FOCUS

THE NEWSLETTER OF THE MATHEMATICAL ASSOCIATION OF AMERICA

VOLUME 5 NUMBER 5 OCTOBER 1985

Plans for ICM-86 Nearing Completion

With less than a year to go, plans for the first International Congress of Mathematicians to be held in the United States in 36 years are nearly complete. ICM-86 will be held at the University of California, Berkeley, from Sunday, August 3 through Monday, August 11, 1986.

The First Announcement of the Congress giving a general description of the mathematical program, social events (which will include a barbeque at the San Francisco Cow Palace, formal receptions, concerts, etc.), and accommodations was mailed last August to all major mathematics organizations and thousands of individuals around the world.

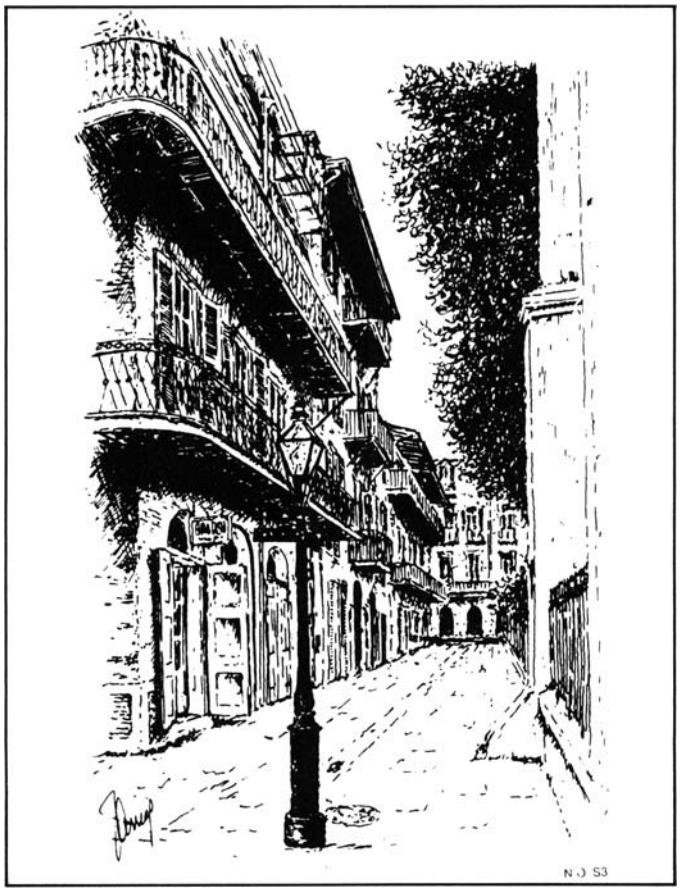
The Second Announcement, which describes all activities of the Congress in detail and provides instructions on how to complete the preregistration process and obtain accommodations, may be obtained by writing to ICM-86, P.O. Box 6887, Providence, RI 02940. Requests should be sent by November 30, if possible. Copies of the Second Announcement will be mailed before the end of 1985.

The work of the Congress will be divided into 19 sections. There will be 16 invited one-hour expository addresses covering recent developments in the major areas of mathematics, and approximately 130 invited 45-minute lectures.

An event of special interest at ICM-86 will be the awarding of the Fields Medals. In addition, a recently-established prize in the mathematical aspects of information science, the Nevanlinna Prize, will be awarded at ICM-86. These prizes are extremely prestigious and the medalists are recognized to be among the preeminent mathematicians of the world.

The Congress is expected to attract some 4000 mathematicians, about forty percent of whom will come from abroad.

(continued on page 2)



Sketch by Joseph Arrigo.

A typical French Quarter street scene in New Orleans, Louisiana, site of the January 1986 Joint Mathematics Meetings.

New Orleans Meeting Program Inside

The center section of this issue contains the program, housing and preregistration forms, and Employment Register forms for the January 1986 Joint Mathematics Meetings in New Orleans, Louisiana. **Note: These are the only forms for this meeting which will be mailed to MAA members.**

The meetings will include the **69th Annual Meeting of the Mathematical Association of America** and the **92nd Annual Meeting of the American Mathematical Society**. MAA sessions will be held on January 9–11. All meeting sessions will be held in the Hyatt Regency and the Superdome.

The deadline for preregistration, the Employment Register, and MAA Minicourses is November 15. MAA members who return the official entry form for the MAA Nomination Campaign (which was mailed to all MAA members in September) by October 25 will be eligible for a drawing for **a free trip for two to the New Orleans meeting and a free hotel room for two for the nights of January 9-11**.

ICM-86 *(continued from page 1)*

The Congress will focus public attention on the role of mathematics in the modern world and its fundamental importance for science and technology.

For additional information about program events of special interest to MAA members, see MAA President Lynn Steen's column "Mathematics Around the World" on page 4 of this issue. Also, watch for an article in the November *FOCUS* by R.H. Bing of the University of Texas at Austin, a veteran of many past International Congresses. A more extensive article on ICM-86, written by Yousef Alavi, Peter Hilton, and Jean Pedersen, will appear in the the January 1986 issue of the *American Mathematical Monthly*.

New Sponsor and Name for High School Contests

The American Mathematical Association of Two-Year Colleges (AMATYC) has become the seventh sponsor of the precollegiate examinations administered by the MAA. The other sponsors are the MAA, Society of Actuaries, Mu Alpha Theta, National Council of Teachers of Mathematics, Casualty Actuarial Society, and the American Statistical Association. As a sponsor, AMATYC appoints a member to the committee which administers the examinations, and provides additional financial support and prizes for the examinations. The first AMATYC appointee is AMATYC President, Stephen Rodi of Austin Community College, Austin, Texas.

At the same time, the examinations, which were previously without a group name, will now be called the "American Mathematics Competitions." The MAA committee in charge, formerly called the Committee on High School Contests, will now be the "Committee on the American Mathematics Competitions."

