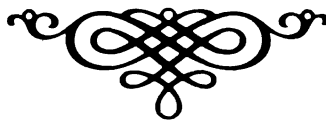


AMERICAN MATHEMATICAL SOCIETY
CENTENNIAL PUBLICATIONS

Volume I

A History of the Second Fifty Years
American Mathematical Society
1939-1988

by
Everett Pitcher



American Mathematical Society
Providence, Rhode Island
1988

Library of Congress Cataloging-in-Publication Data

Pitcher, Everett, 1912-

A history of the second fifty years, American Mathematical Society, 1939-1988.

Includes index.

1. American Mathematical Society—History.

I. American Mathematical Society. II Title.

QA1.P52 1988 510'.6'073

88-22318

ISBN 0-8218-0125-2

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Preface

The history of the first fifty years of the American Mathematical Society was prepared by Raymond Clare Archibald and was published by the Society at the time of the Semicentennial in 1938. The present volume covers the second fifty years. It is not an attempt to write what Professor Archibald would have written had he been here to do so, something that I could not expect to achieve. It is an effort to cover principal functions of the Society and the development of the organizational structure by which it carries out those functions.

The two major activities of the Society are publication and meetings. Following an introductory chapter on the state of affairs fifty years ago there will be several chapters on publications followed by several on meetings. They are not easily separated because the scientific substance of meetings and particularly of conferences is reported through publications. Then there will be several chapters on the organization of the Society itself. However, much of this will have been reported already since the persons who edit publications and handle meetings are members of that organization. Next there are chapters on the functioning of the Society through various committees, though committees will have appeared throughout. Finally, the physical structures and the archives will be described briefly.

Records on which this book is based are described in the first chapter. Such records as minutes of the Council and Trustees and announcements in the *Bulletin* and *Notices* have been paraphrased or quoted liberally without attribution.

A number of bits of biographical information have been secured from *American Men and Women of Science* (or its predecessors) edited by the Jacques Cattell Press and published by R. R. Bowker and Company.

Portions of the book have been written by others, specifically sections about *Mathematical Reviews* by Ralph P. Boas, its second executive editor, and by William B. Woolf, its current and long time managing editor. The tables in the chapter on finances were prepared in the Fiscal Department in Providence. In addition many individuals have provided bits and pieces of

information. These include Nathan Reingold, then with the Smithsonian Institution, Andrew Mattel Gleason, past president of the Society, John Willie Green, former secretary of the Society, Lincoln K. Durst, former deputy executive director, and current staff members of the Society. The record is not complete on who the latter are, particularly as a question asked of one is answered by another in a general spirit of helpfulness. However the list certainly includes Robert C. Blanchette, Gary G. Brownell, Tricia Cross, Monica Foulkes, Regina M. Girouard, Ellen Heiser, Edith Krekorian, William Judson LeVeque, Muriel Scribean, and Ben Silver in Providence and Robert G. Bartle and Jane E. Kister in Ann Arbor.

The editorial management and support was provided by Mary C. Lane in Providence.

I thank all the persons named and unnamed who have helped me.

One who should not go unnamed but should be placed in a separate paragraph is my secretary Ruth Hahn, who has lived through the trials of word processing in preparation of the manuscript and deserves special thanks.

Introduction

RECAPITULATION

This is a history of the second fifty years of the American Mathematical Society. It is convenient to summarize the first fifty years and in particular the state of affairs in 1938.

The purpose of the American Mathematical Society is stated in its certificate of incorporation, dated 3 May 1923, “into a corporation pursuant to, and in conformity with, the provisions of sub-chapter III of ‘An Act to Establish a Code of Law for the District of Columbia’ approved March 3, 1901, and of the several Acts amendatory thereof.” The statement is that “The particular business and objects of the Society are the furtherance of the interests of mathematical scholarship and research.”

The Society accomplishes its purposes through meetings and publications and it is to these two topics that a great deal of this history is devoted.

An effort will be made to give a picture of the Society of 1938 and an indication of the political and social influences that shaped its subsequent development. In another direction, the organizational development of the Society, the financial growth, and the changing physical circumstances will be treated. Significant personalities in these developments, notably the presidents, will be described briefly.

