

I

INTRODUCTORY. THE SOCIETY, 1888-1920

INTRODUCTORY

Mathematical research in America did not begin before the early part of the nineteenth century, when Nathaniel Bowditch (1773-1838) and Robert Adrain (1775-1843) made a definite, though small, beginning.¹ Bowditch is popularly known as the author of *The American Practical Navigator* which went through ten editions during his life time and more than fifty editions after his death, most of them having been published by the U. S. Government. In the nineteenth century this work was used by sailors all over the world. But there are two of his publications which involve what may more properly be termed mathematical research. The first of these was a paper of 1815, "On the motion of a pendulum suspended from two points." The study of the theory of such a motion was suggested by a colleague in the AACAS, who employed such a pendulum to illustrate the apparent motion of the earth as viewed from the moon. Bowditch thus first studied curves, many years later to become famous, in connection with certain acoustical phenomena, as "Lissajous curves."¹ The second research publication was Bowditch's English translation of the first four v. of Laplace's *Mécanique Céleste* (1798-1805), published in four huge v. with elaborate notes and commentary (1829-39). Bowditch was not a genius or a discoverer, but rather a singularly sagacious critic, of the Delambre type, with an exceptionally endowed mind. After discussing the work of Adrain in detail Professor Coolidge concludes as follows:¹ "It was indeed no small accomplishment in his day, and under his conditions, to ask and answer questions involving the calculus of variations and elliptic integrals. What he might have accomplished under more favorable circumstances must always remain a subject of conjecture. What he did accomplish entitles him to the glory of a pioneer in the development of American mathematics."

A man of very different calibre was Benjamin Peirce (1809-1880) whose improvements of Bowditch's commentary in the Laplace work were numerous. Reference may be made to two of his publications, the first

¹ See R. C. Archibald: (a) *DAB*, v. 2, 1929; (b) "The scientific achievements of Nathaniel Bowditch" in *A Catalogue of a Special Exhibition of Manuscripts, Books, Portraits and Personal Relics of Nathaniel Bowditch . . .*, Salem, Mass., 1937. See also J. A. Lissajous, "Mémoire sur la position des nœuds dans les lames qui vibrent transversalement," *Ann. Chimie et Physique*, s. 3, v. 30, 1850. For a summary of known results connected with these curves, see G. Loria, *Spezielle alg. u. transcendente ebene Kurven*, Leipzig, 1910, v. 1; and F. Gomes Teixeira, *Traité des Courbes Spéciales Remarquables*, 1915, v. 3 (suppl.). J. L. Coolidge, "Robert Adrain, and the beginning of American mathematics," *AMM*, v. 33, 1926, p. 61-76.

a work on mechanics (1855), and the second a work on algebra (1870). The *Analytical Mechanics* was a large quarto of nearly five-hundred pages; the projected following volumes, on Celestial Mechanics, Potential Physics, and Analytic Morphology, were never published. It is a work displaying great power and originality, and may be found in most large European libraries. Muir has commented on the extraordinary exposition of Jacobi's work on determinants at the outset of the tenth chapter (see R. C. Archibald, *Benjamin Peirce . . . Biographical Sketch and Bibliography*, Oberlin, 1925). His second publication, *Linear Associative Algebra* was developed from papers read before the NAS and was issued by persons in the U. S. Coast and Geodetic Survey through "labors of love" in a small edition. A new edition with notes by his son C. S. Peirce appeared in *AJM*, v. 4, 1881. This work, characterized as "really epoch-making," aimed to develop so much of the theory of hyper-complex numbers as would enable him to enumerate all inequivalent, pure, non-reciprocal systems in less than seven units. He anticipated a good deal of the work of Study and Scheffers in this connection. In 1925 President A. L. Lowell (author of "Surfaces of the second order treated by quaternions," *AAAS Proc.* 1878) wrote as follows: "Benjamin Peirce still impresses me as having the most massive intellect with which I have ever come into close contact, and as being the most profoundly inspiring teacher that I ever had."

