

## TABLE OF CONTENTS

Chapter 1	
<i>Introduction</i> .....	2
Chapter 2	
<i>Organization and Establishment</i> .....	3
Chapter 3	
<i>Early Years</i> .....	5
Chapter 4	
<i>Operation, Expansion and Emergence</i> .....	8
Chapter 5	
<i>Meetings, Conferences and Workshops</i> .....	13
Chapter 6	
<i>SIAM's Journals Fulfill a Mission</i> .....	15
Chapter 7	
<i>The Book Publishing Program</i> .....	19
Chapter 8	
<i>Commitment to Education</i> .....	22
Chapter 9	
<i>Recognizing Excellence</i> .....	25
Chapter 10	
<i>Leadership</i> .....	29



# CHAPTER 1

## INTRODUCTION

*One of the most significant factors affecting the increasing demand for mathematicians during the early 1950s was the development of the electronic digital computer.*



*The ENIAC was developed in Philadelphia in 1946.*

### Origins

In the years during and especially following the Second World War, the nation experienced a surge in industrial and military research and the development of related technology, thus creating a need for improved mathematical and computational methods. To illustrate, in 1938, there were about 850 mathematicians and statisticians employed by the federal government. By 1954, however, that number nearly quadrupled to 3200. Likewise, at the turn of the 20th century, there were barely a dozen mathematicians working in industry in the United States, but by 1953, this number had grown to approximately 1500. More importantly, though, despite this increase in the number of mathematicians working in the industrial sector in the mid-1900s, there was a *demand* for twice this amount.

### A Need Arises

One of the most significant factors affecting this increasing demand for mathematicians during the early 1950s was the development of the electronic digital computer. One of the first, the ENIAC, was completed in 1946. As early as 1933, scientists, engineers and mathematicians at the Moore School of Electrical Engineering of the University of Pennsylvania began working with their counterparts in the military to construct a *differential analyzer*. Over time, this device was greatly improved through the use of then-modern servomechanisms and was made more versatile through advanced mathematical techniques. When the ENIAC was first developed, it was used primarily by the armed forces to make calculations relating to the design and deployment of rockets and missiles; prepare firing tables; and develop solutions to a host of other research problems. However, because this prototype and the computers that followed permitted a higher level of complexity in mathematical models to be subjected to final numerical evaluation, computers gradually began to be used in various fields of science and industry, as well.



*An ad that appeared in the SIAM NEWSLETTER May, 1956*

Mathematicians eventually began working with engineers and scientists more frequently, in a wider variety of areas, including software development, trajectory simulations, computer design, vibration studies, structural and mechanical design, radar and communications system design, and coding theory. Working as a team, the applied mathematician would conduct the preliminary analysis of the systems and devices proposed for construction by engineers and other professionals. Having mathematicians play such a critical role in industrial research and development sparked a growing need for new mathematical insight and methods to ensure the effective use and design of new technology such as computers, radar communications systems and television.

## CHAPTER 2

# ORGANIZATION AND ESTABLISHMENT

*SIAM was incorporated on April 30, 1952 as a non-profit organization under the laws of the State of Delaware.*



### *An Idea Takes Shape*

By the early 1950s, mathematicians, engineers and scientists began to think that meeting the latest technological demands required the promotion of applied mathematics and computation in industrial research. This sentiment was shared by several of the participants who had attended the November 30, 1951 meeting of the Servomechanisms Section of the American Institute of Electrical Engineers at the Chalfont-Haddon Hall in Atlantic City, New Jersey. Two of these participants in particular— I. Edward Block, a consulting mathematician at the Philco Corporation, and George Patterson, III, a mathematical logician at the Burroughs Adding Machine Company— were especially committed to the formation of such an organization. After some discussion on the issue, several of the participants assembled at this meeting decided to form a professional organization for mathematicians working in industry and government to convey useful mathematical knowledge to other professionals who could implement the theory for practical, industrial or scientific use.

### *Steps toward Organization*

A few weeks later, in December 1951, the first meeting for this proposed organization was held in

Philadelphia at an engineering lab at the Drexel Institute of Technology (now Drexel University). Members of the organizing committee included: I. Edward Block, Donald B. Houghton, Samuel S. McNeary, Cletus O. Oakley, George Patterson, III and George Sonneman. During this meeting, it was mentioned that an *Industrial Mathematics Society* was located in Detroit, Michigan and a debate arose as to whether the proposed organization should affiliate with the Michigan association. The organizers of the new group concluded that the organization should be an independent, regional professional society dedicated to the idea that mathematics should play a greater role in solving the problems of government and industry and that members of academe, government and industry should join forces to achieve this goal. It was also decided that this

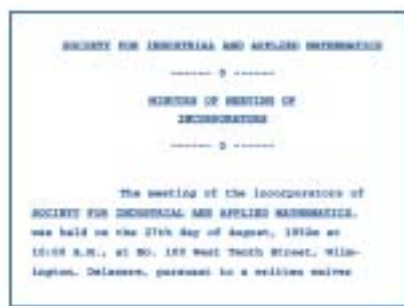
group should be called the *Society for Industrial and Applied Mathematics*. And so, the movement toward organization had begun.

### *The Society Is Formed*

During the first quarter of 1952, the fledgling group was occupied with the formalities of organizing the society. With help from the Philco Corporation, SIAM was incorporated on April 30, 1952 as a non-profit organization under the laws of the State of Delaware. According to its Articles of Incorporation, the society was organized: (a) to further the application of mathematics to industry and science; (b) to promote basic research in mathematics leading to new methods and techniques useful to industry and science; and (c) to provide media for the exchange of information and ideas between mathematicians and other technical and scientific personnel. To ensure the strongest interactions between mathematics and other scientific and technological communities, this three-fold aim of SIAM has remained the same for the past half-century.

### *First Headquarters in Philadelphia*

Given SIAM's limited funds at this time, Donald Houghton, who was employed by the Franklin Institute Laboratories in Philadelphia, persuaded



## SIAM'S HEADQUARTERS OVER THE YEARS

As the association's membership grew over its first three decades, so did its staff and need for office space. Consequently, in the late 1950s



and early 1960s, SIAM moved its headquarters to various locations near the campuses of the University of Pennsylvania and Drexel University. By the mid-1960s, SIAM began to lease office space in downtown Philadelphia at 33 South 17th Street.

In July, 1980, SIAM moved its headquarters down the street to 117 South 17th Street. This space served the Society well for several years, but by 1988, SIAM's office space was again in need of expansion.



In August 1988, SIAM entered into an agreement of sale for the purchase of 21,000

square feet of office space in a nine-story glass and steel building being constructed at 36th and Market Streets in Philadelphia. SIAM moved into its current headquarters in July 1989. This move was necessary to accommodate SIAM's office staff of 40, which was then serving a membership that had burgeoned to 7,200 by the late 1980s.



the Franklin Institute to provide SIAM with some office space for its first headquarters. The Institute also provided some storage space and the secretarial services needed to conduct the society's business. Until SIAM was finally able to afford to lease office space in 1958, the business office of its early presidents usually served as its headquarters.



*Franklin Institute*

### *Framework for Success*

By June 1952, the society's bylaws had been completed, and they required that: (1) the organization's affairs be managed by a Board of Trustees; (2) its officers include a president, two vice-presidents, a secretary and a treasurer; and (3) a Council be appointed *to formulate and administer the scientific policies of the society and to act in an advisory capacity to the Board of Trustees*. The Council was also made responsible for the society's publications, the first of which was designated by the bylaws as a *Bulletin*. To facilitate some of the society's objectives, the bylaws also required the formation of two committees. The *Publication Committee* was to be responsible for publishing the *Bulletin*, as well as any other publications deemed necessary by the Council. Consisting of at least two Council members and others, the *Program Committee* was to plan and implement the agenda for the society's meetings. Any papers that were to be presented at the society's meetings required the prior approval of the Program Committee. Both of these committees were established in June 1952.



*Drexel Institute*

With the formalities of incorporation complete, the society's next step was to rally the interest and support of more members. SIAM's bylaws provided that members were to be elected into the society by a vote of the Council through its *Membership Committee*. Three classes of membership were established: *ordinary, contributing and institutional*. The

Philco Corporation, in early 1952, printed promotional materials; assembled and maintained a listing of members; and made mailings as needed. All the mailings that were used to announce SIAM's meetings in the winter and spring of 1952 were also used to solicit members. As a result, membership in the society began to grow. By November 1952, the society had more than 130 members.

### *Early Meetings*

James W. Crease, then president of the Drexel Institute of Technology, made a commitment to support the growth of this new organization and offered to host SIAM's early meetings at Drexel's Picture Gallery. Approximately 180 people attended the first meeting, held at Drexel, on March 17, 1952. W. F. G. Swann, Director of the Bartol Foundation of the Franklin Institute was the speaker. His presentation was titled, *Mathematics, the Backbone of Science*. Mina Rees, then Director of the Mathematics Branch of the Office of Naval Research, spoke about *The Role of Mathematics in Government* at SIAM's second meeting, on April 28, 1952. The May 26, 1952 lecture of William E. Bradley, Director of Research for the Philco Corporation, was entitled *Is It Mathematics?* After a brief pause during the summer, the society offered a series of lectured meetings on mathematics and its applications in the Philadelphia area in the fall.

## CHAPTER 3 EARLY YEARS



*Just eighteen months after incorporating, SIAM had nearly 300 members. During its early years, the society spent much time on establishing operational protocols and developing a newsletter and a journal.*

### First Election

In August 1952, the society's incorporators elected Wroe Alderson, Donald Houghton, Robert James, John Mauchly, and George S. Webster to serve as temporary trustees until a formal election was conducted. SIAM held its first annual business meeting in October 1952, at the University of Pennsylvania's Bennett Hall. At this meeting, Grace M. Hopper lectured on the *Elementary Training of a Computer*, and SIAM held its first formal election of officers, trustees and council. These individuals were elected as the society's first executives: *President*: William E. Bradley; *Vice President*: Grace M. Hopper; *Vice President*: George W. Patterson; *Treasurer*: Emil Amelotti; and *Secretary*: I. Edward Block.

SIAM's first Council members were also elected at this meeting. They were Raymond F. Berkowitz, Heinrich W. Brinkman, Alan C. Byers, Donald B. Houghton, G. Truman Hunter, Robert F. Jackson, Robert C. James, Robert B. Kleinschmidt, Harold W. Kuhn, Samuel S. McNairy, John H. Ramser and Russell Remage.



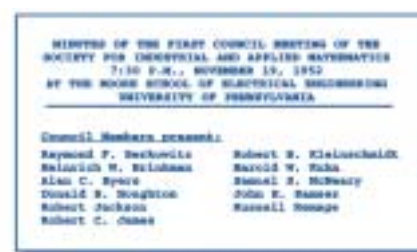
*The University of Pennsylvania's Bennett Hall*

In the fall following this first election, SIAM also held a meeting, roughly once a month, which included lectures of interest to members. By the end of the year, President Bradley informed the association that due to the pressure of his daily business responsibilities, he needed to resign from his post. Donald Houghton formally replaced Bradley in May, 1953.

### Early Council Meetings

Most of SIAM's early council meetings focused primarily on establishing operations. At the first council meeting of the society, which was held on November 19, 1952 at the Moore School of Electrical Engineering of the University of Pennsylvania, Raymond Berkowitz was elected to serve as chairman of the *Programs Committee*, and George W. Patterson was chosen to chair the *Membership Committee*. During this meeting, the Council also decided that SIAM should have a monthly newsletter to keep members apprised of matters within the organization and the profession, as well as to discuss some expository papers that had been presented at meetings. Another issue that received much attention at the Council's early meetings

was the *Bulletin*. After some discussion, it was agreed that the society's technical publication should be called a *Journal*, rather than a *Bulletin*, and that its content should be limited to clearly written research and tutorial papers. The group decided that it was best to delay its release until such a set of papers could be assembled.



