

HISTORY OF THE AMERICAN MATHEMATICAL SOCIETY 1888–1938*

RAYMOND CLARE ARCHIBALD

At the present time, throughout the world, there are many mathematical societies, but if we limit our consideration to those which have been in existence at least twenty-five years there are but twenty. This number is reduced to eleven if the minimum age is set at fifty years. Let us then recall who our ten elder sisters may be. The Hamburg Mathematical Society, founded in 1690, with publications issued almost continuously during the past two hundred years, started out as "A Society for Lovers of the Art of Calculation." The Amsterdam Mathematical Society is only 160 years old, but it has been issuing substantial volumes since 1782. The other eight societies are very much younger. The forerunner of the Czechoslovakian Society for Mathematics and Physics, organized in 1869, was the Society for Free Lectures on Mathematics and Physics, founded 76 years ago. This Society with nearly 2000 members is the most affluent of all mathematical organizations, owning its own press and buildings where it transacts an extensive business in texts used throughout the country. The important Moscow Mathematical Society developed in 1867 from a Circle of Lovers of Mathematics, started in 1864. The fifth member of this family of societies, The London Mathematical Society, was born a year later, and its kinship with our own organization will presently be indicated. After two seven-year intervals the Mathematical Society of France arrived in 1872 and the Kharkov Mathematical Society in 1879. The group of ten was completed in 1884 by the delivery of triplets, the Edinburgh Mathematical Society, the Mathematical Circle of Palermo, and the Physico-Mathematical Society of Japan.

These ten societies are in eight countries, and in five of these countries during the nineteenth century great mathematical discoverers were flourishing. France had, for example, Laplace, Legendre, Poncelet, Cauchy, Hermite, and Poincaré; Germany had Gauss, Weierstrass, Riemann, Jacobi, Steiner, and Kronecker; Great Britain had Hamilton, Smith, Cayley, Sylvester, Stokes, and Maxwell; Italy

* This was the first of the ten invited addresses for the Semicentennial Celebration; the other nine have been published as Volume 2 of the American Mathematical Society Semicentennial Publications. Twenty-two portraits on lantern slides, here listed at the end of the address, were used to illustrate this lecture.

had Cremona, Brioschi, Beltrami, Betti, and Dini; Russia had Chebyshev, Lobachevskii, and Liapunov. It was probably while thinking of the work of such men that Maxime Bôcher wrote in January, 1895: "In my opinion there is no American mathematics worth speaking of as yet." If facts now common property had been known to Bôcher, he might well have cast his statement into different form. Only the briefest suggestion as to such facts may now be indicated.

There was certainly no real mathematical research in the United States before the beginning of the nineteenth century. Robert Adrain was then formulating and answering questions involving elliptic integrals and the calculus of variations. Also Nathaniel Bowditch, famed for his *American Practical Navigator*, prepared a monumental English edition of most of Laplace's *Mécanique Céleste* with very elaborate commentary, and he published an interesting memoir on the motion of a pendulum suspended from two points, and thus initiated the study of curves much later to become famous also in connection with certain acoustical phenomena as Lissajous's curves. Next in chronological order is Benjamin Peirce, of Harvard University, an extraordinarily inspiring teacher and a man of great abilities, whose notable *Analytical Mechanics* is to be found in nearly all the great libraries of Europe. But of prime importance was his epoch-making *Linear Associative Algebra*, first published privately in 1870, and anticipating a good deal of the work of Study and Scheffers in connection with the theory of hypercomplex numbers. George William Hill, born about a generation later than Peirce, was the greatest master of mathematical astronomy in the last quarter of the nineteenth century. His extraordinary memoir in the first number of the *American Journal of Mathematics*, in 1878, was fundamental in the development of celestial mechanics in three different directions, throughout the next generation. But his privately printed memoir of 1877, with the introduction of infinite determinants and the differential equation now generally known as "Hill's equation", is even more famous. Simon Newcomb was slightly older than Hill and wrote interesting and valuable theoretical papers on hyperspace and the general integrals of planetary motion. The great contributions of Josiah Willard Gibbs in thermodynamics and vector analysis and part of his work in statistical mechanics seem to have been developed before 1888. From the founding of The Johns Hopkins University to the end of 1883 Sylvester was the enormously inspiring professor of mathematics, and the editor-in-chief of the *American Journal of Mathematics* from its foundation in 1878. Thus this notable journal had been published for ten years before our Society was founded, and

contained many important papers by such men as Sylvester, Cayley, and H. A. Rowland, as well as others less significant by such authors as Fabian Franklin, W. I. Stringham, and Henry Taber, who had received their doctor's degrees at The Johns Hopkins; by F. N. Cole, awarded his doctorate at Harvard, although the work for it was mainly done in Leipzig under Klein's direction; and by E. H. Moore, whose A.B. and Ph.D. degrees came from Yale University.