It is an interesting commentary on the time that another work of great genius was also privately printed seven years later by G. W. Hill (1838–1914); I refer to his *On the part of the motion of the lunar perigee which is a function of the mean motions of the sun and moon*. Commentary on this monograph with its extraordinary original work on infinite determinants, and on his remarkable memoir "Researches in the lunar theory" (1878), which won high praise from Poincaré, occur later, in chapter XV.

In the same chapter are references to Simon Newcomb (1835–1909) and his (a) "Elementary theorems relating to the geometry of a space of three dimensions and of uniform positive curvature in the fourth dimension" (*Crelle's Journal* 1877), founded on ideas of Riemann's dissertation; (b) "Note on a class of transformation which surfaces may undergo in space of more than three dimensions" (*AJM* 1878), where it is proved that "If a fourth dimension were added to space, a closed material surface (or shell) could be turned inside out by a simple flexure, without either stretching or tearing;" (c) "The general integrals of planetary motion" (1874).

The great contributions of Josiah Willard Gibbs (1839–1903) in thermodynamics and vector analysis, and part of his work on statistical mechanics seem to have been developed before 1888 (see E. B. Wilson, *DAB*, v. 7; J. W. Gibbs, *Collected Works*, 2 v., New York, 1928, with memoir by H. A. Bumstead).

Other outstanding events in connection with mathematical research in America were the founding of The Johns Hopkins University in 1876, the appointment of J. J. Sylvester (1814-1897) who was a professor there 1876-83, and the establishment by the JHU of the *American Journal of Mathematics*. Ten volumes of this journal had appeared by October 1888. Among the papers in it, apart from many by Sylvester and by Cayley, a lecturer at the JHU during 1882, and those by Hill and Newcomb, were highly significant contributions in the field of mathematical physics from the pen of H. A. Rowland (1848-1901), and others of worth by T. Craig, F. Franklin, E. McClintock, W. I. Stringham, and W. E. Story. Sylvester not only aroused tremendous enthusiasm in his own department but, in his constant pursuit of things of the spirit, was a source of inspiration throughout the academic community, where scholars were

“Led by soaring-genius’d Sylvester,”

as Lanier has expressed it in his “Ode to The Johns Hopkins University.”

Hence in America before the end of 1888 there had been an appreciable amount of mathematical research, some of it of first importance, even according to recent standards. There had been centers of mathematical inspiration. Such universities as Yale, The Johns Hopkins and Harvard, had been sending out doctors in mathematics for a number of years, and many Americans had been getting degrees in Europe. The time was ripe for an organization to draw together many people scattered throughout the country who were especially interested in mathematical pursuits.

THE SOCIETY, 1888-1920

In the spring of 1887 when Thomas S. Fiske was in his second year as a graduate student, and an assistant in mathematics, at Columbia College, his principal teacher Prof. J. H. Van Amringe suggested that he should spend at least six months at Cambridge U., England. One of the Columbia trustees, Mr. G. L. Rives, who had been fifth wrangler at the mathematical tripos in 1872, and had declined an offer of a fellowship at Trinity, gave Fiske letters of introduction to Cayley, Glaisher, Frost, Forsyth and George Darwin. On arrival at Cambridge he was received as a guest and was invited to attend whatever mathematical lectures might be of interest to him. Prof. Fiske’s reminiscences may now be put in his own words as follows: “Scientifically I benefited most from the instruction and advice of Forsyth and from my reading with Dr. H. W. Richmond, who consented to give me private lessons. However, from Dr. J. W. L. Glaisher, who made of me an intimate friend, who spent with me many evenings in heart to heart conversations, who took me with him to meetings of the London Mathematical Society, and who entertained me with gossip about scores of contemporary and earlier mathematicians, I gained more in a general way than from any one else. I had attended only a few

lectures by Cayley on 'The calculus of the extraordinaries' when, slipping on the ice, he suffered a fracture of the leg, which brought the lectures to an end.

"On my return to New York I was filled with the thought that there should be a stronger feeling of comradeship among those interested in mathematics, and I proposed to my classmates and friendly rivals, Jacoby and Stabler, that we should try to organize a local mathematical Society."