First among several reasons for the name change is that these tests now include a junior high exam, the American Junior High School Mathematics Examination (See *FOCUS*, November-December 1984). The other exams are the American High School Mathematics Examination, American Invitational Mathematics Examination, and the USA Mathematical Olympiad.

Excellence in Expository Writing Recognized in Laramie

Several articles which appeared in 1984 issues of MAA journals have been chosen as examples of outstanding expository writing in mathematics. The authors of these articles were honored at the MAA Business Meeting in Laramie, Wyoming, last August.

Carl B. Allendoerfer Awards for articles in *Mathematics Magazine* were given to:

- **Philip D. Straffin, Jr.** of Beloit College and **Bernard Grofman** of the University of California—Irvine for their article, "Parliamentary Coalitions: A Tour of Models," November 1984, pp. 259-274.
- **Frederick S. Gass** of Miami University for his article, "Constructive Ordinal Notation Systems," May 1984, pp. 131-141.

The Lester R. Ford Awards for articles which appear in *The American Mathematical Monthly* were presented to:

- **Donald G. Saari** of Northwestern University and **John B. Urenko** of Pennsylvania State University for their article, "Newton's Method, Circle Maps, and Chaotic Motion," January 1984, pp. 3-17.
- **John D. Dixon** of Carleton University in Ottawa for his article "Factorization and Primality Tests," June-July 1984, pp. 333-352.

The **George Pólya Awards** for articles in *The College Mathematics Journal* were given to:

- **Anthony Barcellos**, a member of the Commission on State Finance, California, for his article "The Fractal Geometry of Mandelbrot," March 1984, pp. 98-114.
- **Kay W. Dundas** of Hutchinson Community College for his article, "To Build a Better Box," January 1984, pp. 30-36.

Each award-winning author(s) received a check from the MAA for $200. A booklet of reprints of the six award-winning articles is available for $4.00 from: Mathematical Association of America, 1529 Eighteenth Street, N.W., Washington, D.C. 20036.

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Chairman of the MAA Newsletter Editorial Committee: Ronald M. Davis, Northern Virginia Community College.

Readers are invited to submit articles, announcements, or Letters to the Editor for possible publication in *FOCUS*. All materials should be sent to the Editor at the MAA Headquarters in Washington, D.C.

The annual subscription price for *FOCUS* to individual members of the Association is $1, included as a part of the annual dues. Annual dues for regular members (exclusive of annual subscription prices for MAA journals) are $22. Student, unemployed, emeritus, and family members receive a 50% discount; new members receive a 30% discount for the first two years of membership.

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Hill Appointed Chairman of NRC Mathematics Education Board

Shirley A. Hill, University of Missouri at Kansas City, has been appointed by the National Research Council (NRC) to chair its new Board on Mathematical Sciences Education. The Board will address national issues in mathematics education at all levels.

Hill has had extensive experience in national and international activities in mathematics education. She served on the Board of Directors of the National Council of Teachers of Mathematics (NCTM) in the mid-1970's and as NCTM President from 1978-1980. In the late 1970's, she served within the National Research Council simultaneously as Chairman of the U.S. Commission on Mathematical Instruction and as a member of the U.S. National Committee on Mathematics.

Hill has also served in a number of capacities within the MAA—as Governor-at-Large, as an Associate Editor of the *American Mathematical Monthly*, and on several committees, including the Nominating Committee. She was on the MAA Presidential ballot in 1983.

Hill has held important posts with the Conference Board of the Mathematical Sciences (CBMS), serving both as a CBMS Trustee and as Chair of the CBMS National Advisory Committee on Mathematics Education. She is presently on the Steering Committee for ICM-86 and the International Program Committee for ICME-6.

The Board will have approximately 35 members, broadly representative of the mathematical sciences and education communities. Announcement of the complete list of Board members is expected shortly. The first meeting of the Board will take place in late October at the National Academy of Sciences in Washington, D.C.

At the request of the *FOCUS* Editor, Hill provided the following comments on the establishment of the Board:

There is a momentum in mathematical sciences education today. There are many things happening in pockets of progress around the country. But nationally there is fragmentation and lack of coordination, where what is needed is a coherent systematic effort, built upon communication and cooperation. The Board has an opportunity to guide this effort and, most critically, to sustain it when public attention wanes.

Education, in the institutional sense, is an extraordinarily complex matter. Experience of the past quarter-century surely has taught us that significant and long-term reform in education in the mathematical sciences requires the cooperation and coordination of many groups' efforts: teachers and school officials, policy makers, parents, the public's representatives, business and industry and other employers, mathematicians and those who use mathematics. This NRC Board, as it brings together these diverse groups who have an interest and a stake in mathematical sciences education, has perhaps the greatest opportunity for national leadership toward reform that we have seen in a long, long time. I believe we can take advantage of it and have a lasting impact.

The Board's activities should reach out well beyond its own membership to tap that immense reservoir of talent, experience, and interest that exists in the communities of the mathematical sciences and mathematical sciences education. We will be calling upon many individuals to play a direct role.

Panel Studying the Uses of Computers in Teaching Undergraduate Mathematics

A panel concerned with the uses of computers to enhance the teaching of undergraduate mathematics has been formed jointly by CTUM (Committee on the Teaching of Undergraduate Mathematics) and C²IME (Committee on Computers in Mathematics Education. The panel's emphasis is on teaching, not on curriculum. While these are tightly intertwined, the latter is the charge to a sister panel of CUPM (Committee on the Undergraduate Program in Mathematics). (See *FOCUS*, May-June 1985.)

The primary concern of the panel is to facilitate communication and the sharing of information useful to college teachers of mathematics interested in using technology. Its initial objectives are to identify colleagues willing to share their experience and to facilitate access to such information.

The panel is especially interested in efforts to use the technology systematically, throughout full courses, for example, and to identify those departments which have integrated the use of computing into significant portions of their undergraduate programs for majors.

Anyone who has information to share with the panel should contact the panel chairman: Dr. Ronald H. Wenger, Mathematical Sciences Teaching and Learning Center, 032 Purnell Hall, University of Delaware, Newark, DE 19716.