### Committees Formed

By the end of 1952, SIAM's Council had also established several new committees, including: *Bylaws*, *Nominating*, *Publicity*, *Arrangements*, *Planning* and *Soliciting*. Since its inception in 1952, SIAM has been run by a dedicated and energetic corps of volunteer members, working as officers, trustees, council and committee members. Throughout the society's fifty-year history, SIAM has established dozens of committees, as needed, to address many issues and matters of concern to its members. The society, its members and the entire mathematical and scientific community have greatly benefitted from this spirit of cooperation, dedication and volunteerism.

## SIAM NEWSLETTER

The *SIAM NEWSLETTER* first appeared in February 1953.

Donald B. Houghton, of the Franklin Institute Laboratories, served as its first editor.

Topics covered in the *NEWSLETTER* included news about the society; educational and professional opportunities; an editorial section; a calendar of events; and a

book review. Publication of SIAM's early newsletters was made possible through the assistance of the Franklin Institute, which financed its composition, printing and mailings. Publication of the *NEWSLETTER* continued until December 1959.

Starting in January 1960, the information previously contained in the *NEWSLETTER* was incorporated into the *News and Notices Section* of the *SIAM REVIEW*, a quarterly publication begun by SIAM in 1959. In the early days of *SIAM REVIEW*, this segment usually amounted to just about two pages and contained news about the society and its sections; a roster of new members; notices; and other helpful information. However, by 1967 this section of the *REVIEW* eventually comprised several pages per issue and became difficult to manage. With SIAM growing in scope and size, the society resumed publication of the *SIAM NEWSLETTER* in April 1968 to keep the membership better informed of timely news items.



Today, *SIAM NEWS* serves as the membership's newsjournal, reporting on the issues and developments affecting the applied and computational mathematics community. While the format of the society's news publication may have changed slightly over the past fifty years, it has remained a primary source of information for members. Typically, *SIAM NEWS* includes technical overview articles; commentaries on the issues that affect the mathematical sciences community; book reviews; news about legislation and funding; a calendar of events; and advertisements of professional opportunities.

## SIAM REVIEW

In 1959, *SIAM REVIEW* was launched as a journal of expository and survey articles, problems and solutions, and book reviews. Since its inception, this publication has served an important function for the SIAM membership by publishing some of the most important papers in applied and computational mathematics. As the only journal of SIAM received by all members, it has been the objective of its editorial staff to appeal to the interests of as many members as possible. With SIAM's membership becoming increasingly diverse, achieving this objective became more challenging. In 1995, at a joint meeting of the SIAM



Board of Trustees and Council, a committee was formed to evaluate the content and format of *SIAM REVIEW*. As a result, a new editorial board was formed and *SIAM REVIEW* was reconstructed to contain five sections: Survey and Review, Problems and Techniques, Education, SIGEST and Book Reviews. The first issue in the new format debuted in March 1999 with a striking new cover



design and a collection of impressive articles. The response to the "new" *SIAM REVIEW* was very positive.

## Sections of the Society Form

Within just seven months after SIAM was organized, discussions had already begun on developing regional sections of the society. In November 1952, Anthony F. Bartholomay, of Boston, Massachusetts, met with SIAM representatives about forming a Boston/Cambridge section of the society. His idea was well received, but the SIAM Council decided to first sponsor meetings in the area, while developing plans for the section. Consequently, on May 20, 1953 SIAM sponsored a meeting in Cambridge, with Norbert Wiener as guest speaker. This was the first SIAM-

The *Society for Industrial and Applied Mathematics* was incorporated on April 30, 1952.

1952

The *SIAM NEWSLETTER* made its debut in February 1953.

1953

In September 1953, sections of the society were organized in the Delaware Valley and Boston/Cambridge area.

By the fall of 1954, SIAM had 500 members and sections had also been formed in New York City, San Francisco and Washington, DC.

1954

By the end of 1955, membership in the society increased to 1000, and another section was formed in Baltimore.

1955

In the fall of 1952, SIAM held its first election of officers, trustees and council members.

1952

The *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS* made its debut in September 1953.

On December 28, 1954, SIAM held its first joint national meeting with the American Mathematical Society, the Mathematical Association of America and the Association for Symbolic Logic.

SIAM published its first book in 1956— *A SURVEY OF TRAINING AND RESEARCH IN APPLIED MATHEMATICS IN THE UNITED STATES*, prepared by F. Joachim Weyl.

sponsored meeting that was not held in Philadelphia. By August 1953, SIAM had received a formal petition requesting the formation of a section in the Philadelphia and in the Boston/Cambridge areas.

Prompted by this interest in organizing local SIAM sections, the society's bylaws were amended in 1953 to permit their formation and operation in geographic areas where there existed at least twenty interested SIAM members. Provisions were also made for providing some financial assistance to the sections and for the election of their officers. Although the society was responsible for establishing the boundaries for the section, these sub-groups were permitted to develop their own rules of procedure.

The requests to organize the Philadelphia and Boston/Cambridge Sections of SIAM were approved in September, 1953. (It was decided that the Philadelphia section should be called the *Delaware Valley Section*.) By year's end, formation of the Southern California Section had also been approved. One year later, in 1954, sections in Central Pennsylvania, Northern California and Greater New York had been established as well. By March 30, 1955, new sections of SIAM were also organized in Cleveland-Akron, Pittsburgh, Baltimore and Washington, DC. In order for the society to keep in touch with these geographic units, the Council voted that each section chairman should designate a section member as an associate news editor of the *SIAM NEWSLETTER*. In November

1954, D. L. Thomsen, Jr., of the Delaware Valley Section, was made the first section editor of the *SIAM NEWSLETTER*.

### **First Journal Published**

After months of preparation, the society published its first issue of the *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS (JSIAM)* in September 1953. The Journal was intended as a quarterly technical publication that would include expository and research papers in applied mathematics and other papers that would be helpful to solving industrial problems. Donations from corporate sponsors such as Burroughs, IBM and the Eckert-Mauchly Division of Remington Rand (later UNIVAC) made publication of the early editions of *JSIAM* possible. The first editors of the journal were I.E. Block, Philip Davis, Robert Jackson, Stanley Katz and Russell Remage.

The first issue of *JSIAM* contained four papers. Papers for inclusion in this journal were solicited by the society's Publications Committee. To provide a more prestigious appearance and to facilitate production, starting in March 1954, *JSIAM* was printed using a hot letterpress. Three months after *JSIAM*'s debut, the society decided to accept some conservative advertising in its publications to offset expenses.



Four issues of *JSIAM* were published in 1954. In the journal's early years, Ed Block and other editors and collaborators, including Phil Davis, Harold Kuhn and David Young, made a devoted and tireless effort to solicit high quality papers. By the late 1950s, the editorial board of *JSIAM* was reorganized to facilitate the processing of an increasing number of papers. Despite

this simple beginning, SIAM now produces eleven journals, including an all-electronic, multi-media journal, with a twelfth to begin publication in 2003.

### **Early Joint Meetings**

In April 1953, SIAM collaborated with other professional associations— the American Institute of Electrical Engineers (AIEE) and the Institute of Radio Engineers (IRE)— to co-sponsor a lecture. Arthur W. Burks was the featured speaker and lectured on the logical design of computers. Then again, on October 14, 1953, local sections of the AIEE and the IRE joined SIAM in conducting a series of lectures in Philadelphia on the design of experiments, random processes, noise and filters, information theory and quality control. This was one of the first opportunities for SIAM to reach out to the broader community of engineers. These early collaborative meetings set a precedent for the society. SIAM has continued to work with other professional associations to sponsor educational conferences and symposia to benefit its members and to advance the application of mathematics and computational science to many areas of study.

1957



By 1958, SIAM admitted its 2,000th member, and had grown so much that it had to lease office space and hire two secretaries.

1959



In 1959, the society launched *SIAM REVIEW* and issued its first translation of *Teoriya Veroyatnostei i ee Primeneniya (Theory of Probability and its Applications)*.

1960

In September 1960, SIAM launched its *Visiting Lectureship Program*.

Lars V. Ahlfors presented the first *John von Neumann Lecture* in August 1960.

1961

The society co-sponsored the first Gattlinburg symposium in April 1961.

## CHAPTER 4

# OPERATION, EXPANSION AND EMERGENCE

*Despite substantial growth, expansion and diversification, over the past half century, SIAM has remained dedicated to the mission formulated by its founders.*



*The 105th meeting of the SIAM Council.*

As in most organizations, growth precipitates change, and this was certainly true for SIAM. Fortunately, during its first decade, SIAM's many volunteer members, committees and officers worked diligently to develop an organizational structure that would accommodate future change and expansion. This chapter focuses on SIAM's evolution and development during the past forty years—starting as an independent, regional professional society, and emerging as an international applied mathematical society. Despite substantial growth, expansion and diversification, SIAM has remained dedicated to the mission formulated by its founders—to promote basic research in mathematics, leading to new methods and techniques useful to industry and science.

### ***Growth and Expansion Prompts Change***

The society grew dramatically during its early years. Within just one year after its formation—by the end of 1953—membership in SIAM had already more than doubled to 350, and then grew to 500 the following year. Due to this exceptional increase in membership, in 1954, SIAM began utilizing a commercial service to distribute its mailings. Two years later, the society also had to hire, on a full-time

basis, the secretary whose services had previously been donated by the Franklin Institute. With all of this growth and development, and the responsibility of publishing its *NEWSLETTER* and *JOURNAL*, managing the day-to-day affairs of the society became more difficult to accomplish in its small office. Consequently, in 1958, SIAM moved out of the Franklin Institute and into a two-room office space on the third floor of a house owned by the Drexel Institute of Technology. At this point, the society had also hired two secretaries to assist with preparing SIAM's publications.

### ***SIAM Emerges onto the National Stage***

Around the mid-1950s, there were many indications that SIAM was gaining national recognition and growing in stature. Sections of the society continued to form around the country, and by the end of the decade, sections had also been organized in Denver, Arizona, Illinois, San Diego, Cincinnati and the Pacific-Northwest. In fact, by this point, a majority of SIAM's members were affiliated with one of its sections, and, although SIAM was founded in Philadelphia, there were more Californians in the society than Pennsylvanians! Another indicator of

SIAM's increasing reach was the success of *JSIAM*—besides the subscriptions issued to SIAM's members, 286 libraries in 36 states across the country and in 11 countries around the world were also receiving copies.

Given the extent of SIAM's early development and expansion, by the mid-1950s, some of the society's leaders, among them Harold W. Kuhn, thought that SIAM should begin to *think nationally*. During Kuhn's tenure as SIAM president (1954-1955), he elicited an invitation from the American Mathematical Society (*AMS*) for SIAM to join the AMS and the Mathematical





Association of America (*MAA*) and the Association for Symbolic Logic for their joint annual meeting on December 28, 1954, at the Mellon Institute of Industrial Research, in Pittsburgh, Pennsylvania. This was SIAM's first national meeting.

### ***Meeting the Special Interests of Members***

Between 1960 and 1980, SIAM added nearly 3,000 members, bringing total individual membership in the society to the 5,000 mark! Within these two decades, numerous technological advances were being made in the computational sciences and in the many facets of applied mathematics, and, consequently, SIAM's membership became increasingly more diverse. To provide a venue within which these scientists, engineers and mathematicians could exchange ideas, expand their networks and organize activities, in November 1980, SIAM established procedures to permit the formation of activity groups (now referred to as *SIAM Activity Groups, or SIAGs*) so that areas of special interest could be studied by smaller groups within the society.