And so it came about that these three young men, all born in the same year, 1865, sent out the following historic document:

It is proposed by some recent students of the graduate school of Columbia College to establish a mathematical society for the purpose of preserving, supplementing, and utilizing the results of their mathematical studies. It is believed that the meetings of the society may be rendered interesting by the discussion of mathematical subjects, the criticism of current mathematical literature, and the solution of problems proposed by its members and correspondents. It is also intended that original investigations to which members may be led shall be brought before the society at its meetings. It is hoped that this society may elicit your interest and be favored with your advice. It is earnestly desired that you will assist in its organization by being present at its first meeting hereby called for Thanksgiving Day at 10:00 A.M.

(Signed) THOMAS SCOTT FISKE
EDWARD LINCOLN STABLER
HAROLD JACOBY

November 1888

On 24 November 1888, the following six persons responded to the call for the purpose of organizing a mathematical society: Profs. Van Amringe and Rees, and Messrs. Fiske, Jacoby, Stabler, and J. Maclay, another graduate student. The Constitution was adopted at the second meeting on 29 December 1888 and The New York Mathematical Society came into being. Prof. Van Amringe was elected president and Dr. Fiske secy., each for one year. It was agreed that the meetings should be monthly during the college year and that it was desirable to bring together mathematicians resident in New York and the neighborhood, teachers of mathematics at institutions of collegiate rank, actuaries of local insurance companies, practising engineers, and others genuinely interested. However at the end of 1889 the Society had only 16 members. Since these may be regarded as the charter members of the Society their names are brought together:

J. H. Van Amringe	J. Maclay	M. I. Pupin
J. K. Rees	H. J. Messenger	E. T. Snook
T. S. Fiske	W. Holladay	I. C. Pierson
H. Jacoby	G. M. Searle	G. Legras
E. L. Stabler	J. Tatlock, Jr.	N. S. Norton
	J. E. McClintock	

Thus on this first list were the names of two future presidents of the Society, and the one who, ever a splendid friend of the Society, was thirty-five years later, to initiate the Josiah Willard Gibbs Lectureship. By the end of 1890 the number of members had increased to 23. The

member elected in Jan. 1891 was Carl Steinmetz, also born in the same year as Fiske. He was a native of Breslau and was by far the ablest of the pupils of Prof. Heinrich Schroeter, at the university there. His dissertation was commended very highly and he was about to receive his degree in the spring of 1888, when to escape arrest as a socialist, he was compelled to flee to Switzerland. Thence he made his way to America arriving in New York in June 1889. About a year later Fiske was attracted by a long article "On involuntary correspondences defined by a three-dimensional linear system of surfaces of the n th order," in *Zeitschrift für Mathem. u. Physik*, by Charles Steinmetz of New York. This was his doctor's dissertation. Fiske got in touch with him, told him that he ought to publish other papers in English and in this country and offered to assist him with the English of his papers. His membership in the Society continued until his death in 1923. He presented a number of papers to the New York Mathematical Society, two of which were published in the *AJM*. Fiske recalls Steinmetz telling him that it had always been his wish to devote his life to pure mathematics, but that his necessities had forced him to become an electrical engineer. Eventually he became chief consulting engineer of the General Electric Co.

The decision having been made to publish a bulletin, if the membership list could be adequately increased, President McClintock's régime was initiated in 1891 by Fiske commencing his campaign for members. He obtained lists of college teachers and other persons interested in mathematical publications from several publishing houses, notably the Macmillan Co., Ginn and Co., and John Wiley and Sons. The names and addresses of suitable persons were culled from these and to them were mailed prospectuses of the *Bulletin*, and invitations to join the Society. Those who joined were asked to suggest other suitable persons for membership. The list of members published on 3 Apr. 1891 contained no less than 89 names. Among them were W. E. Byerly, F. N. Cole, H. B. Fine, G. B. Halsted, A. Martin, C. S. Slichter, O. Stone, J. M. Van Vleck, A. Ziwet, and W. W. Johnson of the U. S. Naval Acad. who was an intimate friend of Glaisher and had heard from him about Fiske. Hence he was especially interested in Fiske's proposal to enlarge the New York Mathematical Society, and to publish a historical and critical review of mathematical science. He was the first member from outside the New York circle and contributed the leading article to the first number of the *Bulletin*.