These suggestions must suffice to indicate that in the United States before the founding of our Society there was already an inspiring mathematical center, and that a considerable body of mathematical work, some of it of first importance, had certainly been already achieved. Many people scattered over the country were then engaged in mathematical pursuits, and among them were not a few who had obtained their doctor's degrees either here or in Europe. Hence the time was opportune for drawing them together in a mathematical organization.

In the spring of 1887, when Thomas Scott Fiske was in his second year as a graduate student and assistant in mathematics at Columbia College, he decided that six months of the following year should be spent in study at the University of Cambridge. Coming with high credentials he was received as a guest. Among his rich experiences was the establishment of an intimate friendship with J. W. L. Glaisher who took him to the meetings of the London Mathematical Society. These meetings deeply impressed Fiske, and on returning to New York he was imbued with the idea that in America there should be a stronger feeling of comradeship among those interested in mathematics. And thus it came about that upon the call of Fiske, and two friends in the graduate school, Edward Lincoln Stabler and Harold Jacoby—three young men all born in the same year, 1865—six persons assembled at Columbia College on Thanksgiving Day, 1888, to organize a local mathematical society. A constitution was adopted at the second meeting on December 29, 1888, and the New York Mathematical Society came into being. John Howard Van Amringe, professor of mathematics in the School of Arts at Columbia College, was elected as its first president, and Dr. Fiske as secretary. "Van Am," as the president was universally called, was a unique figure in Columbia College and University, and probably no other teacher there of his day was so loved and revered. As M. H. Thomas has told us, "his boys" have delighted to perpetuate his memory at Columbia in song and stone and bronze and oils. One of Columbia's most popular songs is the adaptation to Van Am of "John Peel," the fine old English hunting song, commencing

D'ye ken Van Am, with his snowy hair,
 D'ye ken Van Am, with his whiskers rare,
 D'ye ken Van Am, with his martial air,
 As he crosses the Quad in the morning?

And then the refrain:

For the sight of Van Am raised my hat from my head,
 And the sound of his voice often filled me with dread,
 Oh! I shook in my boots at the things that he said,
 When he asked me to call in the morning.

The little Society met monthly during the college year, and the sixteen members at the end of 1889 included: J. K. Rees, professor of geodesy and practical astronomy and director of the Observatory at Columbia; I. C. Pierson, secretary of the Actuarial Society of America; J. E. McClintock, vice president of the Actuarial Society of America and actuary of the Mutual Life Insurance Company of New York, later to serve the Society so notably; M. I. Pupin, instructor in mathematical physics at Columbia and throughout life one of the Society's finest friends. In December, 1890, when the new president, Dr. McClintock, was in the chair, a letter from an American who had attended a meeting of the London Mathematical Society was read. It described the meeting and made reference to its Proceedings. Resulting discussion led to the motion that our Society publish a bulletin, the details to be worked out by the Council which had been established in June, 1889. And thus, as in connection with our founding, the London Society was again suggestive. At the meeting of our Society in January, 1891, it was decided, on the basis of the Council's report, that the publication of a bulletin should not be attempted unless (a) the annual dues were increased from two to five dollars; and (b) the number of members became very much larger. There were only 23 members of the Society at the end of 1890. Dr. Fiske then commenced his campaign for members. I wish that I might pause to give you details but I may merely note results, namely, that his printed list of April third contained the names of 89 members; the one for May first, 135, and that for June, 174. The publication of the Bulletin of the New York Mathematical Society was thus made possible, and the first number of the first volume appeared in October, 1891; the style of the cover was patterned after that of the Messenger of Mathematics, edited by Glaisher. Dr. Fiske became the editor-in-chief. Of this first number 2000 copies were printed for wide free distribution in the continuation of the campaign for members. By the end of 1891 the membership totalled 210—an increase

of 187 in this single year, when the Society blossomed forth from a purely local into a truly national organization; indeed by 1892 it had become international since, apart from Canadians, such men as Cayley, Glaisher, and Mindizábel-Tamborrel, were also members. No praise can be too high for this very extraordinary achievement of Secretary Fiske, heartily backed by President McClintock. Let us hope that no longer will the erroneous statement be made that the Society became national in 1894.