#### ***SIAM's Activity Groups and Year of Formation***

- Linear Algebra, 1982
- Discrete Mathematics, 1984
- Supercomputing, 1984
- Optimization, 1985
- Control and Systems Theory, 1986
- Dynamical Systems, 1989
- Geometric Design, 1989
- Orthogonal Polynomials and Special Functions, 1990
- Geosciences, 1991
- Imaging Science, 2000
- Life Sciences, 2000
- Computational Science and Engineering, 2002



*(From left to right) Carl Meyer, Gene Golub and Hans Schneider relaxing during SIAM's 1982 conference on linear algebra.*

According to the procedures outlined, an activity group could be formed, provided at least 20 or more members presented a petition to do so. Each SIAG has a chair, a vice-chair, a secretary and a program director. These sub-groups organize conferences, workshops and tutorials that appeal not only to SIAM members, but also to members in other professional societies with overlapping interests. Members of SIAM may join as many SIAGs as desired, and new groups can be formed at any time by submitting the appropriate petition.

#### ***First Activity Group Formed***

In April 1982, SIAM sponsored a conference dedicated exclusively to linear algebra and its applications near the campus of North Carolina State University in order to lend support to this area of study. Of the 345 registrants who attended, 58 were from outside the U.S. The purpose of the conference was to examine the latest developments in linear algebra and to consider its future development. Three months later, on July 19, 1982, SIAM's first activity group— on Linear Algebra— was formally established.

The activity group on Linear Algebra was the first of twelve that have formed within SIAM during the past twenty years. Like the society as a whole, with the help of the SIAM staff, these individual groups plan their own activities (such as conferences and minisymposia); award prizes; and issue newsletters (paper and electronic) to their members. Each year, a directory is compiled for each activity group and distributed to its members.

## **SERVING THE MEMBERSHIP**

When SIAM contracted to purchase its current headquarters in August 1988, this office facility was selected because it was large enough to accommodate a growing membership. With the number of members passing the 9,000 mark in the 1990s, SIAM now has a staff of more than 60 full- and part-time employees, who serve members in the areas of Accounting, Books, Conferences, Customer Service, Editorial, Information Systems, Marketing, Production, *SIAM NEWS*, Warehousing and Shipping, and the Office of the Executive Director.

To better serve its members, in 1994 SIAM established a website— [www.siam.org](http://www.siam.org)— and has been able to offer members a variety of online services through its home page, including access to its journals; a complete book catalog; conference and program announcements; membership information; and career and professional opportunities.

Moreover, SIAM has a computer-based system for transaction processing, and extensive office systems for internal and external applications, including desktop publishing, manuscript processing and a local area network linked to the internet. In addition, every staff member is accessible through the internet and an automated voice mail service.



## SIAM GROWS INTERNATIONALLY

After making headway onto the *national* stage in the mid-1950s, it was over the next two decades that SIAM began to evolve into one of the country's leading mathematical societies, and that SIAM also began reaching out to the international mathematical and scientific community. Though the society progressed slowly at first, SIAM has evolved into a truly international professional society. As such, SIAM and its leaders have taken this role very seriously and have taken various steps to improve and enhance the discipline of applied mathematics and computational science throughout the world. Probably the most visible sign of SIAM's efforts has been its role as a participant in and sponsor of various international conferences. As early as September 1954, SIAM selected a representative to the *International Conference of Mathematicians* in Amsterdam, Netherlands. Similarly, in September 1968, SIAM, co-sponsored the *Second International Conference on Computing Methods in Optimization Problems* in San Remo, Italy. Since then, SIAM has cooperated in a variety of international conferences on a wide range of topics.

### ICIAM

SIAM was instrumental in organizing the *First International Conference on Industrial and Applied Mathematics* (ICIAM) in Paris, on June 29-July 3, 1987. Although SIAM had been exploring the possibility of sponsoring such an international meeting as early as October, 1970, it was not until the mid-1980s that this objective began to materialize. In December 1985, SIAM President, Gene Golub, and Managing Director, Ed Block, traveled to France to join with representatives from the mathematical societies of France, Great Britain and Germany to discuss and prepare for staging the first event.

It was the success of the first International Conference on Industrial and Applied Mathematics (ICIAM) that convinced



*Second ICIAM, hosted by SIAM in 1991.*



*Planning meeting for first ICIAM in 1985.*



the international community that developments in industrial and applied mathematics warranted a series of international meetings, setting the stage for ICIAM to be held every four years. SIAM has been deeply involved in the planning and staging of the ICIAM from the start.

1962

The society released its first issue of the *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS SERIES A: CONTROL* in 1962.

1963

1964



Two years later, in October 1964, SIAM developed the *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS SERIES B: NUMERICAL ANALYSIS*.

1965

1966

The *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS* was renamed the *SIAM JOURNAL ON APPLIED MATHEMATICS* in January 1966.



Reception for participants at first ICIAM in Paris, 1987.

When SIAM hosted the *Second International Conference on Industrial and Applied Mathematics* in Washington, DC in July 1991, more than 2,000 mathematicians and scientists from 48 countries attended. Golub was cited by the international mathematical community for his leadership in bringing about the first ICIAM.

Because ICIAM evolved into such an important forum for showcasing international developments in industrial and applied mathematics, as a regular sponsoring organization for the meeting, SIAM established a policy to help defray the travel expenses of students, post-docs and needy scientists. With funding from the National Science Foundation, the Department of Energy and the National Security Agency, travel grants have been awarded to attendees of ICIAM.

### Reaching Out

Through its direct involvement in organizing, sponsoring and supporting so many international conferences, exchanges and meetings over the past fifty years, SIAM has been able to satisfy its founders' mission of promoting research in mathematics around the

globe. SIAM has been especially mindful of this obligation in developing areas of the world. In January 1989, SIAM reiterated the society's commitment to deepen its ties with applied mathematicians in countries that have not yet organized applied mathematics societies by devel-

oping international programs to encourage worldwide communication and interaction. In January 2000, in an effort to broaden the reach of SIAM to mathematicians around the world, the Board of Trustees approved reduced membership dues for mathematicians in developing countries.

### International Membership

Given the demographic diversification of SIAM since the mid-1980s, this international perspective has been appropriately shared by SIAM's officers. To illustrate, in 1986, the *Nordic Section* of SIAM was formed. This was the society's first international section, and included members from Denmark, Finland, Iceland, Norway and Sweden. Although this section was dissolved in 1990, in December 1996, SIAM approved the formation of a section for the United Kingdom and the Republic of Ireland. Eighteen months later, in July 1998, the *East Asia Section* of SIAM was established, bringing together scientists and engineers engaged in the application of mathematics, in industry and academe, throughout East Asia, including China, Japan and Korea.

## THE COMPUTER REVOLUTION

While the development of digital computers like the ENIAC certainly revolutionized the field of scientific computing, the rapid, sweeping changes to occur in computer design and application during the five decades that followed have been extraordinary. In fact, a study of the most state-of-the-art computers in each of these decades revealed that, on average, the performance of these machines increased every decade by about two orders of magnitude. In order to keep members apprised of the many advances in the development of this indispensable tool, beginning in the early 1980s, *SIAM News* frequently featured articles dedicated to the design, program development, use and application of computation.



The *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS SERIES A: CONTROL* was renamed the *SIAM JOURNAL ON CONTROL* in 1966.

1968

SIAM established the *Theodore von Karman Prize* in 1968 to honor a notable application of mathematics to mechanics and/or the engineering sciences.

SIAM instituted the *George Polya Prize* in 1969.

1970

1967

The American Mathematical Society and SIAM established the *Norbert Wiener Prize* and the *George David Birkoff Prize* in 1967.

1969

In May 1969, the society released its first volume in the book series, *SIAM-AMS Proceedings*.



The *SIAM JOURNAL ON MATHEMATICAL ANALYSIS* was launched in February 1970.

1971

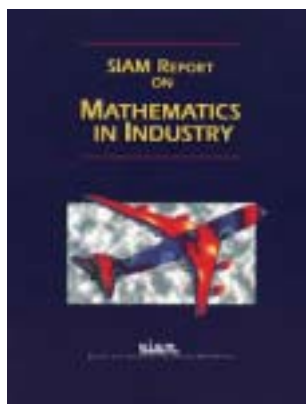
### *First Forum to Focus on Industry*

SIAM is unlike many other professional associations because it does not have a well defined constituency. Rather, SIAM's membership is quite diverse, consisting of mathematicians, college professors, engineers, researchers, statisticians, computer scientists, physicists, researchers and others. Over the years, this mix has remained fairly consistent, though, with seventy percent of SIAM's members working in academia, and the remaining thirty employed in industry and government. Despite these differences, all of SIAM's members use mathematics to solve real-world problems.

Beginning in the early 1990s, SIAM began a series of initiatives to focus on the needs of its members in industry. For example, in May, 1992, SIAM conducted its first *Forum on Industrial and Applied Mathematics* to foster discussion about the sweeping changes affecting the professional environment in applied and computational mathematics, from employment opportunities to education to research. A second forum was held in June 1993 to facilitate better communication and information exchange within the applied and computational mathematics community. Because of the decreasing job opportunities for graduate and doctoral level mathematicians due, in part, to a down-sizing trend in American companies, SIAM held a third *Forum on Industrial and Applied Mathematics* in July 1994, immediately preceding its annual meeting, to discuss the industrial job market.

### *Mathematics in Industry Project*

Prompted, in part, by a desire to expand employment opportunities for graduate students, SIAM conducted several focus groups which revealed that there were extraordinary differences in the training, values and culture between academic and industrial mathematicians. As a result, the next year, SIAM began its *Mathematics in Industry Project*, intending to ultimately formulate educational recommendations that would improve the ability of students to obtain employment in industry. With support from the National Science Foundation and the National Security Agency, the society began a study to examine the role of mathematics in business, industry and government in order to develop strategies for enhancing graduate education in mathematics; non-academic career opportunities for mathematicians; and the application of mathematics in nonacademic environments.



At the conclusion of the study, SIAM released its *Report on Mathematics in Industry* in 1996. An important finding in the report was that students at the graduate and doctoral level would benefit greatly from exposure to mathematics in the sciences and engineering, and other disciplines. When the report was released, SIAM Executive Director, James Crowley, emphasized the association's commitment to work with academic institutions, students, faculty and members of industry to implement the report's recommendation of broadening the graduate curriculum and to improve the match of graduate education to the needs of industry.

### *Maintaining a Washington Presence*

SIAM has cooperated with the AMS and the MAA through the Joint Policy Board for Mathematics (JPBM) and, more currently, with the Computing Research Association (CRA) concerning advocacy for and public awareness of mathematics and computing. Although JPBM originally shared a congressional liaison, SIAM established its own representative in Washington, DC, starting in January 2001, to speak on behalf of its members regarding the needs of the mathematical community and the importance of research in the areas of applied mathematics and computational science.



*SIAM Washington representative Mel Ciment (center) meets with (from left) Tony Chan, Steve Ashby, Mac Hyman and Gil Strang.*



*SIAM's 1998 annual meeting in Toronto, Canada.*

## CHAPTER 5 MEETINGS, CONFERENCES, AND WORKSHOPS

*For fifty years, SIAM's meetings, conferences and workshops have provided members with a broad view of the state of the art in applied mathematics and the computational sciences and their applications.*

### *National Meetings*

After holding its first national meeting in Pittsburgh in December 1954, SIAM embarked on a policy of regularly staging two meetings per year that would appeal to the entire membership and attract a much broader audience. Within the next two years, SIAM also co-sponsored several national meetings across the country with other national mathematics- and science-oriented organizations. In March 1959, SIAM established a committee to develop a

structure for planning these national meetings. This program format continued until 1982, when SIAM tested the idea of holding one national meeting per year. That year's very successful meeting celebrated SIAM's 30th anniversary and was held at Stanford University. The organizing committee of SIAM's 30th anniversary meeting was chaired by Gene Golub. This meeting also marked the beginning of what has become a standard feature of subsequent SIAM meetings— the minisymposia.