The American Mathematical Society dates its founding from 1888. After some preliminary planning, the organization meeting of six persons was held on 24 November 1888 (Thanksgiving Day) at Columbia College. The constitution was adopted at the second meeting on 29 December 1888. The organization was initially named the New York Mathematical Society, for the London Mathematical Society was a predecessor and a model. The name was changed to the American Mathematical Society in 1894 by an amendment to the constitution.

Initially, the Society was small but grew rapidly. There were 16 members by the end of 1889. The numbers in some subsequent years were:

1890	230
1900	3470
1910	6300
1920	770
1930	1926.

The year 1923 saw a reorganization of the Society as a corporation under the laws of the District of Columbia. There were then 1250 members. By 1938, the year of the Semicentennial Celebration at Columbia University, the membership had increased to 2139.

The celebration took place in the interval 6–9 September 1938. It was the forty-fourth Summer Meeting, with an attendance of about 700, including 419 registered members of the Society. The public record is presented in several parts. The conventional report of the scientific meeting by Associate Secretary T. R. Hollcroft is published in the *Bulletin of the American Mathematical Society*, 44(1938), 744–755. The account of the celebration was prepared by the secretary and the associate secretaries. It is in the *Bulletin of the American Mathematical Society*, 45(1939) and consists of a frontispiece in three parts, namely a photograph of those assembled, and a report on pp. 1–9. There are twelve appendices on pp. 10–30, the first being a letter from President Franklin D. Roosevelt, and a brief history of the Society by Raymond Clare Archibald on pp. 31–46. Archibald was the chairman of the subcommittee on the program and the brief history is the published version of his address.

There was one unofficial and previously unrecorded event at the semicentennial. The celebration featured a gala dinner on Wednesday, 7 September 1938, at the Hotel Astor, attended by 368 persons. The charge for the dinner was \$3.00. This figure should be compared with the fact that single rooms were available to registrants for \$1.00 and \$1.25 and the Astor itself charged \$3.00. There were younger members of the Society who thought \$3.00 outrageously large for a dinner. Accordingly there was also an impromptu event known as the “ungala dinner” in a restaurant on 42nd Street, attended by at least twenty-five mathematicians, who sent a telegram of congratulation to the gala dinner. At least two future winners of Steele Prizes for the cumulative effect of their lifetime of mathematics, one future president of the Society, and other future officers were among the participants.

The Semicentennial was commemorated in the *Semicentennial Publications* in two volumes. The first, cited as [A], is a history written by Professor Archibald and consists of ix+262 pages. The second is a collection of nine addresses, one by George D. Birkhoff on Fifty Years of American Mathematics and the other eight on broad fields of mathematics. It consists of vi+315

pages. In the Council minutes of 28 December 1938 is the final report prepared by Thornton C. Fry and concerned principally with the finances of the venture. Net expenses of the celebration over and above those attributable to a usual summer meeting were \$343.29. The celebration was subsidized by Columbia University to the extent that it rendered no bills for services. The publications came in below budget at \$4,645.25. The report is necessarily silent on the amount recovered through subsequent sale of the two publications.

The total annual disbursements of the Society did not pass \$10,000 until 1923 and were somewhat more than \$30,000 in 1938.

There will be a number of references to dollar amounts in this account. These must be interpreted in the light of inflation over a period from 1938 to 1988. There are well established measures of the general inflation. These may not exactly measure the effect of inflation on the goods and services supplied to the Society and by the Society. Roughly speaking, the inflation between 1938 and 1988 is a factor of 8.4 as measured by the Consumer Price Index.

The elected officers in 1938 consisted of a president, three vice presidents, a secretary, four associate secretaries, a treasurer, a librarian, twelve members of the three editorial committees, and fifteen elected Council members. Certain past officers remained as Council members after their terms as elected officers expired. There was a board of five elected Trustees.

The only meetings of the Society in the late 1930s were general meetings. Two of these were national in character, a Summer Meeting in early September and the Annual Meeting between Christmas and New Year's Day. These two were joint meetings with the Mathematical Association of America. Other meetings, of which there were sometimes seven, were regional, there being three areas known as Eastern, Western, and Far Western.

The usual fare consisted of an invited address and contributed ten minute papers. Occasionally there was more than one invited address, sometimes two or three addresses in a single field. The number of contributed papers was sometimes as small as 10 and exceeded 50 only at the two national meetings. The Colloquium Lectures were a feature of the Summer Meeting. The retiring presidential address, required by the bylaws, usually came at an Annual Meeting. The Annual Meetings were sometimes held in conjunction with the annual meeting of the American Association for the Advancement of Science and such events of Section A of the Association as the retiring address of the section chairman were scheduled in connection with the Society meeting.