During the five years 1892–1896 there were several important occurrences leading to later development, in the Society and in mathematics of this country. The University of Chicago opened its doors in the autumn of 1892 and the department of mathematics began with that remarkable group of professors Eliakim Hastings Moore, Oskar Bolza, and Heinrich Maschke. They supplemented one another notably: Moore, a fiery enthusiast, brilliant, and keenly interested in the popular research movements of his day; Bolza, product of the meticulous German school of analysis led by Weierstrass, able and widely-read scholar; Maschke, deliberate, sagacious, brilliant in research, delightful lecturer on geometry. During the period 1892–1908 the University of Chicago was the second great university center of mathematical inspiration, and unsurpassed in this country as an institution for the study of higher mathematics. For the World's Fair at Chicago Moore, Bolza, Maschke, and H. S. White of Northwestern University constituted the local committee for mathematics and astronomy, which in August, 1893, organized the first International Congress of Mathematicians, in which seven countries participated. Felix Klein was the outstanding figure at the Congress. During two weeks after it was finished he lectured daily at a Colloquium in Evanston organized by some of his former students, particularly Professor White with whom he stayed. These lectures were published in 1894 and reprinted by the Society in 1911 after they had been out of print for some years.

On the suggestion of Professor Moore in April, 1894, the Society undertook the publication of the Proceedings of the Chicago International Congress; about twenty per cent of the necessary cost was covered by private subscriptions. Apart from its Bulletin this was the first mathematical publication of the Society. Such a major enterprise quickened the desire of its members for a name indicative of its national or continental character. A meeting of the American Association for the Advancement of Science at Brooklyn, N. Y., in August, 1894, suggested an appropriate time for the *début*. Hence a fore-

gathering in affiliation with Section A took place, and thus occurred not only the first summer meeting of the Society but also the first meeting of "The American Mathematical Society." Summer meetings were continued annually, except in 1924 when the International Congress of Mathematicians met in Toronto. After attending two such meetings, Professor H. S. White, with the satisfactions of the Evanston Colloquium fresh in mind, felt that similar colloquia following the summer meetings would be a source of inspiration to many people. He communicated his thought to Professor Fiske and a number of prominent members soon supported the project. As a result, immediately after the summer meeting in Buffalo in 1896, Professors Bôcher and Pierpont each delivered six lectures in the first series of Colloquium Lectures of the Society, a series later to develop into one of its most important activities. The second set of such lectures was delivered in 1898 at Harvard University by Professors W. F. Osgood and A. G. Webster. The value of Professor White's idea was then fully demonstrated and such lectures were later an integral part of the program of summer meetings. So it was in 1901 at Cornell University when the third set of lectures was delivered by Professors Bolza and E. W. Brown. The Boston Colloquium of 1903 was the fourth and of special interest in two respects; firstly because the three lecturers, Professors E. B. Van Vleck, H. S. White, and F. S. Woods were all former students of J. M. Van Vleck, of Wesleyan University; secondly because these were the first lectures in this series to be issued in book form. At the twenty colloquia which have been held (the last in 1937) there have been 33 speakers (one counted twice) and the lectures of 28 of them have been published, several of the volumes in more than one edition.