Since holding its first national meeting in 1954, SIAM has used this forum to provide members with a broad view of the state of the art in applied mathematics, computational science, and their applications through invited presentations, prize lectures, minisymposia, short courses and contributed papers and posters. At these meetings, SIAM's members have also been able to join their peers and leading experts in the field to exchange ideas and to expand their personal and professional networks.



## SIAM INSTITUTE FOR MATHEMATICS AND SOCIETY

In 1972, Donald L. Thomsen, Jr., a past-president and then chair of the SIAM board, organized an invitation-only conference at Arden House in Harriman, New York on what SIAM should be doing about government problems such as ecology, epidemiology, environmental health, energy, urban planning, and population analysis. Others at the meeting who shared Thomsen's concern about SIAM's future included Hirsh Cohen, Mark Kac, Brockway McMillan and Ed Block.

An outcome of the conference was the establishment, in late 1972, of the SIAM Institute for Mathematics and Society (SIMS), a legal entity independent of SIAM, but with a common board. Thomsen became its President and Executive Director.

Some projects of SIMS included the research applications workshops; the transplant program; the organization of symposia at AAAS and SIAM meetings; the initiation of *societal* research projects largely at Stanford and Columbia Universities, using funds provided by EPA, NSF and other federal agencies; and the stand-alone conferences on societal problems.

In 1986, after several years of discussion, the SIAM and SIMS boards decided it would be in the best interests of both organizations to terminate their relationship. The termination took effect in late 1986.

Thomsen continued as president of SIMS using the name *Societal Institute of the Mathematical Sciences*.



## TOPICAL CONFERENCES



*Attendees at the 1964 Gatlinburg Conference included (from left) James Wilkinson, Wallace Givens, George Forsythe, Alston Householder, Peter Henrici and Fritz Bauer.*

For the past forty years, SIAM has organized focused-topic conferences to present research in applied and computational mathematics and applications. Some of the topics covered at these meetings have included: computer and communications networks, combustion, modeling of materials, bioremediation, and discrete algorithms in computer science. Many of SIAM's activity groups also organize their own conferences. It was through these focused conferences that SIAM helped to demonstrate that many societal problems could be solved through various methods of applied mathematics.

### *The Gatlinburg Symposia*

When the first large computers became available in the 1950s, researchers at the Oak Ridge National Laboratory (ORNL) were among the leaders in the development of tools for numerical linear algebra. Alston Householder, who went on to serve as SIAM's President in 1963-1964, convinced the society to co-sponsor a symposium on matrix computation in Gatlinburg, Tennessee, along with the

ORNL, with funds provided by the U.S. Atomic Energy Commission and the National Science Foundation. The first symposium was held in April 1961.

The first issue of the *SIAM JOURNAL ON NUMERICAL ANALYSIS* was formed from papers from Gatlinburg II. SIAM managed the administrative matters for the first five Gatlinburg meetings. After Householder retired from the ORNL, the name of the series was changed from the Gatlinburg to the Householder symposia. The SIAM Activity Group on Linear Algebra remains as a cooperating society in the organization of the series.

In 1974, SIAM began a series of conferences under the auspices of SIMS (see sidebar on left).

## CHAPTER 6

# SIAM'S JOURNALS FULFILL A MISSION



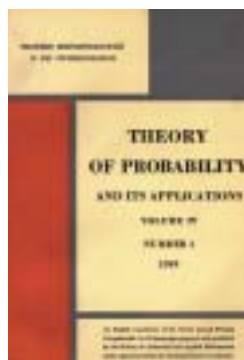
*A meeting of the managing editors of SIAM's journals in the early 1990s.*

One of the primary objectives for organizing SIAM was *to provide media for the exchange of information and ideas between mathematicians and other technical and scientific personnel*, and the society has been very successful in fulfilling this mission. While the subject matter of SIAM's journal publications vary, they share a common goal— to introduce new mathematical techniques; demonstrate new applications for mathematics; and call attention to areas in which there is a need for mathematical development. Currently, SIAM publishes eleven peer-reviewed journals, including an all-electronic, multi-media journal, and plans on releasing another next year.

SIAM began publishing its journals electronically in 1997. Because the electronic articles are published on the website in their final form, these papers are able to be cited in literature and included in the author's list of publications. With this new plan, SIAM's electronic subscribers benefitted from the fact that new research results were disseminated to them far earlier than the printed version. Each of SIAM's journals has its own descriptive home page on the SIAM website.

### *Russian Translation Project*

In 1957, SIAM received a substantial, three-year grant from the National Science Foundation to translate into English the first four volumes (1956-1959) of the leading Soviet quarterly journal on probability and statistics— *Teoriya Veroyatnosti i ee Primeneniya*. This became the journal on the *Theory of Probability and Its Applications*, and continues to be published by SIAM. The purpose of the program was to make these journals available in their entirety to American mathematicians, engineers and physicists. SIAM hired Natascha Artin Brunswick, of the Courant Institute of Mathematical Sciences, to edit the copy. The first of the translations was issued in 1959. After



nearly forty years of continuous service to this translation project, in 1997, SIAM presented a *Certificate of Appreciation* to Brunswick.

### *Journal on Control and Optimization*

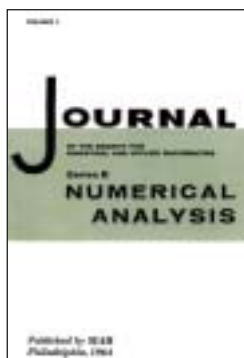
In the summer of 1959, SIAM— in conjunction with the AMS and the MAA— sponsored a national meeting and symposium on *control systems*. One year following this meeting, some of SIAM's members proposed starting a SIAM journal on control theory. The first issue of the *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS SERIES A: CONTROL* was released in



1962. John Bertram served as the journal's first managing editor. After the first issue, Lucien Neusteadt became the managing editor. In 1966, this journal was re-named the *SIAM JOURNAL ON CONTROL*, and in 1976, the *SIAM JOURNAL ON CONTROL AND OPTIMIZATION*. Over the past 40 years, this journal has contained research articles on the mathematics and applications of control theory and on those parts of optimization theory concerned with the dynamics of deterministic or stochastic systems.

### *Journal on Numerical Analysis*

In October 1964, Cornelius Lanczos wrote in the introduction to the first issue of the *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS SERIES B: NUMERICAL ANALYSIS* that



the need for such a journal could “...hardly be overrated. With the ever increasing demand for the big electronic computers the temptation is ever present to put problems on the machine without the proper analytical preparation.” In 1966, the journal was renamed the *SIAM JOURNAL ON NUMERICAL ANALYSIS*. Then, as now, this journal has continued to present research articles on the development and analysis of numerical methods. Its first managing editor was T. N. E. Greville.

### *Journal on Applied Mathematics*

In January 1966, the *JOURNAL OF THE SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS* became the *SIAM Journal on Applied Mathematics*. On this date, the editors were K. J. Arnold, I. E. Block, R. A. Good and A. S. Householder.

### *Journal on Mathematical Analysis*

First issued in February 1970, the *SIAM JOURNAL ON MATHEMATICAL ANALYSIS* has featured research articles of the highest quality, employing inno-

vative analytical techniques to treat problems in the natural sciences. Papers featured in the journal have been primarily analytical and have employed mathematical methods in such areas as partial differential equations, the calculus of variations, functional analysis, approximation theory, harmonic or wavelet analysis or dynamical systems. Frank W. J. Olver served as this journal’s first managing editor.



### *Journal on Computing*

By the late 1960s, there was an increasing interchange of ideas across many mathematical disciplines in which computer-oriented concepts served as a unifying thread. Recognizing that many of the foundations of computer science were derived from a wide spectrum of mathematical disciplines, in March 1972, SIAM published the first issue of the *SIAM JOURNAL ON COMPUTING*. Since its inception, this journal has contained a variety of research articles on the application of mathematics to the problems of computer science and the non-numerical aspects of computing. Though this journal was



originally issued quarterly, it is now printed bimonthly. Philip M. Lewis, II was this journal’s first managing editor.

### *Journal on Scientific Computing*

The first issue of the *SIAM JOURNAL ON SCIENTIFIC AND STATISTICAL COMPUTING* appeared in March 1980.

Aimed at the broad audience of applied mathematicians, computational numerical analysts and practitioners concerned with scientific computation, this journal has focused on the techniques, methodologies and computational insights necessary for



scientific computing, including the design of computer programs. Gene Golub was this journal’s first managing editor. The premier issue of this journal was dedicated to James Hardy Wilkinson, an innovator in scientific computing who was well known for his fundamental contributions to numerical linear algebra and roundoff error analysis. In 1993, this journal became known as the *SIAM JOURNAL ON SCIENTIFIC COMPUTING*. Although this journal began as a quarterly publication, it is now printed bimonthly.

### *Journal on Algebraic and Discrete Methods*

Starting in the late 1970s, there was an increasing interest in the applied areas of discrete mathematics. This spawned a

In March 1972, the society published its first issue of the *JOURNAL ON COMPUTING*.

1972



SIAM published the first volume in its SIMS proceedings in 1974.

1974

SIAM published its first volume in the CBMS series in 1972.

1973

1975



In January 1976, I. Edward Block became SIAM’s Managing Director.

1976



relatively new community of applied mathematicians and engineers who were working in applied areas of combinatorics, discrete optimization, linear algebra and graph theory.



Consequently, the *SIAM JOURNAL ON ALGEBRAIC AND DISCRETE METHODS* was developed in March 1980 to increase the society's support of research efforts in discrete areas and to replace that portion of the *SIAM JOURNAL ON APPLIED MATHEMATICS* that was devoted to them. Daniel J. Kleitman was this quarterly journal's first managing editor.

### *Journal on Matrix Analysis and Applications*

In late 1987, SIAM's governing bodies authorized the *JOURNAL ON ALGEBRAIC AND DISCRETE METHODS* to be divided into two separate publications: the *SIAM JOURNAL ON MATRIX ANALYSIS AND APPLICATIONS* and the *JOURNAL ON DISCRETE MATHEMATICS*. The former appeared in January 1988. Its first issue was dedicated to Hans Schneider whose thirty years of research, leadership and teaching made a great impact on the development of linear algebra and matrix theory. This journal has focused on linear algebra with an emphasis on applications and numerical procedures. Gene Golub was this journal's first managing editor. It is currently published quarterly.

### *Journal on Discrete Mathematics*

The *SIAM JOURNAL ON DISCRETE MATHEMATICS* was launched in February 1988, and continued the society's focus on the growing field of discrete mathematics, which served as an important link between mathematics and computer science and offered immediate applications to engineering, the physical sciences and social and behavioral sciences. W.T. Trotter was the first managing editor of this quarterly journal.



### *Journal on Optimization*

The *SIAM JOURNAL ON OPTIMIZATION* made its debut in February 1991, with John Dennis, Jr. serving as this quarterly journal's managing editor. Its first issue was dedicated to George Dantzig, whose work was very influential in the development of optimization theory. Since then, the journal has contained research articles on the theory and practice of optimization, with an emphasis on optimization theory, algorithms, software, computational practice and applications.



### *Journal on Applied Dynamical Systems*

Appropriately enough, in its fiftieth anniversary year, SIAM marked another important milestone— the release of its first all-electronic journal. The *SIAM JOURNAL ON APPLIED DYNAMICAL SYSTEMS*, which made its debut in April 2002, uses color, animated visualization and internal linking to enhance the presentation of research articles on the mathematical analysis and modeling of dynamical systems and its application to the physical, engineering and life sciences. Martin Golubitsky is the journal's editor-in-chief.



