

ENDOWMENT FUND

In 1923 an Endowment Fund was collected to meet the greater demands on the publication program of the Society, these demands caused by the ever-increasing number of important mathematical memoirs. Of this fund, which amounted to approximately \$94,000 in 1960, a considerable proportion was contributed by members of the Society. In 1961, upon the death of the last legatees under the will of the late Robert Henderson—for many years a Trustee of the Society—the entire principal of the estate was received by the Society, thereby bringing the total of the Endowment Fund to approximately \$648,000.

PRIZE FUNDS

The Bôcher Memorial Prize

This prize was founded in memory of Professor Maxime Bôcher with an original endowment of \$1,450. It is awarded every five years for a notable research memoir in analysis which has appeared during the past five years. Either the recipient is a member of the Society or the Memoir is published in a recognized North American journal; this provision, introduced in 1971, is a liberalization of the terms of the award.

First (preliminary) award, 1923: To G. D. Birkhoff for his memoir, *Dynamical systems with two degrees of freedom*, published in the Transactions of the American Mathematical Society, volume 18 (1917), pp. 199–300.

Second award, 1924: To E. T. Bell for his memoir, *Arithmetical paraphrases*. I, II, published in the Transactions of the American Mathematical Society, volume 22 (1921), pp. 1–30, 198–219; and to Solomon Lefschetz for his memoir, *On certain numerical invariants with applications to Abelian varieties*, published in the Transactions of the American Mathematical Society, volume 22 (1921), pp. 407–482.

Third award, 1928: To J. W. Alexander for his memoir, *Combinatorial analysis situs*, published in the Transactions of the American Mathematical Society, volume 28 (1926), pp. 301–329.

Fourth award, 1933: To Marston Morse for his memoir, *The foundations of a theory of the calculus of variations in the large in m -space*, published in the Transactions of the American Mathematical Society, volume 31 (1929), pp. 379–404; and to Norbert Wiener for his memoir, *Tauberian theorems*, published in the Annals of Mathematics, volume 33 (1932), pp. 1–100.

Fifth award, 1938: To John von Neumann for his memoir, *Almost periodic functions and groups*. I, II, published in the Transactions of the American Mathematical Society, volume 36 (1934), pp. 445–492, and volume 37 (1935), pp. 21–50.

Sixth award, 1943: To Jesse Douglas for his memoirs, *Green's function and the problem of Plateau*, American Journal of Mathematics, volume 61 (1939), pp. 545–589; *The most general form of the problem of Plateau*, American Journal of Mathematics, volume 61 (1939), pp. 590–608; and *Solution of the inverse problem of the calculus of variations*, Proceedings of the National Academy of Sciences, volume 25 (1939), pp. 631–637.

Seventh award, 1948: To A. C. Schaeffer and D. C. Spencer for their memoir, *Coefficients of schlicht functions*. I, II, III, IV, published in the Duke Mathematical Journal, volume 10 (1943), pp. 611–635, volume 12 (1945), pp. 107–125, and the Proceedings of the National Academy of Sciences, volume 32 (1946), pp. 111–116, volume 35 (1949), pp. 143–150.

Eighth award, 1953: To Norman Levinson for his contributions to the theory of linear, nonlinear, ordinary, and partial differential equations contained in his papers of recent years.

Ninth award, 1959: To Louis Nirenberg for his work in partial differential equations.

Tenth award, 1964: To Paul J. Cohen for his paper, *On a conjecture of Littlewood and idempotent measures*, published in the American Journal of Mathematics, volume 82 (1960), pp. 191–212.

Eleventh award, 1969: To I. M. Singer in recognition of his work on the index problem, especially his share in two joint papers with Michael F. Atiyah entitled *The index of elliptic operators*. I, III, published in the Annals of Mathematics, Series 2, volume 87 (1968), pp. 484–530, 546–604.

The Frank Nelson Cole Prize in Algebra

The Frank Nelson Cole Prize in Number Theory

These prizes were founded in honor of Professor Frank Nelson Cole on the occasion of his retirement as secretary of the American Mathematical Society after twenty-five years of service and as editor-in-chief of the *Bulletin*. The original fund was donated by Professor Cole from moneys presented to him on his retirement, was augmented by contributions from members of the Society, and was later doubled by his son, Charles A. Cole. The present endowment is \$2,250. The prizes are awarded at five-year intervals for contributions to algebra and the theory of numbers, respectively, under restrictions similar to those for the Bôcher Prize.