In making reference to Colloquium Lectures we have gone far beyond our quinquennial period 1892-1896, for which a few more comments are appropriate. President McClintock was elected for four consecutive years, 1891-1894, and during his term of office, which was twice as long as that of any other president, the membership increased from 23 to 251, three volumes of the Bulletin had been published, summer meetings were started, and the Society took on a new name, at the same time that an important publication project was launched. Further, the first librarian of the Society, the well known author Professor D. A. Murray, was appointed in May, 1892, the first book for the Library having been donated in 1890. In 1895 the third librarian was Mr. E. L. Stabler, who joined with Professor Fiske in the call for the founding of the Society. We rejoice to have him with us at this celebration. McClintock published notable mathe-

mathematical papers, and was one of the greatest actuaries that America has ever produced. The connection of the Society with actuaries, all through its history, has been a notable source of strength. McClintock's successor, for the final years of the period, was G. W. Hill, to whose genius as a man of research we have already paid tribute. He was a great lover of nature, and accumulated from personal observation an extraordinary amount of knowledge about trees, flowers, and birds.

At the beginning of our next quinquennial period, 1897–1901, another great astronomer, Simon Newcomb, became president of the Society, towards the close of his career. An international committee had just selected him as the leading astronomer in the world. No other American scientist ever accumulated such an extraordinary collection of tokens of recognition of great achievements. He and Weierstrass were elected in the same year as foreign associates of the Academy of Sciences of the Institute of France. The Society was fortunate in those days in having so many astronomers among its members. Besides Hill and Newcomb there were, for example, E. W. Brown, J. G. Hagen, later the director of the Vatican Observatory, Harold Jacoby, later head of the department of astronomy at Columbia University, A. O. Leuschner, C. L. Poor, T. H. Safford, Ormond Stone, founder of the *Annals of Mathematics*, J. M. Van Vleck, and Mary W. Whitney. The American Astronomical Society was not founded until 1899. To one surveying the Society's history a feeling of pride must be engendered by the fact that among her presidents have been three great men who worked on a common problem, the motions of the moon: Newcomb, the mighty watcher of the skies; Hill and Brown, the leaders among all mathematical astronomers who have achieved their careers in this country. Incidentally it may be remarked that the two latter, like the greatest mathematical astronomer of all time, were wedded to their intellectual interests alone. The same might be said of A. S. Eddington and Josiah Willard Gibbs.

Early in 1897 the Chicago Section of the American Mathematical Society was organized for members in Chicago and surrounding places. Under the inspiration of the group at the University, to which we have already referred, this Section contributed signally in every direction to promoting the ideals of the Society. By 1913 its scientific meetings were recorded as regular meetings of the Society; but beginning with 1924, the meetings were in every respect regular meetings of the Society, and there was a general understanding that a meeting of the Council should be held there once a year.

Soon after starting the *Bulletin* Professor Fiske found that Professors Ziwet and Cole at the University of Michigan were especially helpful, and E. R. Hedrick, a student of Ziwet, worked for a time on preparing lists of new publications for the *Bulletin*. In 1895 Cole was one of three distinguished scholars called to Columbia University to give prestige to the infant Barnard College. Beginning with 1896, on Fiske's recommendation, his duties as Secretary of the Society were turned over to Cole; and beginning with February, 1899, his further recommendation that Cole be made editor-in-chief of the *Bulletin* as well was also put into effect. It was not a case of Fiske suddenly terminating the period of his great services to the Society, but rather that he had undertaken to render her still further notable assistance in another direction.

As early as 1897 discussion had started in the Society concerning the pressing need for a journal in which to publish original investigations. In the following year a committee consisting of Professors Fiske (chairman), Bôcher, E. H. Moore, Newcomb, and Pierpont, was appointed to report to the Council on this matter. At first an attempt was made to acquire editorial control of the *American Journal of Mathematics* with Newcomb as editor-in-chief, but this plan fell through. The much larger project of starting an entirely new publication was then taken up. At the Christmas meeting of the Chicago Section in 1898 Professor Pierpont was greatly encouraged by the opinions of the leading mathematicians favoring the project, and especially by the unbounded enthusiasm of Maschke. By April, 1899, arrangements had been made for the publication of the *Transactions*, subventions of \$100 a year for five years having been promised by ten colleges or universities. Similar subventions were continued for another five years. Thus during the first ten years of publication \$8100 was contributed by sixteen institutions: Chicago, Columbia, Cornell, Northwestern, and Yale each for ten years; and the following for shorter periods: Bryn Mawr, California, Harvard, Haverford, Illinois, Missouri, Princeton, Stanford, Vassar, Wesleyan, and Wisconsin. The cooperation of these institutions was only secured after carefully prepared conferences with officers and administration. In this connection James Pierpont played a leading role.