### *Journal on Multiscale Modeling and Simulation*

SIAM is scheduled to release another journal— *MULTISCALE MODELING AND SIMULATION*— in early 2003. In commenting about SIAM's newest journal publication, Thomas Hou, its founding editor-in-chief, stressed that multiscale modeling is highly interdisciplinary with developments occurring independently across fields. Because domain journals are often results-oriented, they give little details about the methods presented. Consequently, multiscale descriptions are nowhere near their potential level of impact, including in education and industry. This latest journal has been created to remedy the fragmentation, serving as a single, broad, authoritative source for new results in this area.

SIAM's first student chapter was formed at the University of Washington in the spring of 1976.



1978

The first volume of *STUDIES IN APPLIED AND NUMERICAL MATHEMATICS* was released in 1979.

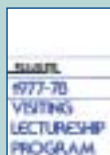
SIAM and the Mathematical Programming Society established the *George B. Dantzig Prize* in 1979.



In July, 1980, SIAM moved its headquarters to 117 South 17th Street in Philadelphia.

1980

1977



Around 1978, SIAM initiated its focused-conference program to concentrate on timely topics in applied and computational mathematics.



1979

In 1979, SIAM instituted its *Prize in Numerical Analysis and Scientific Computing*, which was renamed in 1987 to honor James H. Wilkinson.

The society launched the *JOURNAL ON SCIENTIFIC AND STATISTICAL COMPUTING* and the *JOURNAL ON ALGEBRAIC AND DISCRETE METHODS* in March 1980.

1981

SIAM established procedures for the formation of *activity groups* in November 1980.

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**A Half Century of Partnership**



## CHAPTER 7

# THE BOOK PUBLISHING PROGRAM



*The successful release of its first book in 1956 prompted SIAM to launch a book publishing program in 1961.*

### ***First Published Book***

SIAM published its first book—*A SURVEY OF TRAINING AND RESEARCH IN APPLIED MATHEMATICS IN THE UNITED STATES* in 1956. A committee of the National Research Council, headed by F. Joachim Weyl,

conducted this survey with the assistance of the American Mathematical Society. More than 2,500 copies of this (soft cover) report were distributed. The success of this project provided the impetus for SIAM to launch its formal book publication program in 1961.

### ***Series in Applied Mathematics Premiers***

Because applied mathematics had been moving toward greater and greater specialization, in 1961 SIAM began publishing its *Series in Applied Mathematics* to make its members aware of the increasingly diverse methods and applications of mathematics. Rudolph F. Drenick served as its editor.

### ***Proceedings in Applied Mathematics***

In 1969, SIAM started to publish select proceedings of its own and other leading conferences on topics that reflected the latest techniques in applied mathematics and computer science. There are currently

over 100 volumes in this series, and they are available in a wide variety of formats, including bound books, CD-ROMs and on-line

versions. These include, for example, a series of proceedings of the Joint ACM-SIAM Symposium on Discrete Algorithms, which has been running annually since 1990.



### ***CBMS-NSF Regional Conference Series in Applied Mathematics***

Three years later, in 1972, SIAM launched its *CBMS-NSF REGIONAL CONFERENCE SERIES*, based on the ten lectures given by the principal speaker at one of the regional conferences in applied mathematics hosted by the Conference Board of the Mathematical Sciences and funded by the National Science Foundation. In documenting these lectures by outstanding mathematicians, SIAM has been able to introduce researchers to new developments in topics of current interest and to stimulate more research in important areas of applied mathematics. Since its initial publication, the series has grown to 75 titles and has sold over 178,000 books.

Just as SIAM's venture into producing journals has met with success, so too, has its comprehensive book publishing program in applied and computational mathematics. Guided by its founders' mandate, SIAM's book program is aimed at making relevant research results accessible to a broad audience by publishing high-quality, affordable books that explain or apply these results to areas in industry and science that are of interest to the society's membership. This program includes the publication of books that promote the interaction between mathematics and other disciplines such as engineering, science and computing, and works in disciplines where mathematical models are just beginning to develop. Another goal of this program has been to reach beyond SIAM's core membership to encompass the interests of potential members such as engineers, statisticians, and scientists working in fields such as medicine, geophysics and materials science.

### *Studies in Applied and Numerical Mathematics*

The first volume of SIAM's *STUDIES IN APPLIED AND NUMERICAL MATHEMATICS* series was released in 1979. Written by researchers for researchers, this series has provided comprehensive, authoritative references and surveys on broadly defined, interdisciplinary topics in applied mathematics such as soliton theory, Fourier analysis, elasticity, electrodiffusion of ions, and linear viscoelasticity.

### *Frontiers in Applied Mathematics*

In 1983, under the leadership of founding editor-in-chief, H. T. Banks, SIAM inaugurated a series of monographs, *FRONTIERS IN APPLIED MATHEMATICS*, to focus on the latest advances in mathematics research and its relationship to new and exciting areas of scientific change. Each volume in the series focused on a specific *hot topic* in applied mathematics and consisted of chapters solicited from distinguished scientists and applied mathematicians who contributed their articles. With the active involvement of the editorial board, the series produced several excellent volumes, but



the concept of multiple authors proved difficult to sustain, and SIAM discontinued the series in the late 1980s. In 1998, SIAM reinstated the *Frontiers* series, again focusing on cutting edge topics in science and applied mathematics.

### *Classics in Applied Mathematics*

Starting in 1988, SIAM began republishing valuable texts that were allowed to go out of print by their original publishers. These *CLASSICS IN APPLIED MATHEMATICS* are books that continue to be important resources for applied mathematicians and other professionals. The editorial board of these *Classics* actively seeks input from SIAM members for texts worthy of inclusion in the series. To date, forty classics have been republished. The series' editor is Robert E. O'Malley, Jr.



### *ASA-SIAM Series*

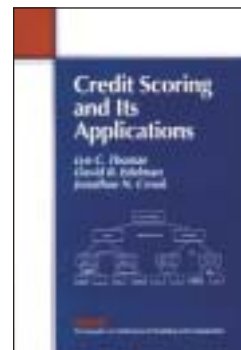
In 1993, Dr. Barbara Bailer, then Executive Director of the American Statistical Association (ASA), and I. E. Block, then Managing Director of SIAM, developed the idea for a joint book series that would serve the needs of the statistics and mathematics communities. Their vision was for a series of affordable, high quality monographs and graduate level textbooks. Dr. Donald P. Gaver served as

the first editor-in-chief of the series since he had ties to both organizations. The first book in this series was published in 1997. These books have included tutorials, surveys, or expository works written for statisticians, mathematicians, engineers and operations researchers.



### *Mathematical Modeling and Computation Series*

As part of its *MATHEMATICAL MODELING AND COMPUTATION SERIES*, SIAM has published numerous monographs on wide ranging topics, including inverse scattering, ill posed problems, fluid mechanics and image reconstruction. The first book in the series, *WAVELETS: A MATHEMATICAL TOOL FOR SIGNAL ANALYSIS*, by Charles K. Chui, appeared in 1997. Through this series, its authors have presented topical mathematical and computational methods, and have introduced applied mathematicians to modern scientific and engineering applications.



SIAM's first activity group—on Linear Algebra—was formally established in July 1982.

1982

In 1983, SIAM inaugurated its book series, *FRONTIERS IN APPLIED MATHEMATICS*.

1983

SIAM held a record-setting, international celebration to mark the society's 30th anniversary on the campus of Stanford University in July, 1982.



1984

SIAM approved the formation of activity groups in Discrete Mathematics and in Supercomputing in July 1984.

1985

In 1985, SIAM published the *Rheinboldt Report, Future Directions in Computational Mathematics, Algorithms, and Scientific Software*, which lead to the High Performance Computing initiative.

SIAM's activity group on Optimization began formal operations in January, 1986.

1986

The *Richard C. DiPrima Prize* was established in December 1985 to commemorate the former SIAM president.

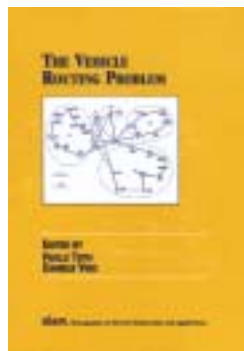
## Software, Environments and Tools

The *SOFTWARE, ENVIRONMENTS AND TOOLS* series, begun in 1995 by editor-in-chief Jack Dongarra, has included more than a dozen monographs and software guides on the practical implementation of computational methods, environments and tools. Some of these texts were previously published by SIAM and were adopted into this series because of their relevance to its subject areas. Since its inception, more than 9,000 books from this series have been sold to readers around the world.



## Monographs on Discrete Mathematics and Applications

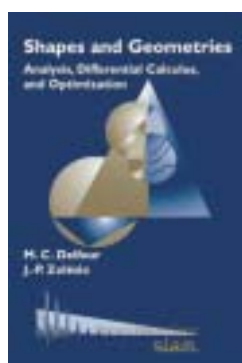
Several factors combined to generate tremendous research in the area of discrete mathematics including the attractiveness of combinatorial problems; the increasing use of combinatorial algorithms as computational tools; and the presence of combinatorial models in a surprising variety of practical areas. The goal of SIAM's *MONOGRAPHS ON DISCRETE MATHEMATICS AND APPLICATIONS*, which



published its first volume in 1998, was to survey the state-of-the-art and progress in this field, and to promote its development. Peter Hammer has served as the series' editor-in-chief.

## Advances in Design and Control

In 1998, SIAM inaugurated its *SERIES ON ADVANCES IN DESIGN AND CONTROL*, publishing texts and monographs dealing with all areas of design and control and their applications. Some topics covered in the series have included shape optimization, robust control, nonlinear programming methods for optimal control and nonlinear control. This series has focused on both mathematical and computational aspects of engineering design and control. Its goal has been the development of textbooks and research monographs that are usable in a wide variety of scientific and engineering disciplines.



## MPS-SIAM Series on Optimization

The *MPS-SIAM SERIES ON OPTIMIZATION* was begun in 2000 to provide the optimization community with an outlet for attractively produced, high-quality books at all levels of sophistication. The series is aimed at advancing optimization research and encouraging the integration of optimization into all areas of applied mathematics and operations research. The

Mathematical Programming Society approached SIAM as a natural scientific and publishing partner in this endeavor, and the series got off to a strong start.



## Evidence of Progress

In the early 1990s, SIAM recognized that there was a growing demand for its books outside the United States, so the society began a more vigorous marketing effort. As a result, the SIAM book program has become more visible than ever, not only in the United States, but around the world as well. By 1997, SIAM's database of individuals, libraries, bookstores and agents interested in its books reached the 50,000 mark, with 24,000 pertaining to mathematicians and scientists living outside the U.S. Since 1961, SIAM has also published textbooks, tutorials, case studies, general interest books and a variety of other stand-alone books that are published without association with any other SIAM series. There are currently more than 75 books in this category, with a combined total of over 145,000 sales to date. SIAM publishes about 25 books annually.



An activity group on Control and Systems Theory was formed in July 1986.

SIAM co-sponsored the *First International Congress on Industrial and Applied Mathematics (ICIAM)* in Paris, on June 29-July 3, 1987.



The *SIAM JOURNAL ON DISCRETE MATHEMATICS* premiered in February 1988.

In July 1989, SIAM moved into its new offices at 3600 Science Center, in Philadelphia, and also established an activity group on Geometric Design.

SIAM hosted the *Second ICIAM* in Washington, DC in July 1991, and more than 2000 mathematicians, computational scientists, engineers and scientists attended.

1987

In July 1986, I. Edward Block became the first recipient of SIAM's *Distinguished Service to the Profession Award*.

By the end of 1986, SIAM had admitted over 900 new members—a record breaker!



SIAM's activity group on Dynamical Systems was formed in July, 1988.

1989

SIAM approved the formation of an activity group on Orthogonal Polynomials and Geometric Design in 1990.

1991

SIAM's activity group on Geosciences was organized in July, 1991.