The staff of 1938 consisted of four persons, who had office space in Low Memorial Library of Columbia University, where the library of the Society was also housed.

The publication program of 1938 was quite simple. The *Bulletin*, which was started in 1894, published volume 44 with 888 pages in that year. It was a privilege of membership. The journal then carried reports of meetings, abstracts of contributed papers, lists of new publications, reports of meetings, obituaries, book reviews, personal notes, and lists of doctorates (72 in 1937), as well as invited and contributed research and expository papers. It served functions now covered by the *Bulletin (New Series)*, *Abstracts*, *Notices*, and *Proceedings*. The *Proceedings* was foreshadowed in the reorganization of the *Bulletin* that took place in 1931, with the separation within one journal into alternate “gray issues” of mathematical papers and “green issues” of news, addresses, and abstracts.

The *Transactions*, first published in 1900, produced volumes 43 and 44 in 1938, with a total of 1073 pages. It was a subscription journal.

These two journals constituted the total of the periodical publication program of the Society. The *Duke Mathematical Journal*, published by Duke University beginning in 1935, had received considerable encouragement from the Society and from its beginning and for many years thereafter had two editors named by the Council.

Beginning in 1927, the Society provided some editors for the *Annals of Mathematics*, published by Princeton University, an arrangement that persisted until 1965.

The *American Journal of Mathematics* began publication in 1878 before the New York Mathematical Society was founded. Early in the history of the Society, a cooperative venture with the *American Journal* was sought and failed. A second attempt resulted in an agreement effective in 1927 with volume 49, whereby the Society shared in the financial management with the John Hopkins University Press and supplied some of the editors. The cooperation in publication was terminated effective in 1977 but not the arrangement to supply editors.

The first book published by the Society was the *Proceedings of the International Congress* of 1893 in Chicago at the time of the Chicago World's Fair. The Colloquium Publications first appeared in 1905. The year 1938 saw the appearance of volume 22, *Summable Series and Convergence Factors*, by Charles Napoleon Moore. Up to 1938, no other books had been published by the Society.

Total receipts in the interval 1891–1937 were \$578,366.16 and total expenditures were \$534,109.17. This compares with the fact that the annual budget passed ten million dollars in 1985. Dues over the 37 year period accounted for \$237,552.52, i.e. about 41% of income. This differs greatly from more recent times, when dues account for about 9% of income. Cost of publication in the 37 year period shows up as \$401,798.45, i.e., about 75%

of expenditure. This agrees closely with the current percentage, which was 73% in a recent year.

The change in the percentage of income from dues suggests that recently a small percentage surplus on a large publication program now pays for a variety of services once covered if at all by dues.

ORGANIZATIONAL RECORDS

Publications

The scientific records of the Society consist of the journals and books that it has published. These will be discussed at another point. The organizational records are of several kinds.

Beginning with volume 1 (1892), the *Bulletin of the American Mathematical Society* records a summary of each meeting, including the names of speakers with the titles of their papers. Moreover, there are lists of bibliographic information on papers read and subsequently published. With the passage of time, these reports came to include summaries of papers delivered. (The predecessor *Bulletin of the New York Mathematical Society* did not include such material.)

There were advance announcements of meetings but the record of them is no longer complete. There are four bound volumes of these. (In 1987 they were in the possession of the Secretary as part of the material scheduled for the archives in the Brown University Library). These begin with the announcement of the Eighth Summer Meeting and the Third Colloquium in Ithaca in August 1901. Next comes the Thirteenth Summer Meeting and Fifth Colloquium in New Haven in 1906. Beginning with the 172nd Regular Meeting in New York on October 31, 1914, there are many announcements and programs but the set has not been examined for completeness. The first book ends in 1926. Subsequent books cover 1927–1938, 1939–1947, and 1948–1953. The later volumes give the appearance of being quite complete. The function of announcing meetings and listing programs was taken over in 1954 by a new journal, the *Notices*.

The reports of meetings contained items called abstracts, written in the third person as though by the secretary preparing the report of the meeting. In the case of a paper already published by the time the report of the meeting appears, there is merely reference to the published paper. The format changed with volume 27 (1920–21) to that of abstracts prepared by the author. Beginning with volumes 36, author abstracts were published in advance of meetings (after a transitional period to clean up abstracts of papers already presented). The last of these in the *Bulletin* appeared in volume 63 (1957).