First award, 1928: To L. E. Dickson for his book *Algebren und ihre Zahlentheorie*, Zürich und Leipzig, Orell Füssli, 1927.

Second award, 1931: To H. S. Vandiver for his several papers on Fermat's last theorem published in the Transactions of the American Mathematical Society and the Annals of Mathematics during the preceding five years, with special reference to a paper entitled *On Fermat's last theorem* which appeared in the Transactions of the American Mathematical Society, volume 31 (1929), pp. 613–642.

Third award, 1939: To A. Adrian Albert for his papers on the construction of Riemann matrices published in the Annals of Mathematics, volumes 35 and 36.

Fourth award, 1941: To Claude Chevalley for his paper entitled *La théorie du corps de classes*, published in the Annals of Mathematics, Series 2, volume 41 (1940), pp. 394–418.

Fifth award, 1944: To Oscar Zariski for four papers on algebraic varieties published in the American Journal of Mathematics, volumes 61 and 62, and the Annals of Mathematics, volumes 40 and 41.

Sixth award, 1946: To H. B. Mann for his paper entitled *A proof of the fundamental theorem on the density of sums of sets of positive integers*, published in the Annals of Mathematics, Series 2, volume 43 (1942), pp. 523–527.

Seventh award, 1949: To Richard Brauer for his paper entitled *On Artin's L-series with*

general group characters, published in the *Annals of Mathematics*, Series 2, volume 48 (1947), pp. 502–514.

Eighth award, 1951: To Paul Erdős for his many papers in the theory of numbers, and in particular for his paper entitled *On a new method in elementary number theory which leads to an elementary proof of the prime number theorem*, published in the *Proceedings of the National Academy of Sciences*, volume 35 (1949), pp. 374–385.

Ninth award, 1954: To Harish-Chandra for his papers on representations of semisimple Lie algebras and groups, and particularly for his paper *On some applications of the universal enveloping algebra of a semisimple Lie algebra*, published in the *Transactions of the American Mathematical Society*, volume 70 (1951), pp. 28–96.

Tenth award, 1956: To John T. Tate for his paper entitled *The higher dimensional cohomology groups of class field theory*, published in the *Annals of Mathematics*, Series 2, volume 56 (1952), pp. 294–297.

Eleventh award, 1960: To Serge Lang for his paper entitled *Unramified class field theory over function fields in several variables*, published in the *Annals of Mathematics*, Series 2, volume 64 (1956), pp. 285–325; and to Maxwell A. Rosenlicht for his papers *Generalized Jacobian varieties*, *Annals of Mathematics*, Series 2, volume 59 (1954), pp. 505–530, and *A universal mapping property of generalized Jacobians*, *Annals of Mathematics*, Series 2, volume 66 (1957), pp. 80–88.

Twelfth award, 1962: To Kenkichi Iwasawa for his paper entitled *Gamma extensions of number fields*, published in the *Bulletin of the American Mathematical Society*, volume 65 (1959), pp. 183–226; and to Bernard M. Dwork for his paper entitled *On the rationality of the zeta function of an algebraic variety*, published in the *American Journal of Mathematics*, volume 82 (1960), pp. 631–648.

Thirteenth award, 1965: To Walter Feit and John G. Thompson for their joint paper entitled *Solvability of groups of odd order*, published in the *Pacific Journal of Mathematics*, volume 13 (1963), pp. 775–1029.

Fourteenth award, 1967: To James B. Ax and Simon B. Kochen for a series of three joint papers entitled *Diophantine problems over local fields*, published in the *American Journal of Mathematics*, volume 87 (1965), pp. 605–648, and the *Annals of Mathematics*, Series 2, volume 83 (1966), pp. 437–456.

Fifteenth award, 1970: To John R. Stallings for his paper entitled *On torsion-free groups with infinitely many ends*, published in the *Annals of Mathematics*, Series 2, volume 88 (1968), pp. 312–334; and to Richard G. Swan for his paper entitled *Groups of cohomological dimension one*, published in the *Journal of Algebra*, volume 12 (1969), pp. 585–610.