## CHAPTER 8

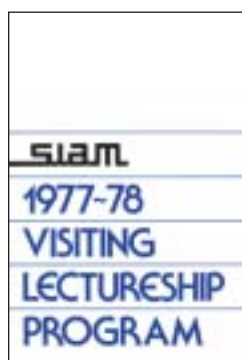
# COMMITMENT TO EDUCATION

*Since its founding, SIAM has taken countless steps to improve the mathematics and science education received by the nation's students, at all levels of study.*



*University of Washington Chapter of SIAM in 1986.*

From making its first donation to a national science scholarship fund in 1955, to its establishment of the *Graduate Student Focus on Diversity Workshop*, forty years later, SIAM's efforts to improve the state of education in the United States have benefited thousands of students. This chapter traces the evolution of SIAM's commitment to education over the past half-century, and demonstrates that education remains a top priority for the association.



### *Visiting Lectureship Program*

In September 1960, SIAM launched its *Visiting Lectureship Program*. With the

National Science Foundation (NSF) subsidizing travel expenses and providing other financial support, SIAM was able to bring applied mathematicians and scientists to speak at colleges and universities nationwide on topics of current interest. The program had several goals: to familiarize college

students with applied mathematics and its role in the industrial setting; to motivate them to consider careers in the profession; and to afford students of smaller, less centrally located colleges with the opportunity to learn about modern advances in math and science. Although nearly 100 lectures were given annually, budget constraints forced curtailment of activities in 1984. SIAM was able to reinstitute this program in September 1992. Now known as SIAM's *Visiting Lecturer Program*, its scope was augmented in response to an increased interest generated by the program's speakers.

### *University Chapters Form*

From the time it was founded, membership in SIAM has been available to academic institutions. To encourage and accommodate the interests of college students studying mathematics, SIAM established procedures to allow representatives of any university holding an academic membership in the society to



*Gil Proctor (right) with students of the Clemson University Chapter of SIAM in 1979.*

submit a petition to form a *university chapter*. SIAM's university chapters have sponsored various activities for the benefit of its student members, including talks on applied and industrial mathematics, sessions on career opportunities in industry and government, student paper presentations, best paper contests and problem seminars. These chapters have also provided students with an excellent entree into professional activities and a bridge to active participation in SIAM after graduation.

### *Student Papers*

Starting at its spring meeting in Alexandria, Virginia in June 1980, SIAM

offered several *contributed paper* sessions for graduate students in applied mathematics. This program has given these students the chance to obtain experience in presenting papers and interacting with other members of the applied mathematics community,



*SIAM President Margaret Wright with the 1996 winners of the society's Student Paper Prize.*

regardless of their work. SIAM has continued to encourage student papers and posters. In 1989, SIAM initiated a Student Paper Prize.

### *Spreading the Message*

In the early 1980s, SIAM was receiving hundreds of requests from school counselors and students (from high school and beyond) about careers in the mathematical sciences. Prompted by this interest, SIAM's Education Committee, headed by Gil Proctor, launched a project to develop two booklets to explain the scope and potential of careers in applied mathematics. Aimed at high school students and college underclassmen, *Careers in Applied Mathematics* introduced students to the extraordinary range of work done by applied mathematicians in business, government and academic environments, and discussed the academic preparation required by students who intended to pursue careers in mathematics and the computer sciences. This booklet was completed in the spring of 1982 and recently redesigned. The other booklet, *Profiles in Applied Mathematics*, described the role of applied mathematics within specific industrial concerns, government agencies and national laboratories.



*SIAM luncheon in 1984 honoring high school teachers.*



### *Promoting the Importance of Applications to Teachers*

Realizing that students often develop their interests in a particular subject due to the enthusiasm of their teachers, SIAM made several efforts throughout the 1970s and 1980s to acquaint high school mathematics and science teachers with the career opportunities available in these fields. For instance, in Norfolk, Virginia in November 1983, SIAM convened a panel session to consider how to motivate high school students to study mathematics and science.

Similarly, at its 1984 Annual Meeting, held in July in Seattle, SIAM honored eight high school teachers for their excellence in teaching. These teacher awards were funded by companies such as IBM, Exxon, Boeing, and GM. At this meeting, SIAM also tried a program for high school teachers, giving them an opportunity to participate in a forum with industry representatives; to view a film series on careers in mathematics; and to attend a panel discussion about solving problems in industry.

SIAM has continued to sponsor workshops for teachers at its Annual Meetings and locally for teachers in the Philadelphia area.

### *National Mathematics Awareness Week*

In April 1986, at the National Museum of American History, U.S. Senator Pete Dominici kicked-off the first *National Mathematics Awareness Week* with a tour of the museum's mathematics exhibit. Dominici sponsored the bill, calling for this special week to draw attention to the numerous exciting fields that depend upon mathematics research. Passage of the bill would not have been successful without the support of mathematicians from across the country, including



*U.S. Senator Pete Dominici (left) during the kick-off of National Mathematics Awareness Week.*

members of SIAM, who wrote to their Congressional representatives, urging its passage. Many members of SIAM's Drexel University Chapter also participated in this effort by soliciting signatures from faculty and students. Congress passed the resolution in less than three months.

### *Student Travel Fund*

In 1991, a group of SIAM authors—Jack Dongarra, Iain Duff, Danny Sorensen and Henk van der Vorst—assigned all royalties from their book—*Solving Linear Systems on Vector and Shared Memory Computers*—to establish the *SIAM Student Travel Fund*. This fund has been used to help students attend SIAM meetings. Since its endowment, dozens of other SIAM authors have followed this lead and donated their royalties to the fund, allowing hundreds of students to participate in meetings which they otherwise could not have attended. Subsequently, SIAM initiated a program to allow all members to contribute at the time of renewal.

## SIAM AWARD IN THE MATHEMATICAL CONTEST IN MODELING

In 1988, SIAM established an award to participants in the Mathematical Contest in Modeling (MCM). A prize is awarded to two undergraduate student teams that, in the opinion of the SIAM graders, submit the best solutions to the two problems presented in the contest. Each winning, three-member student team receives a certificate and each student on the winning team receives a cash award and a three-year student membership in SIAM. Several student participants have attributed their interest in applied mathematics in large part to their experience in the MCM. By participating in this contest as judges, organizers and team advisors, many members of SIAM have helped to recognize undergraduates with talent in mathematical modeling.



*Winners of SIAM's award for the 1990 Mathematical Contest in Modeling pose with one of the organizers of the contest, Ben Fusaro (center).*

## GRADUATE STUDENT FOCUS ON DIVERSITY WORKSHOP



*SIAM board member Cleve Moler (second from left) conversing with students and family members at the 1997 Graduate Student Focus on Diversity Workshop.*

In October 1995, SIAM initiated and held its first *Graduate Student Focus on Diversity Workshop* for underrepresented minority students during its annual meeting in Charlotte, North Carolina. Three graduate students from Rice University— Monica Martinez-Canales, Pamela Williams and Cassandra McZeal— with guidance and support from Professor Richard Tapia, also of Rice, organized the workshop.

The goals of the workshop were to send a clear, explicit message of enthusiastic welcome and support from SIAM to members of underrepresented groups; to provide an opportunity for minority graduate students to present their research at a major scientific meeting; to show undergraduate students the professional opportunities resulting from graduate degrees in science and mathematics; and to conduct a frank and candid discussion about school experi-

ences, career expectations, and the job market. This was such a successful event that since the 1999 workshop in Atlanta, it has become an annual SIAM event. The association's sixth *Graduate Student Focus on Diversity Workshop* was held at SIAM's annual meeting in Philadelphia in 2002.



*Paul Boggs (left) speaking with students at SIAM's first Graduate Student Focus on Diversity Workshop in 1995.*





*I. Edward Block (left) being congratulated by Werner Rheinboldt (center) and Gene Golub (right) on his receipt of SIAM's first Prize for Distinguished Service to the Profession in 1986. Block was a founder of SIAM and its managing director from 1976 to 1994.*

Throughout the past half century, many advances have been made in applied mathematics, computing and applications. To recognize the contributions of dedicated mathematicians and scientists, and to encourage others in a similar pursuit of excellence, SIAM has established several prizes and awards over the years. In 1977, the SIAM Council explained that the purpose of the society's awards and prizes is to draw attention to applied mathematics, to increase its prestige, to encourage research of high quality in mathematics, and to honor those who make an outstanding contribution to these ends. SIAM prizes include awards for student research and for outstanding papers in SIAM journals. Several of the SIAM Activity Groups award their own prizes. SIAM's Major Awards, prizes named in honor of individual scientists, are listed below.

### ***PRIZES FOR RESEARCH, SERVICE AND OUTREACH***

#### ***The John von Neumann Lecture***

In 1959, SIAM announced the establishment of the John von Neumann Lecture to honor the memory of this distinguished mathematician, who made significant contributions to the study of economics, logic and mathematics and the theory of computing machines. The award – given in the form of an honorarium for a lecture – is presented each year at the SIAM Annual Meeting to a



*Kurt O. Friedrichs was the SIAM John von Neumann Lecturer in 1979.*

mathematician, or a scientist in another field, who has made a distinguished contribution to pure and/or applied mathematics. In the lecture, the award recipient is invited to survey and evaluate a significant and useful contribution to mathematics and its applications. The prize fund was initially endowed by the IBM Corporation and Bell Telephone Laboratories.

## CHAPTER 9 RECOGNIZING EXCELLENCE

*The purpose of the society's awards and prizes is to draw attention to applied mathematics, to increase its prestige, to encourage research of high quality in mathematics, and to honor those who make an outstanding contribution to these ends.*

#### ***The Theodore von Karman Prize***

The Theodore von Karman Prize, which was established in 1968, is awarded every fifth year (generally at the SIAM Annual Meeting), for a notable application of mathematics to mechanics and/or the engineering sciences made during the preceding five to ten year period. The award, which includes a cash prize and a certificate, is given either for a single notable achievement or for a collection of such achievements. As part of the prize ceremony, the recipient is asked to present a lecture. Initial funding for the award came from contributions by friends, colleagues, and students of Theodore von Karman, whose work in applying mathematics to both engineering and physics was legendary.



*Joe Keller (left) and George Carrier (center) accepting the Theodore von Karman Prize from SIAM President Richard DiPrima in 1979.*



SIAM President Margaret Wright and David Reimer (center) with the 1996 Polya Prize winners, Paul Seymour (left) and Jeffrey Kahn.

### The George Polya Prize

Established in 1969, the George Polya Prize is awarded every two years in one of two alternating categories: (1) for a notable application of combinatorial theory; or (2) for a notable contribution in another area of interest to George Polya such as approximation theory, complex analysis, number theory, orthogonal polynomials, probability theory or mathematical discovery and learning. The award is made at the SIAM Annual Meeting. Each winner receives an engraved medal and a cash award. The prize was initially endowed by Frank Harary and William Tutte, who assigned royalties from books. In 1992, a bequest from Stella Polya allowed the prize to be expanded in scope.

### The James H. Wilkinson Prize in Numerical Analysis and Scientific Computing

In order to stimulate research in, or other contributions to, numerical analysis and scientific computing, SIAM, in 1979, instituted a Prize in Numerical Analysis and Scientific Computing. Although this prize was designed to encourage younger contributors and to assist them in their careers, the prize has no restrictions on eligibility. The work recognized must have been completed during the six years preceding the award date.



SIAM President Seymour Parter presenting Bjorn Engquist with the first James Wilkinson Prize in Numerical Analysis and Scientific Computing in 1982.

The prize, which consists of a cash award and an engraved plaque, is given every fourth year, usually at the SIAM Annual Meeting. As part of the prize ceremony, the recipient presents a lecture. In 1987, the award was re-named the James H. Wilkinson Prize in Numerical Analysis and Scientific Computing to honor the memory of Wilkinson, who died in 1986.