MAA Seeking Associate Director

The Mathematical Association of America expects to have an opening in its Headquarters Office for the position of Associate Director, beginning on January 1, 1986, or as soon as possible thereafter. For an exceptional candidate, a starting date as late as July 1 may be negotiated.

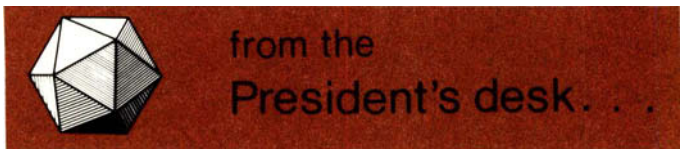
The responsibilities of the Associate Director will be largely in the area of publications, as editor of *FOCUS* and administrative supervisor of a publications program which includes three journals and 5-10 books per year. The Associate Director will also work on special projects and assist the Executive Director in the administration of the Headquarters Office.

Mathematical training is a requirement for this position, preferably to the doctoral level. However, a strong master's degree, especially when combined with administrative experience, may qualify.

This position offers the possibility of an exciting leadership career in publishing and association management.

Applications will be accepted at any time. However, interviews with candidates are scheduled to begin soon after November 15. Applicants should send a curriculum vitae and arrange to have three letters of recommendation sent to A.B. Willcox, Executive Director, Mathematical Association of America, 1529 Eighteenth Street, N.W., Washington, D.C. 20036.

The Mathematical Association of America is an Equal Opportunity Employer.



Lynn Arthur Steen, St. Olaf College

Mathematics Around the World

Americans are often reminded by events taking place in other countries that our political and cultural views—not to mention our linguistic abilities—tend to be rather parochial. Despite global telecommunications and international travel, our concerns and opinions are molded primarily by local experience.

What is true about politics, language, and culture is also true about mathematics education. Do we know, for example, how France and Japan are dealing with the issue of discrete mathematics? What is Great Britain doing to sustain student interest in university mathematics? Is the problem of underprepared entering students common in other countries, or unique to the United States? Why does Germany have a surplus of secondary school mathematics teachers? What kind of mathematics is being taught and learned in China, Mexico, Vietnam, or Egypt?

U.S. mathematicians and mathematics teachers will have a rare opportunity to meet and talk with mathematicians from all over the world when the International Congress of Mathematicians (ICM-86) meets next August in Berkeley. Because of the importance of this Congress, the MAA will not hold a competing summer meeting in 1986. Instead, we encourage our members to attend ICM-86 and experience there a global view of mathematics rarely available in the United States.

The Congress will present 16 expository lectures planned to survey recent developments in major areas of mathematics, 130 invited lectures will be given in 19 research sections, including all parts of core and applied mathematics, mathematical aspects of computer science, history of mathematics, and teaching of mathematics. In addition, the International Commission on Mathematics Instruction (ICMI) is planning a series of presentations on instructional issues at the collegiate level from around the world. Finally, participants in the Congress will have an opportunity to present short contributed papers, and to organize informal seminars on their own initiative.

The MAA has taken several steps to insure that our members and our Sections are well represented at the Congress. We are working with ICMI to help plan those parts of the program dealing with mathematics instruction. The Board of Governors and the Section Officers will hold their regular summer meetings in Berkeley; other committees may choose to hold informal meetings. We hope that Sections will further encourage their members and officers to attend the Congress, and perhaps schedule reports from their delegates into their 1986-87 meetings.

For more information about the Congress, including where to write for the Second Announcement, see "Plans for ICM-86 Nearing Completion" on page 1 of this issue of *FOCUS*.

Highlights of the Board of Governors' Laramie Meeting

Wilf Elected *Monthly* Editor

Herbert S. Wilf of the University of Pennsylvania was elected by the Board as the next Editor of the *American Mathematical Monthly*. Wilf will assume the editorship in January 1987 when the term of the current Editor, Paul Halmos, University of Santa Clara, ends.

Distinguished Service Award

Arnold Ross of The Ohio State University, Columbus, was unanimously elected by the Board to receive the Award for Distinguished Service to Mathematics in January 1986 at the MAA Annual Meeting in New Orleans.

Bylaw Changes

The Board approved several bylaw changes that will be presented to the membership for final approval at the Business Meeting in New Orleans. The proposed changes, including a new procedure for electing the MAA President, will be published in the November issue of *FOCUS*.

Long Range Planning

The Long Range Planning Committee (which consists of President Lynn Steen, and the two Vice-Presidents, Gerald Alexanderson and Ronald Davis) made a progress report to

(continued on page 6)