Sixteenth award, 1972: To Wolfgang M. Schmidt for the following papers: *On simultaneous approximations of two algebraic numbers by rationals*, *Acta Mathematica* (Uppsala), volume 119 (1967), pp. 27–50; *T-numbers do exist*, *Symposia Mathematica*, volume IV, Academic Press, 1970, pp. 1–26; *Simultaneous approximation to algebraic numbers by rationals*, *Acta Mathematica* (Uppsala), volume 125 (1970), pp. 189–201; *On Mahler's T-numbers*, *Proceedings of Symposia in Pure Mathematics*, volume 20, American Mathematical Society, 1971, pp. 275–286.

The Oswald Veblen Prize in Geometry

This prize was established in 1961 in memory of Professor Oswald Veblen through a fund contributed by former students and colleagues. The fund was later doubled by the widow of

Professor Veblen, bringing the fund to \$2,000. The first two awards of the prize were made in 1964 and the next in 1966; thereafter, an award will ordinarily be made every five years for research in geometry or topology under conditions similar to those for the Bôcher Prize.

First award, 1964: To C. D. Papakyriakopoulos for his papers entitled *On solid tori*, *Annals of Mathematics*, Series 2, volume 66 (1957), pp. 1–26, and *On Dehn's lemma and the asphericity of knots*, *Proceedings of the National Academy of Sciences*, volume 43 (1957), pp. 169–172.

Second award, 1964: To Raoul Bott for his papers entitled *The space of loops on a Lie group*, *Michigan Mathematical Journal*, volume 5 (1958), pp. 35–61, and *The stable homotopy of the classical groups*, *Annals of Mathematics*, Series 2, volume 70 (1959), pp. 313–337.

Third award, 1966: To Stephen Smale for his contributions to various aspects of differential topology.

Fourth award, 1966: To Morton Brown and Barry Mazur for their work on the generalized Schoenflies theorem.

Fifth award, 1971: To Robion C. Kirby for his paper entitled *Stable homeomorphisms and the annulus conjecture*, published in the *Annals of Mathematics*, Series 2, volume 89 (1969), pp. 575–582.

Sixth award, 1971: To Dennis P. Sullivan for his work on the Hauptvermutung summarized in the paper, *On the Hauptvermutung for manifolds*, which appeared in the *Bulletin of the American Mathematical Society*, volume 73 (1967), pp. 598–600.

The George David Birkhoff Prize in Applied Mathematics

This prize was established in 1967 in honor of Professor George David Birkhoff. The initial endowment of \$2,066 was contributed by the Birkhoff family. It is normally awarded every five years, beginning in 1968, for an outstanding contribution to "applied mathematics in the highest and broadest sense." The award is made jointly by the American Mathematical Society and the Society for Industrial and Applied Mathematics. The recipient must be a member of one of these societies and a resident of the United States, Canada, or Mexico.

First award, 1968: To Jürgen K. Moser for his contributions to the theory of Hamiltonian dynamical systems, especially his proof of the stability of periodic solutions of Hamiltonian systems having two degrees of freedom and his specific applications of the ideas in connection with this work.

Second award, 1973: To Fritz John for his outstanding work in partial differential equations, in numerical analysis, and, particularly, in nonlinear elasticity theory; the latter work has led to his study of quasi-isometric mappings as well as functions of bounded mean oscillation, which have had impact in other areas of analysis.

Third award, 1973: To James B. Serrin for his fundamental contributions to the theory of nonlinear partial differential equations, especially his work on existence and regularity theory for nonlinear elliptic equations, and applications of his work to the theory of minimal surfaces in higher dimensions.

The Norbert Wiener Prize in Applied Mathematics

This prize was established in 1967 in honor of Professor Norbert Wiener and was endowed by a fund amounting to \$2,000 from the Department of Mathematics of the Massachusetts

Institute of Technology. The prize is normally awarded every five years, beginning in 1970, for an outstanding contribution to "applied mathematics in the highest and broadest sense." The award is made jointly by the American Mathematical Society and the Society for Industrial and Applied Mathematics. The recipient must be a member of one of these societies and a resident of the United States, Canada, or Mexico.