### The SIAM Prize for Distinguished Service to the Profession

Instituted by SIAM in 1985, this prize is in the form of a certificate awarded to an applied mathematician who has made distinguished contributions to the furtherance of applied mathematics on the national level. This prize was to be awarded from time to time but, starting with the 1997 award, is presented every three years. I. Edward Block, a founder of SIAM and its Managing Director from 1976 to 1994, was the first recipient of this prize. Others include SIAM Past Presidents Gene H. Golub, Avner Friedman and Margaret H. Wright.



Ronald DeVore (right) congratulates Keith Lindsay on receiving the Richard C. DiPrima Prize in 2000.

### The Richard C. DiPrima Prize

The Richard C. DiPrima Prize was established in 1986 and is awarded to a young scientist for outstanding research in applied mathematics (defined as those topics covered by SIAM journals). To be eligible for the prize, a candidate must have completed the requirements for a doctorate one to three years prior

1993



The W.T. and Idalia Reid Prize in Mathematics was established by SIAM in 1993.

1994

SIAM established a website—[www.siam.org](http://www.siam.org)—in 1994.

Ed Block retired as Managing Director of SIAM in September 1994, and he was replaced by James Crowley, who was named as SIAM's Executive Director.

1995

In 1995, SIAM established the I. E. Block Community Lecture and the Germund Dahlquist Prize.



In October 1995, SIAM held its first Graduate Student Focus on Diversity Workshop in Charlotte, NC.

1996

The society premiered its SOFTWARE, ENVIRONMENTS AND TOOLS book series in 1995.



The society's report on *Mathematics in Industry* was released in 1996.

In December 1996, a United Kingdom/Republic of Ireland section of SIAM was formed.

1997

Beginning in 1997, subscribers to SIAM's journals were able to receive them electronically.

to the award date. Selection is based on each candidate's dissertation, which must represent a topic in applied mathematics. The prize, which consists of a certificate and a cash award, is presented every even-numbered year at the SIAM Annual Meeting. The prize was established to commemorate Richard C. DiPrima, a dedicated member of SIAM, who served the society for many years in varying posts, including as President, Vice President for Programs, and a member of the Board and Council.

### *The Germund Dahlquist Prize*

The Germund Dahlquist Prize was established in 1995 and is awarded to a young scientist (usually under the age of 45) for original contributions to fields associated with Germund Dahlquist, especially the numerical solution of differential equations and numerical methods for scientific computing. The prize is given every two years at one of the SciCADE conferences, an ICIAM conference or the SIAM Annual Meeting.

### *The W.T. and Idalia Reid Prize in Mathematics*

The W.T. and Idalia Reid Prize in Mathematics was established by SIAM in 1993 to recognize outstanding work in, or other contributions to, the broadly defined areas of differential equations and control theory. The prize, given every year at the SIAM Annual

Meeting, may be awarded either for a single notable achievement or a collection of such achievements. The award consists of a cash prize and engraved medal. The prize recipient is required to give a lecture as part of the prize ceremony. The prize fund was endowed by Mrs. Idalia Reid to honor her husband.

### *The I. E. Block Community Lecture*

The I.E. Block Community Lecture was instituted in 1995 to encourage public appreciation of the excitement and vitality of applied mathematics by reaching out as broadly as possible to students, teachers and members of the local community, as well as to SIAM members, researchers, and practitioners in fields related to applied and computational mathematics. The lecture is open to the public and is named in honor of I. Edward Block, a founder of SIAM who served as its Managing Director for nearly twenty years.



*Richard Tapia (left) receiving the 1999 I.E. Block Community Lecture Award from SIAM President Gil Strang.*



*Roger Brockett (right) accepts the Reid Prize from John Burns in 1996.*

### *The Ralph E. Kleinman Prize*

Established in 1998, the Ralph E. Kleinman Prize is awarded to one individual for outstanding research, or other contributions, that bridge the gap between mathematics and applications. Work that uses high-level mathematics and/or invents new mathematical tools to solve applied problems from engineering, science and technology is particularly appropriate for the prize. The value of the work is measured by the quality of the mathematics and its impact on the application. Each prize may be given either for a single notable achievement or for a collection of such

In 1997, SIAM launched its *MATHEMATICAL MODELING AND COMPUTATION SERIES*, and also released the first book in a collaborative series with the American Statistical Association.

1999



The *MPS-SIAM SERIES ON OPTIMIZATION* was begun in 2000.

2000

SIAM added two new activity groups— *In Life Sciences and Imaging Science*— and also instituted the *Julian Cole Lectureship* in 2000.

In 2002, an activity group on Computational Science and Engineering was organized.

In April 2002, the society released its first, all-electronic journal— the *SIAM JOURNAL ON APPLIED DYNAMICAL SYSTEMS*.

2001

In January 2001, the society established a representative in Washington, DC to represent the interests of its members.

2002

SIAM celebrated its 50th Anniversary in July, 2002.

1998

In 1998, SIAM established the *Ralph E. Kleinman Prize*, and premiered its *MONOGRAPHS ON DISCRETE MATHEMATICS AND APPLICATIONS*.

achievements. Initial funding for this prize, which consists of a certificate and a cash prize, was made by the family and friends of Ralph Kleinman. The prize is awarded every two years at the SIAM Annual Meeting.



*SIAM President Tom Manteuffel (left) presents the 2001 Ralph E. Kleinman Prize to William Symes.*

### ***The Julian Cole Lectureship***

SIAM instituted the Julian Cole Lectureship in 2000 for an outstanding contribution to the mathematical characterization and solution of a challenging problem in the physical or biological sciences, or in engineering, or for the development of mathematical methods for the solution of such problems. This award was originally endowed by the students, friends, colleagues and family of Julian Cole and is to be given every fourth year at SIAM's Annual meeting. The first award of the lectureship was made at the SIAM 50th Anniversary Meeting in 2002.

### ***PRIZES AWARDED JOINTLY WITH OTHER SOCIETIES***

#### ***The Norbert Wiener Prize and The George David Birkhoff Prize***

These two prizes were established in 1967 and are awarded jointly by SIAM and the American Mathematical Society (AMS). Both prizes are currently awarded every third year. The Birkhoff Prize started in 1968 and the Wiener Prize started in 1970. Each prize consists of a cash award for an outstanding contribution to applied mathematics in the highest and broadest sense. The original funds for the Birkhoff Prize were donated by the Birkhoff family, while the Wiener Prize was endowed by the Mathematics Department of MIT. These awards are usually presented at either the Joint Mathematics Meeting, or at a SIAM meeting.

#### ***The George B. Dantzig Prize***

Established in 1979, the George B. Dantzig Prize is awarded jointly by SIAM and the Mathematical Programming Society (MPS) for original work that, by its breadth and scope, constitutes an outstanding contribution to the field of mathematical programming. The contribution recognized by the award must be publicly available and can be related to any aspect of mathematical programming in its broadest sense. The prize is awarded every three years and includes a certificate and a cash prize. The award is presented at the International Symposium of the MPS or, every third time, at the annual meeting of SIAM.

#### ***The Peter Henrici Prize***

Established in 1998, the Peter Henrici Prize is awarded jointly by SIAM and Eidgenössische Technische Hochschule-Zürich (ETHZ) for original contributions to applied analysis and numerical analysis and/or for exposition appropriate for applied mathematics and scientific computing. The prize is intended to recognize broad and extended contributions to these subjects, more than a single, outstanding work, and is presented every four years at either an ICIAM conference or the SIAM Annual Meeting. The first presentation of the award was made at the 1999 ICIAM Conference.

### ***SIAM ACTIVITY GROUP PRIZES***

Several activity groups have established prizes for individuals who make outstanding contributions to the particular area of research of interest to its members. In 1987, the SIAM Activity Group on Linear Algebra became the first activity group to establish a prize. The SIAM Activity Group on Optimization established its prize in 1992, while the SIAM Activity Group on Control and Systems Theory established its prize in 1997. Most recently, in 2000, the SIAM Activity Group on Dynamical Systems established its J.D. Crawford Prize and its Jürgen Moser Lecture.

## CHAPTER 10

# LEADERSHIP

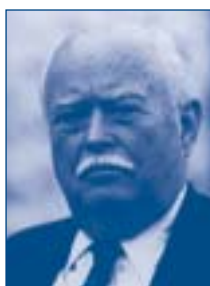


*Some of SIAM's past presidents gathered for this picture at the society's 30th anniversary gala celebration in 1982 (standing from left) J. Barkley Rosser, J. Wallace Givens, Burton Colvin and Alston Householder.*

*Strong, committed and capable leadership is not just an asset to an organization. Rather, having the right individuals lead any association is truly vital to its success and longevity.*

SIAM has been fortunate to have had a dedicated, qualified and energetic corps of leaders carefully and successfully guiding the association and its membership through the many challenging issues faced throughout the last fifty years, including the unprecedented growth and expansion of the society; the increasing globalization of the mathematical and scientific communities; and the rapid growth in technology and science. While the source of the challenges to SIAM may have changed from year to year, its ability to overcome these problems can be traced, in large measure, to the capable officers, trustees and council members who have lead the society since its founding. This chapter is dedicated to all those individuals who have served SIAM and its members as officers, trustees, council members and board members.

## PRESIDENTS



*William Bradley  
(1952-53)*



*Donald Houghton  
(1953-54)*



*Harold Kuhn  
(1954-55)*



*John Mauchly  
(1955-56)*



*Thomas Southard  
(1956-58)*



*Donald Thomsen, Jr.  
(1958-59)*



*Brockway McMillan  
(1959-60)*



*F. Joachim Weyl  
(1960-61)*



*Robert Rinehart  
(1961-62)*



*Joseph LaSalle  
(1962-63)*



*Alston Householder  
(1963-64)*



*J. Barkley Rosser  
(1964-66)*



*Garret Birkhoff  
(1966-68)*



*J. Wallace Givens  
(1968-70)*



*Burton Colvin  
(1970-72)*



*C.C. Lin  
(1972-74)*



*Herb Keller  
(1974-76)*



*Werner Rheinboldt  
(1976-78)*



*Richard DiPrima  
(1979-80)*



*Seymour Parter  
(1981-82)*



*Hirsh Cohen  
(1983-84)*



*Gene Golub  
(1985-86)*



*C. William Gear  
(1987-88)*



*Ivar Stackgold  
(1989-90)*



*Robert O'Malley  
(1991-92)*



*Avner Friedman  
(1993-94)*



*Margaret Wright  
(1995-96)*



*John Guckenheimer  
(1997-98)*



*Gilbert Strang  
(1999-2000)*



*Tom Manteuffel  
(2001-02)*



*James (Mac) Hyman  
(2003-04)*

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 F. Joachim Weyl, 1958-60  
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 Charles R. DeCarlo, 1960-61  
 Alston S. Householder, 1961-62  
 M. Ostrofsky, 1962-63  
 I. Edward Block, 1963-74  
 W.J. Jameson, Jr., 1969-74  
 Jurgen K. Moser, 1971-72  
 Herbert B. Keller, 1972-73  
 T.E. Hull, 1973-74  
 Richard C. DiPrima, 1974-77  
 Gian-Carlo Rota, 1974-75  
 Armen H. Zemanian, 1974-75  
 Hirsh G. Cohen, 1975-77  
 Werner C. Rheinboldt, 1975-76  
 William E. Boyce, 1978-81  
 Joseph B. Keller, 1978-79  
 James C.T. Pool, 1979  
 Jane K. Cullum, 1980-83  
 James McKenna, 1980-81  
 Fred S. Roberts, 1984-87  
 Shmuel Winograd, 1988-89  
 Margaret Wright, 1990-93  
 Cleve Moler, 1994-95  
 Thomas Manteuffel, 1996-

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 James Daniel, 1986-87  
 John Burns, 1988-90  
 Bart Ng, 1991-97  
 Barbara Lee Keyfitz, 1998-