In Fiske's second printed list, on May 1st, there were the names and addresses of 135 members; in the list for June, 174. By the end of the year 187 new members had been secured, making a total of 210 members, and the first three numbers of the *Bulletin* had been published. The Society had become a national organization and its future seemed assured. No praise can be too high for this extraordinary achievement on the part of the secretary of the Society, most heartily backed by the president.

Since later chapters contain full details with regard to, (a) the history of the *Bulletin* (IV), (b) presidents (XV), (c) secretaries (XIII), (d) treasurers, the first being a secretary-treasurer for 1890 (III), (e) vice-presidents, the first elected for 1890 (XIV), (f) the Council, first organized in Dec. 1889 (XII), (g) the Library and its librarians, the first librarian being elected for 1892 (XI), and (h) annual meetings (VIII),—repetitions will be avoided as much as possible.

The meetings of the new Society followed one another regularly and the papers presented were very varied in their topics and aroused much interest and discussion. A notable mathematical event for America was the International Congress of Mathematicians in Chicago in Aug. 1893, where Felix Klein was prominent (for details see chap. VII). On 30 Sept. 1893 a special meeting of the NYMS was called for the purpose of giving the members an opportunity of meeting Klein. President McClintock referred to his achievements as teacher, investigator, organizer and editor. Klein then described a non-Euclidean development of spherical trigonometry by Dr. Schilling and outlined recent investigations by Prof. Study, of U. Marburg, and himself. Klein was present at another meeting of the Society in Oct. 1896 (see chap. IV). At the meeting of the Society in Oct. 1893 Study appeared unexpectedly, and described some of his researches in collaboration with Engel. Simon Newcomb's address on "Modern mathematical thought" was a feature of the annual meeting in 1893. The address appeared later in the *Bulletin* and was translated into Italian.

Further reminiscences of Prof. Fiske may now be introduced: "Conspicuous among those who attended the meetings of the Society in the early nineties was the famous logician Charles S. Peirce.¹ His dramatic manner, his reckless disregard of accuracy in 'unimportant' details, his clever newspaper articles [in *The Evening Post*, and *New York Times*] on the activities of the young Society, interested and amused us all. He was the adviser of the New York Public Library for the purchase of scientific books, and wrote the mathematical definitions for the *Century Dictionary*. He was always hard up, living partly on what he could borrow from friends, partly on what he got from odd jobs like writing for the newspapers. He seemed equally brilliant whether under the influence of liquor or otherwise. His company was prized by the various organizations to which he belonged; and so he was never dropped from membership even though he failed to pay his dues. He infuriated Charlotte Angas Scott by contributing to the *Evening Post* an unsigned obituary of Arthur Cayley, in which he stated, upon no grounds whatsoever, that Cayley had inherited his genius from a Russian mother.

¹ C. S. Peirce (1839–1914) was the second son of Benjamin Peirce referred to above. When he was at the JHU his talents were greatly admired by Sylvester. Already six v. of his *Collected Papers* have been published by the Harvard U. Press (1931–35).

“At a meeting of the Society in November 1894 in an eloquent oration on the nature of mathematics, C. S. Peirce proclaimed that the intellectual powers essential to the mathematician are ‘Concentration, imagination, and generalization.’ Then, after a dramatic pause, he cried ‘Did I hear some one say demonstration?’ ‘Why, my friends,’ he added, ‘demonstration is but the pavement on which the chariot of the mathematician rolls.’”

At the meeting of the Council in Apr. 1894 Prof. E. H. Moore proposed that the Society should publish the proceedings of the International Congress of Mathematicians at Chicago in 1893. In June the Council appropriated \$600 toward the publication, under an arrangement with the Macmillan Co. It authorized the raising of an additional sum by private subscriptions, and the sale of the work, when published, to the members of the Society at a reduction from the regular price. The Society finally paid the printer \$773.76. The year 1894 was a culminating year in the history of the New York Mathematical Society. This major publication enterprise, transcending local considerations and sentiment, quickened the desire of the Society for a name indicative of its national or continental character. The forthcoming meeting of the American Association for the Advancement of Science at Brooklyn, N. Y. in Aug., 1894 seemed to present a most appropriate occasion to make its *début* as a national institution in name. It appeared likely that the influence of the AAAS would bring to New York from more or less remote parts of the country many members of the Society who would welcome the opportunity of attending a meeting of the Society. Accordingly plans were made for the meeting in affiliation with Section A. This was the first summer meeting of the Society, and at the same time the first meeting of the Society under its new name “The American Mathematical Society.” For a list of, and notes on, all summer meetings of the Society see chapter IX.