MAA
BOOK STORE
feature

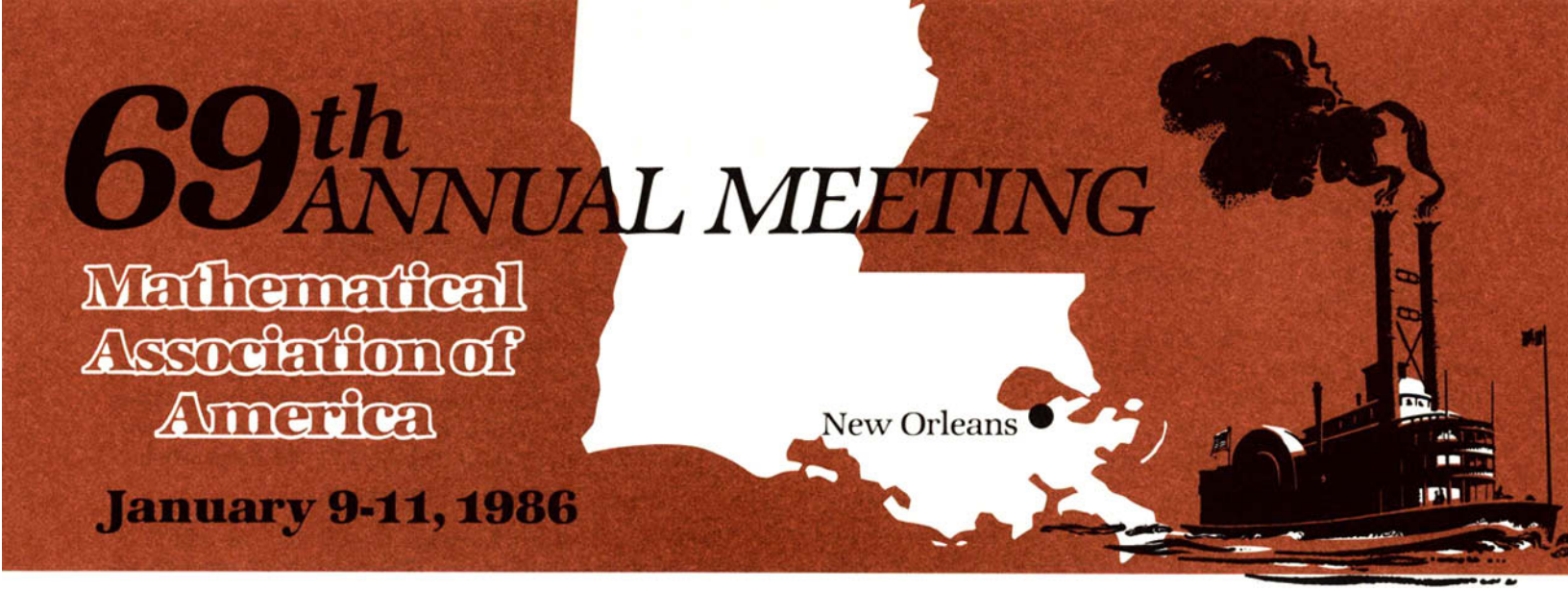
MAA Studies in Mathematics #24,
Studies in Numerical Analysis
Gene H. Golub, Editor

x + 415pp. Hardbound. List: $36.00 MAA Member $27.00
Prices valid until June 30, 1985.

This volume is a collection of papers describing the wide range of research activity in numerical analysis. The articles describe solutions to a variety of problems using many different kinds of computational tools. Some of the computations require nothing more than a hand-held calculator; others require the most modern computer.

Numerical analysis has a long tradition within mathematics and science, beginning with the work of early astronomers who needed numerical procedures to help them solve complex problems. The subject has grown and developed many branches, but it has not become compartmentalized. Solving problems using numerical techniques often requires an understanding of several of the branches. This fact is reflected in the papers in this collection.

Over the years, the range of computational devices has expanded tremendously and we can see that exciting developments are on the way. Hand-held calculators have become a basic tool for every modern engineer. At the same time, computers can do more now than we could ever have imagined. The papers in this volume present the different techniques needed for and made possible by several of these computational devices.



The January 1986 Joint Mathematics Meetings, including the 69th Annual Meeting of the Mathematical Association of America, the 92nd Annual Meeting of the American Mathematical Society, and the 1986 annual meetings of the Association for Women in Mathematics and the National Association for Mathematicians, will be held January 7–11 (Tuesday–Saturday), 1986, in New Orleans. MAA sessions will take place in the Hyatt Regency New Orleans, Poydras at Loyola Avenue, and the Louisiana Superdome, Girod Street.

69th Annual Meeting of the MAA
January 7–11, 1986

Retiring Presidential Address

Ivan Niven, University of Oregon, will deliver the MAA Retiring Presidential Address at 3:30 p.m. on Friday, January 10. The title of his address is *Surprising results in elementary mathematics II.*

Invited Addresses

There will be eight invited fifty-minute addresses. The names of the speakers, their affiliations, some of the titles of their talks, the times and days follow:

R. H. Bing, University of Texas at Austin, *Using examples in topology*, 9:00 a.m. Saturday.

Ronald L. Graham, AT&T Bell Labs, title to be announced, 1:10 p.m. Friday.

Peter J. Hilton, SUNY at Binghamton, *Elementary algorithms in number theory*, 8:00 a.m. Friday.

Joseph B. Keller, Stanford University, title to be announced, 9:00 a.m. Friday.

Victor L. Klee, University of Washington, *Linear programming: The d-step conjecture and its relatives*, 2:15 p.m. Friday.

Cathleen S. Morawetz, Courant Institute of Mathematical Sciences, New York University, title to be announced, 1:00 p.m. Saturday.

Henry O. Pollak, AT&T Bell Labs, *School buses, baseball, and public cryptography*, 10:00 a.m. Saturday.

Gail S. Young, University of Wyoming, *The problems of mathematics to 2000; an attempt at prediction*, 11:00 p.m. Saturday.

Minicourses

Twelve Minicourses are being offered by the MAA. The detailed descriptions and enrollment limitations for the Minicourses may be found on pages 7-8 of the news section of this issue of *Focus*.

Minicourse #1: *Introduction to actuarial mathematics* is being organized by Ellen M. Torrance, M & R Services, Inc.

Minicourse #2: *muMATH workshop*, is being organized by Wade Ellis, Jr., West Valley College.

Minicourse #3: *Discrete mathematics using difference equations* is being organized by James T. Sandefur, Jr., Georgetown University.

Minicourse #4: *Data analysis and regression* is being organized by Susan J. Devlin, Martin A. Koschat, and Paul A. Tukey, Bell Communications Research.

Minicourse #5: *Microcomputer software for teaching linear algebra and calculus* is being organized by David A. Smith, Duke University and Benedict College and David P. Kraines, Duke University.

Minicourse #6: *Discrete algorithmic mathematics* is being organized by Stephen B. Maurer, Swarthmore College.

Minicourse #7: *Introductory computer science* is being organized by J. Arthur Seebach, St. Olaf College.

Minicourse #8: *Teaching experiential applied mathematics* is being organized by Jeanne L. Agnew, James R. Choike, John M. Jobe and Marvin S. Keener, Oklahoma State University.

Minicourse #9: *Introduction to computer graphics* is being organized by Joan P. Wyzkoski, Fairfield University.

Minicourse #10: *The use of computing in the teaching of linear algebra* is being organized by Eugene A. Herman, Grinnell College.