### **Vice President, Education**

(and College & University Activities)  
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 Gil Strang, 1991-96  
 Terry Herdman, 1997-

### **Vice President, Industry**

Claude Greengard, 1999-2000  
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 G. Kaskey, 1959-63  
 W.S. Dorn, 1963-64  
 W.J. Jameson, Jr., 1964-68  
 R.E. Beckett, 1968-71  
 Jane K. Cullum, 1971-76  
 Fred S. Roberts, 1976-81  
 Paul W. Davis, 1982-85  
 Robert Voigt, 1988-90  
 Peter Castro, 1991-97  
 Gregory Shubin, 1998-2001  
 Paul Boggs, 2002-

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 H. M. Gurk, 1961-65  
 R. G. Lamb, 1965-83  
 Samuel Gubins, 1983-

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 John W. Mauchly, 1952-55  
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 Alan C. Byers, 1952-56  
 G. Truman Hunter, 1952-55  
 Donald B. Houghton, 1952-53  
 Robert Jackson, 1952-55  
 Robert C. James, 1952-53  
 Robert B. Kleinschmidt, 1952-54  
 Harold W. Kuhn, 1952-54  
 Samuel S. McNary, 1952-60  
 John H. Ramser, 1952-56  
 Russell Ramage, 1952-55

### **Subsequent Board Members**

Cletus O. Oakley, 1953-56  
 T. K. Sharpless, 1953-55  
 C. W. Adams, 1955-58  
 J. W. Carr, 1955-57  
 Charles DeCarlo, 1955-60  
 I. A. Getting, 1955-56  
 H. R. Grosch, 1955-58  
 G. P. Harnwell, 1955-58  
 A. W. Tucker, 1955-57  
 I. Travis, 1955-56  
 A. M. Mood, 1956-59  
 Grace M. Hopper, 1957-60  
 D. S. Saund, 1957-59

Brockway McMillan, 1958-60  
 Donald L. Thomsen, 1958-73  
 George S. Webster, 1958-67  
 H. H. Bruning, 1959-62  
 Robert F. Rinehart, 1959-62  
 F. Joachim Weyl, 1959-62, 1965-77  
 H. Brooks, 1960-62  
 M. Ostrofsky, 1960-63  
 E. Pitcher, 1960-63  
 N. Levinson, 1961-64  
 Burton H. Colvin, 1962-65  
 Joseph P. LaSalle, 1962-63  
 Brockway McMillan, 1962-77  
 David M. Young, Jr., 1962-65  
 Richard Courant, 1963-66  
 M. J. Kelley, 1963-66  
 E. R. Piore, 1963-66  
 W. R. Sears, 1965-68  
 Alston S. Householder, 1966-72  
 J. Barkley Rosser, 1967-70  
 A. H. Taub, 1967-70  
 C. C. Lin, 1968-70  
 Hirsh G. Cohen, 1969-75  
 Mark Kac, 1969-75  
 I. Edward Block, 1970-76  
 George E. Forsythe, 1970-72  
 C. O. Reville, Jr., 1971-74  
 Werner C. Rheinboldt, 1971-76, 1982-90  
 R. C. Buck, 1972-74  
 George F. Carrier, 1973-78  
 Joseph B. Keller, 1975-78  
 E. Bromberg, 1975-79  
 Maxine L. Rockoff, 1975-79  
 Ivar Stackgold, 1975-84  
 N. I. Agin, 1976-79  
 Richard C. DiPrima, 1976-78  
 Eugene Isaacson, 1978-83  
 James C. T. Pool, 1978-83  
 Eric Wolman, 1978-82  
 Herbert B. Keller, 1979-81  
 John A. Nohel, 1980-82  
 M.H. Schultz, 1980-82  
 V. Klema, 1981-83  
 A. Newell, 1981-83  
 Gene H. Golub, 1982-83  
 Seymour V. Parter, 1982  
 Robert E. O'Malley, 1983-85  
 Jane K. Cullum, 1984-89  
 James Glimm, 1984-92  
 Hans F. Weinberger, 1984-88  
 Marshall Tulin, 1984-92  
 Ettore Infante, 1985-90  
 Martin Kruskal, 1985-90  
 B. Buzbee, 1985-90  
 W.F. Miller, 1985-86  
 James McKenna, 1986-95  
 John Burns, 1986-88

Richard Ewing, 1987-92  
 John Hopcroft, 1989-93  
 Richard Tapia, 1990-92  
 Mary F. Wheeler, 1990-97  
 Julian D. Cole, 1991-94  
 Bjorn Engquist, 1991-94  
 Avner Friedman, 1991-92  
 Jill Mesirov, 1991-95  
 James M. Hyman, 1993-98  
 Joseph Olinger, 1993-95  
 Alexander Chorin, 1993-95  
 John Guckenheimer, 1994-96  
 Charles Peskin, 1994-96  
 Cleve Moler, 1996-  
 Francis Sullivan, 1996-2001  
 Margaret Cheney, 1997-  
 Rosemary Chang, 1997-  
 Joyce McLaughlin, 1997-  
 Michael Overton, 1997-  
 H.T. Banks, 1998-  
 Christopher Jones, 1998-2000  
 Robert Plemmons, 1998-2000  
 Peter Castro, 1999-2001  
 Margaret Wright, 2000-  
 Eric Grosse, 2002-  
 Max Gunzberger, 2002-  
 Paul Van Dooren, 2002-

### **Subsequent Council Members**

Anthony F. Bartholomay, 1953-56  
 Raymond S. Berkowitz, 1953-55  
 Heinrich W. Brinkman, 1953-57  
 C. Hammer, 1953-56  
 G. Truman Hunter, 1953-56  
 Robert Jackson, 1953-55  
 Robert B. Kleinschmidt, 1953-54  
 Harold W. Kuhn, 1953-57  
 Samuel S. McNeary, 1953-61  
 G. W. Preston, 1953-56  
 John H. Ramser, 1953-56  
 Russell Remage, 1953-55  
 John W. Tukey, 1954-57  
 P. Brock, 1955-61; 1967-70  
 M. M. Flood, 1955-58  
 Mina S. Rees, 1955-58  
 L. A. Aroian, 1956-59  
 I. Edward Block, 1956-64  
 J.H. Curtiss, 1956-59  
 R. M. Thrall, 1956-59  
 Kenneth J. Arnold, 1957-63  
 J. W. Luke, 1957  
 Robert J. Wisner, 1957-60  
 R. E. Gaskell, 1958-61; 1963-66  
 J. Wallace Givens Jr., 1958-61; 1964-67  
 T.N.E. Greville, 1958  
 Alston S. Householder, 1958-61  
 Thomas H. Southard, 1958  
 Herman H. Goldstein, 1959  
 Saul Gorn, 1959-63  
 David Slepian, 1959-62  
 Richard S. Varga, 1959-62

Magnus R. Hestenes, 1960-63  
 D. Mittleman, 1960-63  
 Harry Polachek, 1960-63  
 J. Bendat, 1961-64  
 Richard C. DiPrima, 1961-64; 1969-74  
 H. M. MacNeille, 1961-64  
 C. Sealander, 1961-64  
 J. W. Carr, III, 1962-65  
 P. E. Hammer, 1962-65  
 F. Joachim Weyl, 1962-65  
 R. F. Clippinger, 1963-66  
 James H. Griesmer, 1963-66  
 A. G. Oettinger, 1963-66  
 Bruce E. Hubbard, 1964-67  
 T. E. Hull, 1964-73; 1974-80  
 Herbert B. Keller, 1964-67  
 A. H. Taub, 1964-67  
 V. L. Klee, 1965-68  
 C. C. Lin, 1965-68  
 C. H. Wilcox, 1965-68  
 Hirsh S. Cohen, 1966-69  
 Jim Douglas, Jr., 1966-69  
 John A. Nohel, 1966-69  
 Armen H. Zemanian, 1966-74  
 R. E. Beckett, 1967  
 Robert H. Owens, 1967-70; 1971-74  
 Werner C. Rheinboldt, 1967-73  
 F. J. Beutler, 1968-74  
 H. J. Greenberg, 1968-72  
 Lucien W. Neustadt, 1968-71  
 Eric Wolman, 1968-74  
 J. B. Kruskal, 1969-72  
 C. G. Maple, 1968-72  
 Julian D. Cole, 1970-76  
 Larry E. Payne, 1970-76  
 Murray S. Klamkin, 1972-75  
 Cleve B. Moler, 1972-75  
 P. J. Eberlein, 1973-77  
 W. J. Gordon, 1973-77  
 Maxine Rockoff, 1973-76  
 D. G. M. Anderson, 1974-75  
 William E. Boyce, 1974-78  
 Hans F. Weinberger, 1974-78  
 Gene H. Golub, 1974-81  
 Juris Hartmanis, 1975-78  
 D. A. Ludwig, 1975-78  
 James M. Ortega, 1975-78  
 W. M. Gentleman, 1976-79  
 Simon A. Levin, 1976-79  
 Gilbert Strang, 1976-81  
 L. Tornheim, 1976-79  
 Cathleen S. Morawetz, 1978-80  
 Seymour V. Parter, 1978-81  
 William F. Ames, 1979-84  
 Donald S. Cohen, 1979-81; 1993-95  
 James McKenna, 1979-80

(Beginning in 1980, the SIAM officers and the chair of the Board became ex-officio members of the Council.)

Albert M. Erisman, 1980-83  
 C. William Gear, 1980-85  
 Robert E. O'Malley, Jr., 1980-82  
 James Varah, 1980-83  
 Grace Wahba, 1980-85  
 L. Ridgway Scott, 1981-83  
 Lynn O. Wilson, 1981-86  
 Ettore F. Infante, 1982-83  
 Nancy Kopell, 1982-84  
 Joseph Olinger, 1982-85  
 Andrew J. Callegari, 1983-84  
 Paul N. Swarztrauber, 1983-88  
 Mary F. Wheeler, 1983-88  
 Kendall E. Atkinson, 1984-89  
 L. Pamela Cook, 1984-86; 1991-97  
 Stephen H. Davis, 1984-86  
 John E. Dennis, Jr., 1985-90  
 Robert J. Plemmons, 1985-90  
 Robert C. Ward, 1985-87  
 Jack Dongarra, 1986-90  
 George C. Papanicolaou, 1986-88  
 J. Alan George, 1987-89  
 Philip John Holmes, 1987-89  
 Margaret H. Wright, 1987-89  
 Linda Petzold, 1988-92  
 Melvyn Ciment, 1989-90  
 Maria Klawe, 1989-90  
 Charles Van Loan, 1989-90  
 Fan R. K. Chung, 1990-92  
 Martin Golubitsky, 1990-95  
 James P. Keener, 1990-95  
 Thomas Manteuffel, 1990-95  
 Marsha J. Berger, 1991-97  
 Tony F. Chan, 1991-94  
 Rosemary E. Chang, 1991-96  
 James Demmel, 1991-96  
 Joyce R. McLaughlin, 1991-94  
 Michael L. Overton, 1991-96  
 Robert B. Schnabel, 1994-99  
 Paul T. Boggs, 1995-2000  
 Suzanne Lenhart, 1995-2000  
 Kathryn Eleda Brenan, 1996-2001  
 Eric H. Grosse, 1996-2001  
 Nicholas J. Higham, 1996-2001  
 Lloyd N. Trefethen, 1996-2001  
 John R. Gilbert, 1997-2002  
 Robert V. Kohn, 1997-2002  
 Virginia Torczon, 1997-2002  
 John G. Lewis, 1998-2002  
 James Sethian, 1998-2002  
 David E. Keyes, 2000-2002  
 Anne Greenbaum, 2001-2002  
 Henk A. van der Vorst, 2001-2002  
 Lisa J. Fauci, 2002-  
 C. T. Kelley, 2002-  
 Randall J. LeVeque, 2002-  
 William W. Symes, 2002-