The first editors of the *Transactions* were E. H. Moore, editor-in-chief, 1899–1907, E. W. Brown, 1899–1906, and T. S. Fiske, 1899–1905. Moore and his associates gave concrete form to an ideal and erected an inspiring editorial standard which has been fully maintained ever since. The *Transactions* was launched during the presidency of R. S. Woodward, distinguished for research of funda-

mental importance in geodesy and geophysics. He was professor of mechanics and mathematical physics as well as dean of the school of pure science at Columbia University before becoming president of the Carnegie Institution of Washington. He was a man of extraordinary personal charm. His successor as president of the Society was E. H. Moore, who was followed as editor-in-chief or managing editor of the Transactions by the succession: Bôcher, Osgood, Bôcher, Dickson, D. R. Curtiss, Eisenhart, Coble, Dunham Jackson, R. D. Carmichael, and C. C. MacDuffee. During the 37 years 1900–1936, 40 volumes of the Transactions, containing over 24,000 pages, were published. They contained 1536 papers by 502 authors. Among these authors were many of the leading foreign mathematicians.

By the end of 1908, when the Society was twenty years old, there were 592 members, and the Society had published seventeen volumes of the Bulletin, nine of the Transactions, a volume of Colloquium Lectures, and the proceedings of an international congress. Following the example set by the Chicago Section, San Francisco and Southwestern Sections of the Society had been organized in 1902 and 1906, respectively, and beginning with 1929 their meetings also were counted as regular meetings of the Society. During the twenty years more than 320 different authors presented papers at the Society's meetings. The attendance was usually comparatively small; even at the annual meeting the maximum attendance, by far the largest, was 81, and at a summer meeting 60. Professor Osgood recalls that "the meetings of the Society had already become interesting. Colleagues came together informally in some convenient hotel or restaurant—it was the time when 'Rathskeller' was applying for citizenship in the English language—where discussion in small groups was easy, and one could talk mathematics with men who knew something of mathematics. Thus personal contact led to acquaintance and not infrequently to enduring friendships." The late Professor Morley recalled that the "meetings of the Society were friendly, optimistic, and even jovial. The seniors, such as G. W. Hill, and H. A. Newton of Yale, were of course dignified; and so were the Harvard men. But it was a new note in scientific meetings to encounter, for instance, G. B. Halsted, who said to me when we met: 'Come down to Texas, and we will shoot Mexicans.' In fact a joke was welcomed."

This was the Halsted who started three of our presidents on their mathematical careers. He sent out Dickson, and our present president R. L. Moore, from the University of Texas; but before that, at Princeton, the inspiration of his enthusiasm led Fine, in his junior year to give up the idea of specializing in ancient classics, in order

to spend a lifetime in exploring the beauties of mathematics. And now the flames of Dickson's and Moore's enthusiasms are developing schools of disciples. In the period under consideration Fiske, Osgood, and White were the successive presidents of the Society following E. H. Moore. Fine became president a little later, 1911-1912, just after Bôcher.

As the year 1920 drew to a close important administrative changes and a financial crisis had to be faced. Professor Cole, who had been secretary of the Society for 25 years, and editor-in-chief of the *Bulletin* for 22 years, resigned from these offices, which he had conducted with high idealism, conspicuous ability, and constant vigilance in maintaining the Society's prestige. The most striking evidence of the tremendous load which he had borne, almost alone except after 1913, and amid many serious problems raised by the World War, is that three people were appointed to continue his personal work. These included Professor Richardson, the new secretary, and Professor Hedrick, the new editor-in-chief of the *Bulletin*.

Another resignation at the close of 1920 was that of Professor Smith, who had been librarian for nineteen years. The library's present excellence is almost wholly due to him. When he entered upon his office the total number of volumes was only 121, and 64 periodicals were received by exchange; but upon his retirement, the total tale was 5862 volumes, and 123 exchanges. During the past eighteen years R. C. Archibald has been librarian. Of 9069 volumes now in the library, 6554 are bound periodicals; 224 current journals are being accessioned. Under mutually advantageous agreements begun in 1901 and culminating in 1934, our library has been cared for by Columbia University.

