due to Liouville. Read (San Francisco) April 9, 1921. *Bulletin of the American Mathematical Society*, vol. 27, No. 6, pp. 273-275; March, 1921.
- Arithmetical paraphrases (II). Read (San Francisco) Dec. 14, 1918. *Transactions of the American Mathematical Society*, vol. 22, No. 2, pp. 198-219; April, 1921.
- On a general arithmetic formula of Liouville. Read (San Francisco) April 9, 1921. *Bulletin of the American Mathematical Society*, vol. 27, No. 7, pp. 330-332; April, 1921.

- BENNETT, A. A. The physical bases of ballistic table computations. Read Oct. 25, 1919. War Department Document No. 972. Washington, Government Printing Office, 1920. 17 pp.
- Continuous matrices, algebraic correspondences, and closure. Read Dec. 30, 1919. *Annals of Mathematics*, ser. 2, vol. 21, No. 4, pp. 299-305; June, 1920.
- BIRKHOFF, G. D. Surface transformations and their dynamical applications. Read Sept. 8, 1914, and Sept. 5, 1918. *Acta Mathematica*, vol. 43, Nos. 1-2, pp. 1-119; 1920.
- BORDEN, R. F. On the Laplace-Poisson mixed equation. Read April 12, 1918. *American Journal of Mathematics*, vol. 42, No. 4, pp. 257-277; Oct., 1920.
- BORGER, R. L. On the Cauchy-Goursat theorem. Read Dec. 31, 1919. *Bulletin of the American Mathematical Society*, vol. 27, No. 7, pp. 325-329; April, 1921.
- BOUTROUX, P. On multiform functions defined by differential equations of the first order. Read Dec. 31, 1919, and Feb. 28, 1920. *Annals of Mathematics*, ser. 2, vol. 22, No. 1, pp. 1-10; Sept., 1920.
- BUCHANAN, D. Isosceles-triangle solutions of the problem of three bodies. Read April 28, 1911. *Periodic Orbits*, by F. R. Moulton and collaborators, chapter 10, pp. 325-356; Carnegie Institution Publication No. 161, Washington, 1920.
- CAJORI, F. Moritz Cantor, the historian of mathematics. Read (San Francisco) June 17, 1920. *Bulletin of the American Mathematical Society*, vol. 27, No. 1, pp. 21-28; Oct., 1920.
- Augustus De Morgan on divergent series. Read (San Francisco) April 10, 1920. *Bulletin of the American Mathematical Society*, vol. 27, No. 2, pp. 77-81; Nov., 1920.
- Euclid of Alexandria and the bust of Euclid of Megara. Read (San Francisco) April 9, 1921. *Science*, new ser., vol. 53, No. 1374, pp. 414-415; April 29, 1921.
- The spread of Newtonian and Leibnizian notations of the calculus. Read (San Francisco) April 9, 1921. *Bulletin of the American Mathematical Society*, vol. 27, Nos. 9-10, pp. 453-458; June-July, 1921.
- CARMICHAEL, R. D. Note on the theory of integral functions of the first class. Read Oct. 25, 1919. *Tôhoku Mathematical Journal*, vol. 17, Nos. 3-4, pp. 279-285; May, 1920.
- Note on a transformation of series similar to the principle of inversion in the theory of numbers. Read Oct. 25, 1919. *Tôhoku Mathematical Journal*, vol. 17, Nos. 3-4, pp. 286-291; May, 1920.
- On the expansion of certain analytic functions in series. Read April 10, 1920. *Annals of Mathematics*, ser. 2, vol. 22, No. 1, pp. 29-34; Sept., 1920.
- Boundary value and expansion problems: algebraic basis of the theory. Read April 10, 1920. *American Journal of Mathematics*, vol. 43, No. 2, pp. 69-101; April, 1921.
- CARVER, W. B. The failure of the Clifford chain. Read Dec. 27, 1917. *American Journal of Mathematics*, vol. 42, No. 3, pp. 137-167; July, 1920.
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- COBLE, A. B. Multiple binary forms with the closure property. Read April 9, 1920. *American Journal of Mathematics*, vol. 43, No. 1, pp. 1-19; Jan., 1921.
- A covariant of three circles. Read (Chicago) April 23, 1921. *Bulletin of the American Mathematical Society*, vol. 27, Nos. 9-10, pp. 434-437; June-July, 1921.
- DICKSON, L. E. La composition des polynômes. Read April 23, 1921. *Comptes Rendus de l'Académie des Sciences*, vol. 172, No. 11, pp. 636-640; March 14, 1921.
- Determination of all general homogeneous polynomials expressible as determinants with linear elements. Read Dec. 30, 1920. *Transactions of the American Mathematical Society*, vol. 22, No. 2, pp. 167-179; April, 1921.
- Fallacies and misconceptions in diophantine analysis. Read March 26, 1921. *Bulletin of the American Mathematical Society*, vol. 27, No. 7, pp. 312-319; April, 1921.
- A new method in diophantine analysis. Read March 26, 1921. *Bulletin of the American Mathematical Society*, vol. 27, No. 8, pp. 353-365; May, 1921.
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- The Einstein solar field. Read April 23, 1921. *Bulletin of the American Mathematical Society*, vol. 27, Nos. 9-10, pp. 432-434; June-July, 1921.
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- FORSYTH, C. H. On the generalization of certain formulas of the mathematical theory of finance. Read December 29, 1920. *Bulletin of the American Mathematical Society*, vol. 27, Nos. 9-10, pp. 446-452; June-July, 1921.
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- GRONWALL, T. H. On the distortion in conformal mapping when the second coefficient in the mapping function has an assigned value. Read Feb. 28, 1920. *Proceedings of the National Academy of Sciences*, vol. 6, No. 6, pp. 300-302; June, 1920.
- Qualitative properties of the ballistic trajectory. Read April 26, 1919, and Feb. 28, 1920. *Annals of Mathematics*, ser. 2, vol. 22, Nos. 1-2, pp. 44-65; Sept.-Dec., 1920.
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- On functions of closest approximation. Read April 10, 1920. *Transactions of the American Mathematical Society*, vol. 22, No. 1, pp. 117-128; Jan., 1921.
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- On the convergence of certain trigonometric and polynomial approximations. Read Sept. 8, 1920, and Oct. 30, 1920. *Transactions of the American Mathematical Society*, vol. 22, No. 2, pp. 158-166; April, 1921.
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- Finite representation of the solar gravitational field in flat space of six dimensions. Read Dec. 28, 1920. *American Journal of Mathematics*, vol. 43, No. 2, pp. 130-133; April, 1921.
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- A new proof of a theorem due to Schoenflies. Read Feb. 23, 1918. *Proceedings of the National Academy of Sciences*, vol. 6, No. 9, pp. 529-531; Sept., 1920.
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- Note on velocity systems in curved space of  $n$  dimensions. Read April 24, 1920. *Bulletin of the American Mathematical Society*, vol. 27, No. 2, pp. 71-77; Nov., 1920.
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- MOULTON, F. R. Closed orbits of ejection and related periodic orbits. Read March 21, 1913. Periodic orbits, by F. R. Moulton and collaborators, chapter 15, pp. 457-484; Carnegie Institution Publication No. 161, Washington, 1920.
- Fundamental theorems on the solutions of differential equations and the logical basis for the numerical integration of differential equations. Read Dec. 22, 1916. Photostat publication of the Technical Staff of the Ordnance Department, U. S. A., Washington, 1920. 25 pp.
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