Minicourse #11: *The teaching of applied mathematics* is being organized by W. Gilbert Strang, Massachusetts Institute of Technology.

Minicourse #12: *PROLOG* is being organized by Frederick Hoffman, Florida Atlantic University.

Participants interested in attending any of the Minicourses should complete the Minicourse Preregistration Form **and send it directly to the MAA Office at the address given on the form so as arrive prior to the November 15 deadline. DO NOT SEND THIS FORM TO PROVIDENCE.**

Please note that prepayment is required. Payment can be made by check payable to MAA (Canadian checks must be marked "in U.S. funds") or Visa or MasterCard credit cards.

The Minicourses are open only to persons who have registered for the Joint Mathematics Meetings and paid the Joint Meetings registration fee. **PREREGISTRATION FORMS FOR THE JOINT MEETINGS SHOULD BE MAILED TO PROVIDENCE.**

If the only reason for registering for the Joint Meetings is to gain admission to a Minicourse, this should be indicated by checking the appropriate box on the Minicourse Preregistration Form. Then, if the Minicourse is fully subscribed, full refund can be made of the Joint Mathematics Meetings preregistration fee(s). Otherwise, the Joint Meetings preregistration will be processed, and then be subject to the 50 percent refund rule.

The registration fee for Minicourses #2, #3, #5, #9, #10, and #12 is $35 each. The registration fee for the other Minicourses is $25 each.

Contributed Papers

Papers were accepted on three topics in collegiate mathematics for presentation in contributed paper sessions. The topics, organizers, their affiliations and days they will meet are:

- Fitting discrete mathematics into the curriculum: Special problems and solutions for small colleges (Sheldon P. Gordon, Suffolk County Community College), Saturday afternoon.
- Technical mathematics: Does the supply meet the demand? (Cheryl Cleaves and Marjie J. Hobbs, State Technical Institute of Memphis), Friday morning.
- Undergraduate topology: Present trends and future prospects (Stephen Willard, University of Alberta), Thursday afternoon.

Call for papers for these contributed papers was announced in the September issue of *Focus*. The deadline for submitting papers for these sessions was **September 30. Late papers will not be accepted.**

Other MAA Sessions

The Louisiana-Mississippi Section of the MAA will hold its Business Meeting at 1:00 p.m. on Friday, January 10, and will have a session for student papers at 10:00 a.m. the same day.

Business Meeting

The Business Meeting of the MAA will take place at 4:40 p.m. on Friday, January 10. At this meeting the Chauvenet Prize, the MAA Book Prize and the Award for Distinguished Service to Mathematics will be presented. Some bylaw changes, mostly involving election procedures, will be submitted for membership approval. This meeting is open to all members of the Association.

Board of Governors

The MAA Board of Governors will meet at 8:00 a.m. on Wednesday, January 8. This meeting is open to all members of the Association.

Section Officers

There will be a Section Officers' meeting at 7:00 p.m. on Wednesday, January 8.

Films

There may be films shown at 7:00 p.m. on Friday, January 10. Further information will be available later.

92nd Annual Meeting of the AMS January 5–11, 1986

The **American Mathematical Society** (AMS) program will feature a series of four Colloquium Lectures presented by Shing-Tung Yau. The fifty-ninth Josiah Willard Gibbs Lecture will be given by L. E. Scriven. There will be six one-hour invited addresses given by Joseph N. Bernstein, Harvard University; Lennart A. E. Carleson, Royal Institute of Technology, Stockholm; Alexander S. Kechris, California Institute of Technology; Sergiu Klainerman, Courant Institute of Mathematical Sciences, New York University; Haynes R. Miller, University of Washington, Seattle; and Jane Cronin Scanlon, Rutgers University.

The American Mathematical Society will also present a two-day short course entitled *Approximation theory* on Sunday and Monday, January 5 and 6. The program is being coordinated by Carl de Boor, who is a professor at the University of Wisconsin, Madison.

Joint AMS–MAA Sessions

By invitation of the AMS-MAA Joint Program Committee (George E. Andrews, Judith V. Grabiner, W. Gilbert Strang, and William C. Waterhouse), there will be three speakers who will address the joint meeting of the AMS and MAA on the history and development of mathematics. The names of the speakers, their affiliations, and their titles will be announced later.

Activities Of Other Organizations

The **American Association for the Advancement of Science** (AAAS) will sponsor a symposium on *Mathematics and the American Association for the Advancement of Science* on Wednesday, January 8 from 7:00 p.m. to 9:00 p.m.

The mathematics community is beginning a many-pronged effort to improve the public image of the mathematics profession. One such prong should extend toward the science community, whose most conspicuous representative is probably the American Association for the Advancement of Science. The AAAS has published *Science* magazine for decades and now also publishes a more popular journal, *Science 85*. However, not many mathematicians are members of this Association, still fewer attend or speak at the annual meeting, and essentially none publish in *Science*. In recent years, there has been more reporting of mathematics news by the *Science* staff and an article or two involving mathematics have appeared in *Science 85*.

To explore the future of these and other avenues for publicizing mathematics to other scientists and for the involvement of mathematicians in broader scientific matters, the mathematics section of the AAAS has organized this session at the Joint Meetings in New Orleans to be addressed by Allen Hammond, former Science News editor of *Science* and present editor of *Science 85*, and by Daniel E. Koshland, Jr., former editor of the *Proceedings* of the National Academy of Science and present editor of *Science*. The session will be chaired by Daniel Zelinsky, chairman of Section A of the AAAS.

This symposium offers a chance to discuss ideas on the image or the impact of mathematics in the sciences, or, more especially, on the reporting of mathematics in *Science* or *Science 85*. This is a unique opportunity to hear about these problems from science editors' points of view.

The sixth annual Emmy Noether Lecture will be presented to the **Association for Women in Mathematics** (AWM) at 11:10 a.m. on Wednesday, January 8, by Yvonne Choquet-Brŭhat.