For fifty years the Society has been a welcome guest of Columbia, first while it was a College on East 49th Street and Madison Avenue until 1897, and then as a University at Morningside Heights on West 116th Street. Until 1901 President Seth Low was the directing genius of the College and University. But since 1902 President Butler, from the first a friend and admirer of Professor Fiske, has furnished us with offices and facilities for meetings which have been very notable contributions in the upbuilding of our Society.

Late in 1919, thirty-one years after the Society was founded, the Council turned again with confidence to one who had held almost every office in her gift, and requested Professor Fiske to become chairman of a committee on reorganization. In the following August the committee reported that even if increase of annual dues and other recommendations were put into effect, there would certainly

be a deficit, unless a considerable increase in membership could be effected over the total of 770 at that time. Professor Hedrick was immediately appointed chairman of a committee on membership and sales, and he convinced his somewhat doubting colleagues on the committee, Professor Birkhoff and President-elect Bliss, that tangible results could be achieved. After Hedrick withdrew, in order to deal with Bulletin problems, Bliss became chairman, and he was able at the close of his term of office in 1922 to make the remarkable report that since October, 1920, 403 new members and 110 new subscribers to the Transactions had been secured. But even such vigorous measures were inadequate for meeting bills based on great increases in cost of printing; curtailment of output would earlier have been necessary had not gifts amounting to \$4600 covered the cost of one volume of the Transactions and of part of a second. Among the last acts of Bliss's administration were the appointments of Professor Julian L. Coolidge as chairman of a committee on endowment, and of a new chairman for the committee on membership, which has ever since been regarded as a necessary part of the Society's continued development.

One of the happier experiences of war days was the establishment of connections of the Society with the National Research Council, three members of the Society being constantly members of the Division of Physical Sciences of the Council since 1919. In 1921, largely through Veblen's influence, the Division set aside a sum of \$1500 as a "Revolving Fund for the publication of Mathematical Books." Volumes by Eisenhart, White, Batchelder, and Bliss have been published with the aid of this fund, which is still almost intact.

Another timely outlet for publication was the Journal of Mathematics and Physics, a quarterly established by the Massachusetts Institute of Technology in 1921.

We now come to the momentous presidential term of Professor Veblen in 1923-1924. After several attempts, the Society was finally incorporated in May, 1923, under the Laws of the District of Columbia. As the result of new By-Laws, a Board of Trustees was created to receive and to administer the funds of the Society, to have full legal control of its investments and properties, to make contracts, and in general to conduct all business affairs of the Society. The function of the Council was still to formulate and administer the scientific policies of the Society, and to act in an advisory capacity to the Board of Trustees. The Society was now in a position to set forth on an endowment campaign.

Professor Coolidge started out with \$100,000 as the goal for an Endowment Fund. He decided that members of the Society should first make their contributions, and that an attempt should be made to educate the public to appreciate the basic character of mathematics in our present civilization and the importance of mathematical research in advancing that civilization. As a result, before the end of 1923, \$25,000 had been contributed to the Endowment Fund and the Josiah Willard Gibbs Lectureship had been established. Of the fourteen lectures which have been delivered under this Lectureship the first was at Columbia University in February, 1924, by Professor Michael Pupin; Dr. Robert Henderson, actuary, for fifteen years trustee of the Society, gave the second lecture; the fifth lecturer was the late Professor E. W. Brown. Professor Coolidge's committee next commenced the solicitation of funds from foundations, from industries dependent on mathematics, and from individuals outside of the Society. Through representations of Professors Coolidge and Veblen, the General Education Board of the Rockefeller Foundation became interested in the question of subsidizing scientific printing, and in 1925 commenced to turn over to the National Academy of Sciences \$10,000 a year for allocation to various scientific publications, but with special reference to those in the field of mathematics.

The Endowment Fund Committee reported at the end of 1925 that \$55,000 had been secured in gifts or pledges, and \$4000 was assured for 1926 from sustaining members; that the subvention from the National Academy of Sciences for 1925 was \$3100 and for 1926 \$2500. Hence the additional income to the Society for 1926 was more than \$10,000, which is considerably in excess of what would have resulted from carrying through the Endowment Fund plan in its original form. The achievements of Professors Coolidge and Veblen were indeed remarkable, and Professor Dresden in the middle west and Dr. Henderson in New York also made notable contributions to the committee's work. In 1926 over \$64,170 was paid into the Endowment Fund of the Society which now amounts to about \$70,456.