At the annual meeting of 1894 President McClintock finished his four terms in office, during which he rendered remarkable service to the Society in countless ways. His was the first retiring presidential address, “The past and future of the Society.” With reference to Fiske, near the beginning he remarked “It is no flattery to him to say that the growing energies of the Society must at various stages have become chilled or misdirected, except for his comprehensive intelligence and untiring industry.”

There was debate as to whether Hill or Newcomb should be the next president of the Society, but Hill was chosen because he was regarded as the greater mathematician. Newcomb succeeded him and was thus for the fourth time president of a national organization. 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 to head the Vatican Observatory, H. Jacoby, A. O. Leuschner, C. L. Poor, T. H. Safford, O. Stone, the founder of *Annals of Mathematics*, and

J. M. Van Vleck. The American Astronomical Society was not founded until 1899.

Beginning with 1896 Prof. Fiske surrendered his duties as secretary of the Society to Prof. F. N. Cole, but continued as editor-in-chief of the *Bulletin* until Jan. 1899. One of the outstanding events of this year was the founding of the Colloquium Lectures, on the basis of suggestions of Prof. H. S. White. An account of this, and of the resulting remarkable *Colloquium Publications* of the present day, is given in detail in chap. VI.

By the end of 1896 the Society had 275 members, a number of whom desired to meet twice a year, under the auspices of the Society, at Chicago. The Council authorized the formation of sectional meetings of the Society, and thus the first meeting of the Chicago Section of the American Mathematical Society occurred in Apr. 1897. For a full account of this Section see chapter VII.

There is, however, one feature in connection with its development, bound up with the evolution of the Society, to which reference may now be made. Two important events occurred at almost the same time, namely: the nationalization of the Society in 1891, with the *Bulletin* as its official organ, and the foundation in 1892 of the U. Chicago, with its group of famous mathematicians, who soon constituted an energizing center felt in ever widening circles throughout the middle west, especially after the foundation of the Chicago Section. By 1906 the Society had made notable achievements with which members of the Chicago group were prominently associated. This group was full of enthusiasm, fertile in new ideas, and impetuous to see them in operation; but ten of the first eleven presidents were from the east; before 1910 all annual meetings were held there, and sectional meetings were not regarded as meetings of the Society; prominent members in the east were inclined to be conservative in making changes. Hence, even with wise counsellors both in the east and in the middle west, there was a distinct chance for misunderstandings and cleavage to arise. That nothing serious in this regard did develop is due in part to E. H. Moore's fine influence; but older members agree that the rôle played by E. B. Van Vleck during the critical years 1906-1920, after he had arrived at the University of Wisconsin, was of no little importance. As a trusted friend of prominent men in both the east and the middle west, and in constant contact with them, he was a frequent interpreter to each of the thought and aspirations of the other. Thus, with others also contributing, differences were composed and cooperation became more intimate.

The Section idea was developed in two other parts of the country. On 3 May 1902, at a gathering of twenty mathematicians in the Academy of Sciences, San Francisco, California, a new section was formed, and the San Francisco Section of the Society came into being. Up to the end of 1928 no less than fifty-six meetings had been held on the Pacific coast and

untold good resulted from the scientific discussions and good fellowship established. Beginning with 1929, meetings of the Section were continued as regular meetings of the Society. The chairmen and secretaries of this Section were as follows:

Chairmen

W. I. Stringham 02-03	H. F. Blichfeldt 09-10, 19-20, 25-26
R. E. Allardice 03-04, 05-06, 15-16, 21-22, 26-27	G. C. Edwards 12-13
M. W. Haskell 04-05, 14-15, 28-29	W. A. Manning 13-14, 17-18
E. J. Wilczynski 06-07	F. Cajori 18-19, 22-23
L. M. Hoskins 07-08, 11-12	A. F. Carpenter 23-24
D. N. Lehmer 08-09, 10-11, 16-17, 20-21	E. R. Hedrick 24-25
	E. T. Bell 27-28