The AWM Business Meeting will be held at 12:10 p.m. on Wednesday, January 8.

The AWM will sponsor jointly with AMS and MAA a session titled *In honor Julia Bowman Robinson, 1919–1985*, at 9:00 a.m. on Thursday, January 9.

A reception is being planned by AWM at 6:15 p.m. on Wednesday, January 8.

The **Consortium for Mathematics and Its Applications** (COMAP) will sponsor a session titled *For all practical purposes: Introduction to contemporary mathematics* at 7:00 p.m. on Thursday, January 9. The session will be devoted to a preview of the new 26 half-hour telecourse, *For all practical purposes*. Excerpts from several of the programs will be shown and the speakers will review the content and goals of the project. Speakers include Solomon Garfunkel, COMAP; David Moore, Purdue University; Joseph Malkevitch, York College, CUNY; and William F. Lucas, Claremont Graduate School.

The **Interagency Commission for Extramural Mathematics Programs** (ICEMAP) will present a session at 4:25 on Tuesday, January 7, titled *News and funding prospects from the federal agencies*. It will include reports from the National Science Foundation, Office of Naval Research, Army Research Office, and the Air Force Office of Scientific Research.

The **International Study Group on the Relations Between History and Pedagogy of Mathematics** (ISGRHPM) will sponsor a session on Friday, January 10 from 3:15 p.m. to 4:15 p.m.

The **Joint Policy Board of Mathematics** (JPBM) Committee for Mathematics Department Heads is organizing a National Meeting of Department Heads at 7:00 p.m. on Thursday, January 9. There will be two one-hour sessions. The first is a panel discussion titled *How to attract undergraduate mathematics majors*. The second session titled *Birds of a feather* will feature three parallel sessions on *Faculty burnout and dropout*; *Recruiting tenure track faculty*; and *Scholarship: How broad the definition*.

Attendance at these sessions is not restricted to department chairmen and all interested mathematicians are encouraged to attend.

The **National Association of Mathematicians** (NAM) will receive the William W. S. Claytor Lecture at 10:00 a.m. on Saturday, January 11, from J. Ernest Wilkins, Jr. who will speak on probability theory. The title of his lecture is *Some optimal gambling strategies*.

NAM will sponsor a Panel Discussion titled *Standardized tests: Indicators or nonindicators for successful performance in mathematics* at 11:15 a.m. on Friday, January 10. The panel will be moderated by Silvia Bozeman.

The NAM Business Meeting will take place at 6:30 p.m. on Friday, January 10. Rogers J. Newman will be the presider.

The **National Science Foundation** (NSF) will be represented at a booth in the exhibit area. NSF staff members will be available to provide counsel and information on NSF programs of interest to mathematicians. The booth will be open the same days and hours as the Exhibits.

The **Rocky Mountain Mathematics Consortium** (RMMC) Board of Directors will meet on Thursday, January 9 from 2:15 p.m. to 4:15 p.m.

The **TEX Users Group** (TUG) will present a brief discussion of the TEX typesetting process given by S. Bart Childs, Department of Computer Science, Texas A & M University, at 7:30 p.m. on Thursday, January 9. Participants who are interested in TEX should read the announcement about a one-day TEX seminar in the Special Meetings section of this issue.

Other Events Of Interest

Book Sales

Books published by the AMS and MAA will be sold for cash prices somewhat below the usual prices when these same books are sold by mail. **These discounts will be available only to registered participants wearing the official meeting badge.** Visa and MasterCard credit cards will be accepted for book sale purchases at the meeting. The book sales will be open the same days and hours as the Exhibits and are located in the French Market Exhibit Hall. The MAA Book Sale will also be open on Saturday, January 11, in the registration area during registration hours.

MAA PROGRAM

Wednesday, January 8

8:00 a.m.–12:30 p.m. **Board of Governors' Meeting**

7:00 p.m.–10:00 p.m. **Section Officers' Meeting**

7:00 p.m.– 9:00 p.m. **Minicourse #3 (Part A):** *Discrete mathematics using difference equations,* James T. Sandefur, Jr., Georgetown University

7:00 p.m.– 9:00 p.m. **Minicourse #4 (Part A):** *Data analysis and regression,* Susan J. Devlin, Martin A. Koschat, and Paul A. Tukey, Bell Communications Research

Thursday, January 9

11:10 a.m.–noon **AMS–MAA Invited Address:** Speaker and title to be announced

afternoon– **Contributed Paper Session:** *Undergraduate topology: Present trends and future prospects,* Stephen Willard, University of Alberta

1:00 p.m.– 3:00 p.m. **Minicourse #2 (Part A):** *muMATH workshop,* Wade Ellis, Jr., West Valley College

1:00 p.m.– 3:00 p.m. **Minicourse #6 (Part A):** *Discrete algorithmic mathematics,* Stephen B. Maurer, Swarthmore College

1:00 p.m.– 3:00 p.m. **Minicourse #7 (Part A):** *Introductory computer science,* J. Arthur Seebach, St. Olaf College

2:15 p.m.– 3:05 p.m. **AMS–MAA Invited Address:** Speaker and title to be announced

3:30 p.m.– 5:30 p.m. **Minicourse #3 (Part B):** *Discrete mathematics using difference equations,* James T. Sandefur, Jr., Georgetown University

3:30 p.m.– 5:30 p.m. **Minicourse #4 (Part B):** *Data analysis and regression,* Susan J. Devlin, Martin A. Koschat, and Paul A. Tukey, Bell Communications Research

7:00 p.m.– 9:00 p.m. **Minicourse #11 (Part A):** *The teaching of applied mathematics,* W. Gilbert Strang, Massachusetts Institute of Technology

7:00 p.m.– 9:00 p.m. **Minicourse #12 (Part A):** *PROLOG,* Frederick Hoffman, Florida Atlantic University

Friday, January 10

morning– **Contributed Paper Session:** *Technical mathematics: Does the supply meet the demand?,* Cheryl Cleaves and Marjie J. Hobbs, State Technical Institute of Memphis