First award, 1970: To Richard E. Bellman for his pioneering work in the area of dynamic programming, and for his related work on control, stability, and differential-delay equations.

The LeRoy P. Steele Prizes

These prizes were established in 1970 in honor of George David Birkhoff, William Fogg Osgood, and William Caspar Graustein, and are endowed under the terms of a bequest amounting to \$140,000 from LeRoy P. Steele. One or more prizes are to be awarded each year, beginning in 1970, at the summer meeting of the Society for outstanding published mathematical research. Most favorable consideration will be given to papers distinguished for their exposition and covering broad areas of mathematics.

August 1970: To Solomon Lefschetz for his paper entitled *A page of mathematical autobiography*, published in the Bulletin of the American Mathematical Society, volume 74 (1968), pp. 854–879.

August 1971: To James B. Carrell for his paper, written jointly with Jean A. Dieudonné, entitled *Invariant theory, old and new*, Advances in Mathematics, volume 4 (1969), pp. 1–80.

August 1971: To Jean A. Dieudonné for his paper entitled *Algebraic geometry*, Advances in Mathematics, volume 3 (1969), pp. 233–321, and for his paper, written jointly with James B. Carrell, entitled *Invariant theory, old and new*.

August 1971: To Phillip A. Griffiths for his paper entitled *Periods of integrals on algebraic manifolds*, Bulletin of the American Mathematical Society, volume 76 (1970), pp. 228–296.

August 1972: To Edward B. Curtis for his paper entitled *Simplicial homotopy theory*, Advances in Mathematics, volume 6 (1971), pp. 107–209.

August 1972: To William J. Ellison for his paper entitled *Waring's problem*, American Mathematical Monthly, volume 78 (1971), pp. 10–36.

August 1972: To Lawrence F. Payne for his paper entitled *Isoperimetric inequalities and their applications*, SIAM Review, volume 9 (1967), pp. 453–488.

August 1972: To Dana S. Scott for his paper entitled *A proof of the independence of the continuum hypothesis*, Mathematical Systems Theory, volume 1 (1967), pp. 89–111.

SPECIAL FUNDS

(\$500 or more)

The Ernest William Brown Fund

From the estate of Professor Ernest William Brown, a fund of \$1,000 is available. The Board of Trustees stipulated that the interest from this fund should be used for the furtherance of such mathematical interests as (a) the publication of important mathematical books, memoirs, and periodicals, and (b) for lectures to be delivered on special occasions by invited guests of the Society.

The Geneva B. Hutchinson Fund

From the estate of Geneva B. Hutchinson, a fund of \$1,000 is available to be used at the discretion of the Council and the Board of Trustees.

The Solomon A. Joffe Fund

A gift of \$3,000 was presented to the Society by Solomon A. Joffe, and the Board of Trustees set this aside in a fund bearing his name.

The Helen A. Merrill Fund

From the estate of Professor Helen A. Merrill, a fund of \$650 is available for use of the Society at the discretion of the governing bodies.

The Eliakim Hastings Moore Fund

This fund was donated in 1922 in honor of Professor Eliakim Hastings Moore on the occasion of the twenty-fifth anniversary of the Chicago (Western) section of the Society. The income from this fund, which is \$2,575, is to be used at the discretion of the Council for the publication of important mathematical books and memoirs and for the award of prizes.

The Marion Reilly Fund

Dean Marion Reilly willed to the American Mathematical Society a portion of her estate to be used for the advancement of research in pure mathematics. The principal of this fund is \$23,600.

The Joseph Fels Ritt Memorial Fund

From the estate of Estelle F. Ritt, the income from a fund of \$22,500 is available for the publication of works in the field of mathematics as shall be determined by the governing bodies of the Society.

The James K. Whittemore Fund

From the estate of James K. Whittemore, a fund of \$1,000 is available for use by the Society.

Library Proceeds Fund

A fund of \$66,000 was established by the Board of Trustees in 1951 from the proceeds of the sale of the library of the Society.

Friends of Mathematics Fund

An anonymous gift of \$2,700 was received by the Society in 1970. A special fund to be called the Friends of Mathematics Fund was created; future donations are to be included in this fund, the proceeds of which will be part of the invested assets of the Society. The principal of this fund is now \$9,000.