With volume 5 (1958) of the *Notices*, author abstracts were published here instead of in the *Bulletin*. This state of affairs persisted through 1979. In

1980, a new journal, *Abstracts*, came into being. Initially it was distributed on request to members without charge but with volume 2 (1981) it became a subscription journal.

The reports of business meetings of the Society were in the *Bulletin* from the beginning through volume 83 (1977). The *Bulletin* was the journal of record and was a privilege of membership. The *Notices* was also a privilege of membership from its inception and, by action of the Council, became the journal of record effective with volume 25 (1978). From that point on, it contained the reports of the meetings.

Minutes of the Society and of the Council contained appointments to committees and appointments of representatives, such as delegates to college and university inaugurations and anniversaries. These were published in the account of meetings as well, through volume 78 (1972) of the *Bulletin*. Publication of lists of representatives in Council minutes ceased at this point.

The Society began a publication called the *Directory of Officers and Committees* in 1954. In 1957 the title was changed to *Administrative Directory*. The publication included the certificate of incorporation, the bylaws, the past winners of prizes, the special funds of the Society, and the lists of past presidents, Gibbs Lecturers, and visiting lecturers. The lists were dropped after 1960. The publication appeared in 1961 as published for the National Register of Scientific and Technical Personnel and included officers and committees of 14 organizations in the mathematical sciences, together with a list of department heads at more than 500 colleges and universities. The year 1965 was the last year of National Register sponsorship, after which it became again a Society venture, with modest financial assistance from some other organizations. The amount of information increased with time.

There was a brief period after 1972 during which committee appointments were not published except in the *Administrative Directory*. By 1975, they were being listed as news in the *Notices*, a feature that became formalized with time, so that they are an entry in the annual index of the *Notices* beginning in 1977.

Members elected were noted in the minutes of the Society and the minutes of the Council from the beginning and lists were published in the *Bulletin*. There is a bound volume containing lists of members for the year 1898, 1902, 1904, 1905, 1906, 1907. (In the possession of the Secretary in 1987). These lists are supplemented with the constitution, the bylaws, and the reports of the treasurer, the auditors, and the librarian. The volume for 1902 is called *Annual Register*, as are subsequent volumes. The list for 1907 is also bound with volume 13 of the *Bulletin*, that for 1909 with volume 15, and for 1911 with volume 17 (in the bound set in the possession of the Secretary in 1987). Each of these is called an *Annual Register*. *The Annual Register* for other years seems to be unavailable.

There is a List of Officers and Members for 1919–1920 bound with volume 28 of the *Bulletin*. Whether it is the first in this format is not known. The list for 1931–1932 is part 2 of an issue of the *Bulletin*, an arrangement that continued through 1950.

Beginning in 1952, there is a separate annual publication called the *Combined Membership List*. It covers AMS and MAA until 1955, when SIAM was included as well. In the issue of 1971–72, the Canadian Mathematical Congress was included for a single year. It reappeared in 1988.

Minutes

There are minutes of the American Mathematical Society covering the period 1888–1912, bound in two volumes. Pages 1–89 of the first volume and unnumbered pages are minutes of the New York Mathematical Society up to the point in 1894 that the name was changed. Pages 90–281 and unnumbered pages of the first volume are minutes of the American Mathematical Society through 1901. The second volume, with pages numbered 1–231 and unnumbered pages cover the period 1901–1912. Here and throughout, it is the pages of actual minutes that are numbered while attachments are unnumbered. (There are occasional exceptions.) The minutes of the Council of February 24, 1917 note that there was a fire in October 1914, though there is no current record of it. There is a pencilled note that there were no minutes of the Society after 1912. The minutes of the Society of 1901–1912 show fire damage.

The function of minutes of the Society, as already noted, was taken over by the reports of meetings in the *Bulletin* and, beginning in 1977, in the *Notices*.