8:00 a.m.– 8:50 a.m. **Invited Address:** *Elementary algorithms in number theory,* Peter J. Hilton, SUNY at Binghamton

8:00 a.m.–10:00 a.m. **Minicourse #2 (Part B):** *muMATH workshop,* Wade Ellis, Jr., West Valley College

8:00 a.m.–10:00 a.m. **Minicourse #6 (Part B):** *Discrete algorithmic mathematics,* Stephen B. Maurer, Swarthmore College

8:00 a.m.–10:00 a.m. **Minicourse #7 (Part B):** *Introductory computer science,* J. Arthur Seebach, St. Olaf College

9:00 a.m.– 9:50 a.m. **Invited Address:** *Title to be announced,* Joseph B. Keller, Stanford University

10:00 a.m.–noon **MAA-Louisiana-Mississippi Student Paper Session**

10:30 a.m.–12:30 p.m. **Minicourse #11 (Part B):** *The teaching of applied mathematics,* W. Gilbert Strang, Massachusetts Institute of Technology

10:30 a.m.–12:30 p.m. **Minicourse #1 (Part A):** *Introduction to actuarial mathematics,* Ellen M. Torrance, M & R Services, Inc.

10:30 a.m.–12:30 p.m. **Minicourse #9 (Part A):** *Introduction to computer graphics,* Joan P. Wyzkoski, Fairfield University

11:10 a.m.–noon **AMS–MAA Invited Address:** Speaker and title to be announced

1:00 p.m.– 2:00 p.m.	**MAA-Louisiana-Mississippi Business Meeting**
1:00 p.m.– 3:00 p.m.	**Minicourse #12 (Part B):** *PROLOG,* Frederick Hoffman, Florida Atlantic University
1:10 p.m.– 2:00 p.m.	**Invited Address:** *Title to be announced,* Ronald L. Graham, AT & T Bell Labs
2:15 p.m.– 3:05 p.m.	**Invited Address:** *Linear programming: The d-step conjecture and its relatives,* Victor L. Klee, University of Washington
3:30 p.m.– 4:30 p.m.	**Retiring Presidential Address:** *Surprising results in elementary mathematics II,* Ivan Niven, University of Oregon
4:40 p.m.– 6:00 p.m.	**Business Meeting:** Presentation of the Chauvenet Prize, the MAA Book Prize, and the Award for Distinguished Service to Mathematics
7:00 p.m.– 9:00 p.m.	**Minicourse #4 (Part C):** *Data analysis and regression,* Susan J. Devlin, Martin A. Koschat, and Paul A. Tukey, Bell Communications Research
7:00 p.m.– 9:00 p.m.	**Minicourse #8 (Part A):** *Teaching experiental applied mathematics (TEAM),* Jeanne L. Agnew, James R. Choike, John M. Jobe, and Marvin S. Keener, Oklahoma State University
7:00 p.m.– 9:00 p.m.	**Minicourse #10 (Part A):** *The use of computing in the teaching of linear algebra,* Eugene A. Herman, Grinnell College
7:00 p.m.–10:00 p.m.	**Films**

Saturday, January 11

8:00 a.m.–10:00 a.m.	**Minicourse #9 (Part B):** *Introduction to computer graphics,* Joan P. Wyzkoski, Fairfield University
9:00 a.m.– 9:50 a.m.	**Invited Address:** *Using examples in topology,* R. H. Bing, University of Texas at Austin
10:00 a.m.–10:50 a.m.	**Invited Address:** *School buses, baseball, and public cryptography,* Henry O. Pollak, AT & T Bell Labs
10:30 a.m.–12:30 p.m.	**Minicourse #5 (Part A):** *Microcomputer software for teaching linear algebra and calculus,* David A. Smith, Duke University and Benedict College, and David P. Kraines, Duke University
11:00 a.m.–11:50 a.m.	**Invited Address:** *The problems of mathematics to 2000; an attempt at prediction,* Gail S. Young, University of Wyoming
afternoon–	**Contributed Paper Session:** *Fitting discrete mathematics into the curriculum: special problems and solutions for small colleges,* Sheldon P. Gordon, Suffolk County Community College
1:00 p.m.– 1:50 p.m.	**Invited Address:** *Title to be announced,* Cathleen S. Morawetz, Courant Institute of Mathematical Sciences, New York University
1:00 p.m.– 3:00 p.m.	**Minicourse #8 (Part B):** *Teaching experiental applied mathematics (TEAM),* Jeanne L. Agnew, James R. Choike, John M. Jobe, and Marvin S. Keener, Oklahoma State University
1:00 p.m.– 3:00 p.m.	**Minicourse #10 (Part B):** *The use of computing in the teaching of linear algebra,* Eugene A. Herman, Grinnell College
3:30 p.m.– 5:30 p.m.	**Minicourse #1 (Part B):** *Introduction to actuarial mathematics,* Ellen M. Torrance, M & R Services, Inc.
3:30 p.m.– 5:30 p.m.	**Minicourse #5 (Part B):** *Microcomputer software for teaching linear algebra and calculus,* David A. Smith, Duke University and Benedict College, and David P. Kraines, Duke University

AMS-MAA Joint Program Committee: George E. Andrews, Judith V. Grabiner, W. Gilbert Strang, William C. Waterhouse (chairman)

Local Arrangements Committee

Frank T. Birtel (ex-officio), L. W. Jones, William J. LeVeque (ex-officio), John Liukkonen, Michael Mislove (chairman), Charles Rees, Kenneth A. Ross (ex-officio), Stephen Scariano (publicity director), Peggy Soileau

Exhibits

The book and educational media exhibits will be located in the French Market Exhibit Hall and will be open Tuesday, January 7, through Friday, January 10. The exhibits will be open from 1:00 p.m. to 5:00 p.m. on Tuesday; from 9:00 a.m. to 5:00 p.m. on Wednesday and Thursday; and from 9:00 a.m. to noon Friday. All participants are encouraged to visit the exhibits during the meeting. **Participants visiting the exhibits will be asked to display their meeting badge or acknowledgement from the Mathematics Meetings Housing Bureau in order to enter the exhibit area.**

Accommodations

Hotels

The rates listed below are subject to an 11 percent hotel/motel tax. The number in parentheses after the name of the hotel is the number it carries on the map. The estimated walking distance from the hotel to the Louisiana Superdome is given in parentheses following the telephone number.