Brief reference may be made to other special funds of the Society in the order of their foundation. The Cole Fund, started in 1921, now amounts to about \$3700 after the payment of prizes to Professors Dickson and Vandiver for work in the theory of numbers. The Bôcher Memorial Fund, established in 1922, now amounts to about \$2150; from income of this fund four awards of prizes have been made to Professors Birkhoff, E. T. Bell, Lefschetz, J. W. Alexander, H. C. M. Morse, and N. Wiener. Professor Lefschetz was later the fourth

professor from Princeton University to become president of our Society. The Moore fund, established in 1922 by former students to perpetuate the name of Eliakim Hastings Moore, amounts to about \$4300. The Reilly Fund, which will eventually amount to at least \$20,000, "to be used for the advancement of research in pure mathematics," was established by a bequest of Miss Marion Reilly, educator, suffrage leader, and philanthropist, who was dean at Bryn Mawr College for a decade, then director of the College until her death in 1928; this fund amounts at present to about \$15,000.

At the close of 1937 the total financial assets of the Society were listed as the goodly sum of \$130,758. But the stock of the Society's publications also constitutes assets of great value; last June, for example, there were 5900 volumes of Colloquium Publications in stock. During 1937 the Society received \$3508 from the sale of volumes of Colloquium Publications, and of back numbers of the *Bulletin* and *Transactions*. Such sales are continuous, while the stock is constantly increasing. At list prices the stock of publications at the present time is valued at more than \$100,000. Such a semi-centennial showing is indeed impressive.

As the endowment campaign approached a conclusion, during President Birkhoff's term of office, 1925-1926, Professor Veblen raised various questions with regard to Colloquium Lectures, which led, in 1928, to the addition of three further officers in the Society, namely the editors of Colloquium Publications. This inappropriate series designation was intended to cover not only all published colloquium lectures but also other volumes accepted by the editorial committee, but not delivered as lectures. Seven volumes of this latter type have been published by the Society, 1927-1938.

Incidentally it may be noted that on President Birkhoff's suggestion in 1926 the Council approved of his plan of creating a Visiting Lectureship for the Society. In this connection the following six lecturers have been appointed, 1927-1936: Professors Carathéodory, Weyl, Bompiani, Blaschke, R. L. Moore, and Vijayaraghavan.

Economic conditions in a country may play havoc with the best laid plans; they caused reduction in income in the securities of the Endowment Fund and in sustaining memberships, so that beginning with 1931 an increase in membership dues became necessary. But the income from sustaining memberships which had amounted to \$4800 in 1928 declined to \$1800 in 1933. Furthermore, it had been understood that the subventions of the Rockefeller Foundation were only temporary and were likely to terminate in 1934. Matters were thus brought to a head during President Coble's administration in 1933-

1934. A plan was devised for stabilizing the Society's finances by increasing the number of individual contributing members, and of sustaining and contributing institutional members. How Professor Ingraham covered himself with glory during 1934–1935 in visiting many major institutions of the continent, and securing 119 contributing members yielding about \$1200 a year, and 87 institutional members producing nearly \$6500 annually, is familiar to all of you. The Rockefeller Foundation not only paid the expenses of this campaign amounting to about \$8500, but also continued its subventions until 1936. With financial stability assured it is therefore with high hope for further worthy achievement that the Society faces the future, where pressing problems await attention.

After 1920 there was a great increase in the amount of material offered for publication, due to such factors as the general return to normal conditions, the influx of foreign scholars into the country, and the great increase in the number of members of the Society. At the close of 1920 there were 770 members; of 1925, 1542; of 1930, 1926; of 1937, 2127. It was not, however, until 1926, when the income from the Endowment Fund and subventions became operative, that considerable expansion gradually became possible in volumes of the *Bulletin*, from volumes of about 600 pages to those of 900 pages or more; there was similar increase in the size of volumes of the *Transactions*. But further, the plan for taking over the *American Journal of Mathematics*, which was rejected by The Johns Hopkins University in 1899, became acceptable 27 years later. Beginning with 1927, this *Journal* has been published under the joint auspices of the University and Society, and of the board of five editors three are appointed by the Society, which contributes up to \$2500 a year for the great increase in size of this volume also. During 1927–1937 the Society paid \$26,000 to The Johns Hopkins University in this connection.