Secretaries

G. A. Miller 02-06	T. M. Putnam 11-12
W. A. Manning 06-09, 12-13, 16-17	T. Buck 13-16
C. A. Noble 09-10	B. A. Bernstein 17-29
H. C. Moreno 10-11	

The preliminary meeting of the proposed Southwestern Section of the AMS took place at Columbia, Mo. on 1 Dec. 1906. Among the thirty-five persons present were twenty members of the Society. Prof. E. R. Hedrick was elected chm. and Prof. A. S. Chessin secy. The Council authorized the formation of the Section at its annual meeting in 1906. Up to the end of 1928 twenty-one meetings of the Section had been held, and the ideals of the Society and interest in mathematics were appreciably promoted by them. The chairmen and secretaries of this Section were as follows:

Chairmen

A. S. Chessin 07-08	W. C. Brenke 19-20, 26
E. W. Davis 08-10, 13-14	C. H. Ashton 21-22
W. H. Roever 10-11, 14-15, 27	E. R. Smith 24
J. N. Van der Vries 11-12, 15-16	R. L. Moore 25
E. R. Hedrick 12-13, 17-19, 20-21, 22-23	U. G. Mitchell 28
S. W. Reaves 16-17	

Secretaries

O. D. Kellogg 07-19	L. Ingold 20, 26	E. B. Stouffer 21-25, 27-28
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In 1898, those brooding over the Society's problems, alert and attuned to every suggestion tending to advance the cause of mathematics, seized upon the idea of establishing a new type of journal as the one most desirable to develop. At the meeting of the Council in August Prof. Fiske was appointed chm. of a comm. of five "to consider the question of securing improved facilities for the publication of original mathematical articles in this country." How this action finally led to the establishment of the *Transactions of the American Mathematical Society*, with E. W. Brown, T. S. Fiské, and E. H. Moore as editors, and to the publication of the first volume in 1900, is set forth in detail in chapter V.

Life members were established in 1898, on the payment of fifty dollars in one sum, exclusive of initiation fee. A. G. Greenhill (later Sir George) was the first life member, Prof. E. B. Elliott of U. Oxford, A. E. Western, and E. T. Whittaker of Trinity C., U. Cambridge, England were others at about the same time. The By-Law with regard to life members was not changed until 1922, when it was amended and practically equivalent to the present statement, "any member not in arrears of dues may become a life member on the payment of a sum to be determined in accordance with actuarial principles." The annual receipts for life memberships, 1898–1936, is indicated in chapter III, Table II; the required reserves for the 80 members in 1938, amount to \$5865.38 (Table IV).

In recent years the appearance at meetings of the Society of distinguished mathematicians from overseas has been of very frequent occurrence, but in earlier days such visits were comparatively rare. On the occasion of the bicentennial celebration of Yale U., Prof. J. Hadamard of the U. Paris came to the United States. At the meeting of the Society in Oct. 1901 he presented a paper "On the theory of elastic plates." The Congress of Arts and Science at the Universal Exposition in St. Louis in 1904, was organized by Simon Newcomb. The participating scholars included É. Picard, G. Darboux, L. Boltzmann, and J. H. Poincaré. At the summer meeting of the Society at St. Louis in Sept. 1904, Poincaré presented a paper on "Closed geodesics on a closed convex surface"; Prof. G. Fano, of the U. Turin, was also a guest of the Society at that time.

From reminiscences of the late Prof. F. Morley, referring to the period before 1904, the following are culled: "In finite groups, a protagonist was F. N. Cole. It should be pointed out that the spread of ideas over the country was immensely helped by the influence of the *Bulletin*. There was no university powerful enough to prevent the group-idea when in fashion being generally accessible—from seeping into courses. Whereas in England, in spite of Burnside, the idea had little educational effect which is a pity, for the first fine careless raptures being over, the effect is lost, perhaps forever. . . . 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; not merely the kind of joke called a pun which plays so large a part in mathematics. For a pun is two meanings for a formula, and he who detects a new meaning is perhaps merely making a pun."