The minutes of the Council begin in 1891. The first volume consists of pages numbered 1–106 and unnumbered pages covering the period 1891–1899 and pages numbered 1–155 and unnumbered pages covering the period 1899–1907. The minutes of the Council of February 14, 1917 state that minutes of 1907–1912 were lost in the fire. The next available volume covers the period 1914–1923 and consists of pages numbered 1–197 and unnumbered pages. It concludes with two pages recording the business meeting at which the transfer of property from the Society to the incorporated Society was authorized. The minutes of the Council continue with four volumes, with pages numbered 1–616 and unnumbered pages, covering the period 1923–1937. The next set of volumes consists of numbered pages 1–939 and unnumbered pages and runs from 1937 to 1966. Beyond this point, minutes are kept in sets of two years, separately numbered and corresponding to terms of the secretary.

With the passage of time, the relative bulk of attachments has become larger. With the gradual shift of the supervision of details of operation from

the Council to the Executive Committee and Board of Trustees, the joint minutes of those two bodies have become very large.

The Trustees had separate minutes, beginning in 1923, when the Society was incorporated and the Trustees came into being. There is a set covering the period from October 1923 to January 1938 with pages numbered 1–125 and unnumbered pages of attachments. There are two subsequent sets. Set A (by inference the secretary's copy) covers the interval December 28, 1937–November 12, 1958. Set B (presumably the treasurer's) covers January 25, 1938–December 11, 1966. The two are not quite identical, particularly with respect to attachments. Set B was augmented by the addition of identified photocopies of the material in set A but not set B. From 1967 on, the minutes of the open sessions of the Trustees are all contained in attachments to Council minutes.

There are minutes of executive sessions of the Executive Committee, of the Executive Committee and the Trustees jointly, and of the Trustees alone. There is the possibility that they are not complete. In particular, there may be minutes concerning salaries that were filed only with the fiscal manager in support of disbursements.

Files

There are two file cabinets of early correspondence. There was an incomplete attempt at rearrangement, so that its present state (1987) is as follows:

One drawer of loose paper.

Five drawers of alphabetic folders of 1930's and 1940's, these being secretarial files of R.G.D. Richardson and John Robert Kline.

Two drawers of material classified by subject or author and date. The blocks of time are 1920–1930, 1931–1940, 1941–1945, 1946–1950, 1951–1955. There are separate files on Annual Register, 1892–1904, and on individual International Congresses through 1954.

The files of Secretary E. G. Begle, 1951–1956, and of Secretary J. W. Green, 1957–1966, are in drawers by year as are those of Secretary Arthur Everett Pitcher, 1967–1988. As the bulk of files grew, there are separate files by meeting for the Executive Committee and Board of Trustees.

The introduction to [A] refers to fifteen years of the files of Thomas Scott Fiske. The writer has not found either these or other files prior to the days of Richardson as secretary.

Presidents have kept their own files and some at least of these have disappeared as the president changed. For the most part, copies of correspondence of presidents appear in the files of the secretary but it is clear that not all significant material is preserved in this manner.

The location of files of treasurers is unknown. A major portion of the significant work of the treasurer appears in minutes of the Trustees.

The chapter on Archives is concerned with the disposition of these records.

POLITICAL INFLUENCES

The growth and the changing activity of the Society must be viewed in the light of world history. There were several related influences that profoundly affected American mathematics and the Society.

Recall that Hitler came into power in 1933 and that racial superiority and the accompanying racism were prime tenets. Germany seized Austria and most of Czechoslovakia in 1938. The attack by Germany on Poland came on 1 September 1939 and Great Britain and France declared war on Germany on 6 September. War on a smaller scale had been going on in several places for some time, with the Italo-Ethiopian war in 1935–1936, the Spanish Civil War in 1936–1939, and the Sino-Japanese War in 1937–1941. Mussolini governed Italy from 1922. He initially distrusted Germany under Hitler and espoused neither socialism nor racism. His position changed and the “Rome-Berlin Axis” was established. By 1938, Italy had accepted racist laws. In 1940, Italy entered the war on the side of Germany and France capitulated.

These political events disrupted the lives of mathematicians and the development of mathematics. One effect was a substantial displacement of mathematicians, including emigration to the United States. Another was the beginning of large-scale government financing of research and of education in the United States.