Yet other steps were taken by the Society to bring relief in the publication situation. It was largely due to its encouragement and cooperation, from 1927 on, that Duke University finally decided in 1934 to publish the *Duke Mathematical Journal*, of which the first volume appeared in 1935. But the demand for more journal space in which to publish research rapidly is more insistent now than in 1935.

There are other passages in our history, not without interest, which might be described if time permitted; one such would deal with the Society's part in smashing the International Mathematical Union. At least we can record that in 1936 at the international gathering in

Oslo, untainted by political connections, Professor Eisenhart on behalf of the Society tendered an invitation for the International Congress of Mathematicians to be held in the United States. Preparations for this gathering at Harvard University and Massachusetts Institute of Technology, September 4–12, 1940, are well advanced.

I should like to tell you of other activities of the Society, of other outstanding personalities and individual achievements connected with her upbuilding, of sacrifices, enthusiasms, and visions woven into the woof of her garments. Prominent in this company would be two groups of officers whose continuity of service was long maintained; only three editors-in-chief of the *Bulletin* from the beginning in 1891 to March, 1937, namely, Fiske, Cole, and Hedrick; and but three secretaries in fifty years, namely, Fiske, Cole, and Richardson. The enormous developments of the Society during the eighteen years of Professor Richardson's splendid service have required the appointment of four associates. President Woodward well wrote, "Our national scientific societies are cooperative enterprises of the most complex and difficult character, and in their evolution the secretaries must play the leading role. . . ."

This address began by pointing out that in mathematical discovery America was far behind Europe in the nineteenth century, and that mathematical research in this country did not begin with the Society's foundation. An outline of the Society's development has been indicated. Speakers who follow me will exhibit mathematical developments in the United States during the past fifty years, and will doubtless bring out relative mathematical achievements of America and Europe, at the *present* time.

To all of us, Professor Fiske, it is a source of profound gratification that you are chairman at this gathering. Our Founder! The one who for a generation was an outstanding leader in directing the Society's affairs. May contemplation of the glorious results of that little meeting at Thanksgiving time, fifty years ago, often bring to you glowing satisfactions—and be as roses for your December days.

LANTERN SLIDES USED TO ILLUSTRATE THIS ADDRESS

Thomas Scott Fiske (1865–), founder, seventh President, 1903–1904.

John Howard Van Amringe (1835–1915), first President, 1888–1890.

John Emory McClintock (1840–1916), second President, 1891–1894.

Frank Nelson Cole (1861–1926), second Secretary, 1895–1920; Editor-in-Chief of the *Bulletin*, Feb. 1899–1920.

David Eugene Smith (1862–), fifth Librarian, 1902–1920.

The Seventeen Presidents Elected Members of the National Academy of Sciences

- George William Hill (1838–1914), third, 1895–1896.
Simon Newcomb (1835–1909), fourth, 1897–1898.
Robert Simpson Woodward (1849–1924), fifth, 1899–1900.
Eliakim Hastings Moore (1862–1932), sixth, 1901–1902.
William Fogg Osgood (1864–), eighth, 1905–1906.
Henry Seely White (1861–), ninth, 1907–1908.
Maxime Bôcher (1867–1918), tenth, 1909–1910.
Edward Burr Van Vleck (1863–), twelfth, 1913–1914.
Ernest William Brown (1866–1938), thirteenth, 1915–1916.
Leonard Eugene Dickson (1874–), fourteenth, 1917–1918.
Gilbert Ames Bliss (1876–), sixteenth, 1921–1922.
Oswald Veblen (1880–), seventeenth, 1923–1924.
George David Birkhoff (1884–), eighteenth, 1925–1926.
Luther Pfahler Eisenhart (1876–), twenty-first, 1931–1932.
Arthur Byron Coble (1878–), twenty-second, 1933–1934.
Solomon Lefschetz (1884–), twenty-third, 1935–1936.
Robert Lee Moore (1882–), twenty-fourth, 1937–1938.

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