As illustrative of matters which came before the Society in its earlier history, the following may be mentioned. In 1902 the Council appointed H. W. Tyler (chm.), T. S. Fiske, W. F. Osgood, J. W. A. Young, and A.

Ziwet as a comm. to consider and report on standard definitions of requirements in mathematical subjects for admission to colleges and scientific schools. In 1903 the committee's report was ordered to be published.

In 1916 it became known that, because of the admiration of one of its most loyal members, the Society would one day be able to offer a very large prize for mathematical research. By the will of Prof. L. L. Conant (1857-1916) who had been a member of the Society from 1892, the sum of \$10,000 was left to the Society, subject to Mrs. Conant's life interest. The will provided that the income from this bequest "shall be offered once in five years as a prize for original work in pure mathematics." Mrs. Conant is still living. Prof. Conant was long connected with the department of mathematics at the Worcester Polytechnic Institute, in final years as head of the department. He was the author of several mathematical works, and editor of the *Journal of the Worcester Polytechnic Institute*, 1897-1905.

In this semi-centennial year it is the Society's good fortune, not only to be able to hold intercourse with its Founder, and to listen to his vivid reminiscences of early days, but also to be able to establish contacts with another valued friend of the Society for many years, namely, Doctor Nicholas Murray Butler, the President of Columbia University. In 1900, while a professor at Columbia, he organized the College Entrance Examination Board, of which he became the first secretary. Upon resigning in the following year, preparatory to becoming president of Columbia, he induced Professor Fiske, long well-known as a colleague, to become his successor as secretary of the Board. Professor Fiske's exceptional capacities were the basis upon which the intimate relations of the Society and University were built. For nearly forty years, special offices for the Society's headquarters at Columbia have been freely supplied, culminating in the present splendid arrangement in the Low Memorial Library. The mutually helpful Library agreement (see chap. XI) was a great boon to the Society, and afforded an adequate basis for the active development of this important element in the Society's resources. But furthermore, through all the years, even down to the present day, Columbia has constantly provided rooms for all of the Society's meetings in New York. The Society's debt to Columbia University is great indeed, and its gratitude most profound.

For many years the office of the Society was on the top floor of East House at Columbia University. But since the fire hazard there seemed great, arrangements were made for removal to another building, thought safer, where the U. in 1913 provided, and partly furnished, an office. This was destroyed by fire on the early morning of 10 October 1914, with complete loss of files and records and a considerable stock of volumes of the

Bulletin and *Transactions*. The first ten v. of the *Bulletin* were completely destroyed and also the Council minutes from 1907 to 1914. Insurance to the extent of \$847.06 was received.

In the previous pages the text has not always been confined to the period before 1920. We may possibly transgress once more, while endeavoring to suggest the growth of mathematical activity in four periods. These statistics indicate the numbers of different persons presenting papers at meetings of the Society. 1891–1904, 243; 1904–1914, 343; 1914–1924, 430; 1925–1934, 866. In 1920–21, when Prof. Cole resigned as secy., 119 authors presented 198 papers to the Society; in 1895–96, when he first became secy., 22 different authors presented 30 papers to the Society. This of itself is suggestive of mounting responsibilities; but coupled with *Transactions*, *Colloquia*, and editing of the *Bulletin*, it seems astonishing that a regular clerk was not appointed to assist Prof. Cole until 1914. This clerk was Dr. Caroline E. Seely who continued to serve the Society with the greatest fidelity until Mar. 1935.

In anticipation of Prof. Cole's retirement a year later, the Council at its meeting in Dec. 1919, appointed a Committee on Reorganization with Prof. Fiske as chairman. The Committee made report to the Council in the following August. Some of the recommendations involving finances are indicated in chapter III. The editor-in-chief of the *Bulletin* and the secretary of the Society under the new set-up, were separate officers, and neither one lived in New York. This called for a reorganization of the New York office, under the general direction of the secretary. At the present time an annual business of thirty thousand dollars, and the great task of seeing the Society's publications through the press, are handled at this office in an extremely efficient manner.