The depression of the early 1930s brought about unemployment in academic ranks. Those employed found their salaries fixed, or, in some cases, reduced. At the same time, the political unrest in Europe, of which anti-Semitism was a substantial factor, caused immigration of persons with the means or the talents that permitted it. There was a substantial number of mathematicians who entered the United States prior to World War II. Reinhold has placed the number between 120 and 150 in the interval 1933–1941. This number should be compared with the annual U.S. Ph.D. output in mathematics of about 75. These immigrants tended to be well educated competent mathematicians. There were several effects. The strengths of some of the immigrants lay in their research. Their presence initially improved the quality of mathematics where they went but denied immediate opportunities to home grown talent. They were sought or tolerated on scientific or humanitarian grounds and resented by some in economic or chauvinistic terms. Part of the resentment was anti-Semitism. The long-run effect of their arrival was an order of magnitude of development and expansion of mathematical research in the United States. The reader is referred to the paper “Refugee

Mathematicians in the United States of America, 1933–1941: Reception and Reaction” by Nathan Reingold, *Annals of Science*, 38(1981), 313–338.

The federal government endeavored to relieve some of the unemployment of the depression of the thirties through made work. Although some of it was characterized as leaf raking, there were also projects of permanent value. The WPA (Works Project Administration) was commissioned in 1938 “to employ needy professional and technical persons in planning, computing and making available a series of mathematical tables, with the assistance of qualified men and organizations.” The tabulated functions included logarithm, exponential, and trigonometric and Bessel functions. The work was done according to procedures approved by the Director and Staff of the National Bureau of Standards. The Director was Lyman J. Briggs and the Technical Director of the Project was Arnold N. Lowan. Not only did the project produce valuable tables but also it was a source of development of numerical analysts among its supervisors.

Although the United States had been preparing for war for some time, its entry was precipitated by the Japanese attack on Pearl Harbor on 7 December 1941. A great deal of work in the application of mathematics during World War II was done directly in government installations by civilian employees and military personnel. Such were the workings of the draft that distinguished mathematicians (e.g. Herbert Federer, Gerhard Hochschild) applied their mathematics in the non-commissioned ranks. The Ballistics Research Laboratory at Aberdeen Proving Ground, where there were 27 Ph.D. mathematicians, was an excellent example of this sort of establishment.

The NDRC (National Defense Research Committee) gathered a group of scientists including mathematicians at Columbia University. Their work covered a variety of applied mathematics, including rocket theory.

Many individual universities, notably New York University, did research in applications of mathematics under contract.

The GI Bill (Servicemen’s Readjustment Act of 1944, Title II, Sec. 400 and subsequent amendments) provided educational benefits for returning veterans of World War II. A great deal of the education was undergraduate or vocational but there was a substantial component of graduate education and even some postdoctoral work supported through this channel. Most of the effect of this was over by 1950.

The launching of the Russian satellite Sputnik in October 1957 had a substantial shock effect in the United States, inducing a feeling that the country might be falling behind in significant areas of science and technology and in the attendant dominance of reputation through publicity about achievement. The result was a substantial increase in government funding of research and education and an increased popularity of scientific and technical vocations. The NDEA (National Defense Education Act) of 1958, amended in 1964,

was one of the reactions. It provided for a relatively large number of graduate fellowships, ordinarily held for three years. Fellowships were tied to institutions, which received a subsidy accompanying each fellowship. The result was that the fellowships were widely spread among good institutions rather than concentrated at the most prestigious ones, so that institutions were developed as well as individuals.

The Office of Naval Research was a prominent vehicle in the support of academic research in mathematics immediately after World War II. It carried the burden until the establishment of the National Science Foundation in 1950. Other services, the Army and the Air Force, sponsored contracts for mathematical research until their activity was somewhat curtailed by the Mansfield Amendment (PL 91-441, Armed Forces Military Procurement Act of 1971, Title II, Sec. 204, and successor acts), which reads:

None of the funds authorized to be appropriated to the Department of Defense under this or any other act may be used to finance any research project or study unless such project or study has, in the opinion of the Secretary of Defense, a potential relationship to a military function or operation.

This wording was carried forward from year to year in successor legislation for a time.

The increase in college population in the late 1960s created the opportunity for the support of additional graduate students as teaching assistants and thus yielded additional Ph.D. mathematicians.

The increase in Ph.D.'s brought about by the NDEA and the increase in teaching assistants and the employment opportunities attributable to the increased undergraduate population overshot its mark, especially as the pressure of undergraduate population was relieved. The graduate population decreased, again overshooting the mark. The shortage was exacerbated by the rising importance of computers, which led students with a generally mathematical bent to study computer science with an eye on future employment rather than mathematics. The available capacity in graduate schools in mathematics and the new shortage in teaching assistants brought many foreign students to American universities.