Participants should be aware that when major conventions occur in any large city, additional safety problems are created, especially at night. Those who are attending the meetings alone, or who are concerned about walking to and from the meetings after dark, are encouraged to choose a hotel in close proximity to the Louisiana Superdome. Participants are also urged to read the "Words to the Wise" in the local information insert in the program they receive at the meetings.

Reservations at these hotels cannot be made by calling the hotel directly until after **December 31**. Also, after that date, the rates below may not apply.

In all cases "single" refers to one person in one bed; "double" refers to two persons in one bed; "twin" refers to two persons in two single beds; and "twin double" refers to two persons in two double beds. A rollaway cot for an extra person can be added to double or twin rooms only; however, not all hotels are able to do so.

Participants should be aware that it is general hotel practice in most cities to hold a nonguaranteed reservation until 6:00 p.m. only. When one guarantees a reservation by paying a one-night's deposit in advance, however, the hotel usually will honor this reservation up until checkout time the following day. If the individual holding the reservation has not checked in by then, the room is then released for sale, and the hotel retains the deposit. If you hold a guaranteed reservation at a hotel, but are informed upon arrival that there is no room for you, there are certain things you can request the hotel do. First, they should provide for a room at another hotel in town for that evening, at no charge (you have already paid for the first night when you made your deposit). They should pay for taxi fares to the other hotel that evening, and back to the meetings the following morning. They should also pay for one telephone toll call so that you can let people know you are not at the hotel you expected. They should make every effort to find a room for you in their hotel the following day, and, if successful, pay your taxi fares to and from the second hotel so that you can pick up your baggage and bring it to the first hotel. Not all hotels in all cities follow this practice, so your request for these services may bring mixed results, or none at all.

Please make all changes to or cancellations of hotel reservations with the Mathematics Meetings Housing Bureau in Providence **before January 1, 1986.** The telephone number in Providence is 401-272-9500 (extension 239). After that date, changes should be made directly with the hotel. **Cancellations must be made 48 hours prior to date of arrival. A deposit of $50 is required for each room reservation and may be paid by check,** Visa, **or** MasterCard **credit cards.** (Canadian checks should be marked "In U.S. funds".

Hyatt Regency New Orleans (2)
Headquarters Hotel
Poydras at Loyola Avenue
New Orleans, Louisiana 70140-1012
Telephone: 504-561-1234 (1 block)

Singles	$66
Doubles	$80 (1 or 2 beds)
Triples	$86 (2 or 3* beds)
Quads	$94 (2 or 3* beds)
Suites	$225–$500

Children 16 years of age and under are free in same room with parents.

(* Limited number of rollaways available on a first-come, first-served basis.)

Days Inn (4)
1630 Canal Street
New Orleans, Louisiana 70112
Telephone: 504-586-0110 (6 blocks)

Singles	$44
Twin Doubles	$44 (2 beds)
Triples	$44 (2 beds)
	$48 (2 beds with rollaway*)
Quads	$44 (2 beds)
	$48 (2 beds with rollaway*)

Single Suites–$52 (1 double bed with murphy bed) plus $4 each additional occupant

Double Suites–$56 (2 double beds with murphy bed) plus $4 each additional occupant

(Maximum of four occupants in each suite)

Children 12 years of age and under are free in same room with parents.

(* Extremely limited number of rollaways available on a first-come, first-served basis.)

A shuttle bus accommodating 44 passengers will make two trips to the Hyatt and Superdome on a first-come, first-served basis each morning and late afternoon or early evening. A schedule will be posted at the check-in desk at the Days Inn. In addition, there is also a public shuttle service (CBD) which makes regularly scheduled stops at the Days Inn, the Hyatt, and the Superdome, for 30 cents per trip.

Ramada Hotel New Orleans (3)
1732 Canal Street
New Orleans, Louisiana 70112
Telephone: 504-525-5525 (7 blocks)

Singles	$40
Doubles	$40 (1 or 2 beds)
Triples	$40 (2 beds)
Quads	$40 (2 beds)
Suites	$65 (1 king bed with studio bed, maximum 4 persons)

Children 18 years of age and under are free in same room with parents.

Shuttle service to the Hyatt Regency and the Superdome will be provided by the Ramada twice each morning and late afternoon or early evening. A schedule will be posted at the check-in desk in the hotel lobby. Public shuttle service (CBD) is also available which stops at the two places mentioned above for 30 cents per trip.

Registration Desk

Registration at the Meetings

Meeting preregistration and registration fees only partially cover expenses of holding meetings. All mathematicians who wish to attend sessions are expected to register, and should be prepared to show their meeting badge, if so requested. **Badges are required to enter the exhibit area, to obtain discounts at the** AMS **and** MAA **Book Sales, to cash a check with the meeting cashier, and to attend sessions scheduled in the Regency Ballroom, Hyatt Regency New Orleans, and in Rooms 8, 9, and 10 in the Louisiana Superdome on Saturday only. (If a preregistrant should arrive too late in the day to pick up his/her badge, he/she may show the acknowledgment received from the Mathematics Meetings Housing Bureau as proof of registration.)** The fees for Joint Meetings registration at the meeting listed below are 30 percent more than the preregistration fees.

Participants wishing to attend sessions for one day only may take advantage of the new one-day fees listed below. These special fees are effective beginning Tuesday, January 7, through Saturday, January 11, and are available at the meeting only, to members and nonmembers. These fees are not applicable to student, unemployed, or emeritus participants.

Joint Mathematics Meetings	
Member of AMS or MAA	$ 74
Emeritus Member of AMS, MAA	$ 20
Nonmember	$113
Student/Unemployed	$ 20
One Day Fee	
Member of AMS or MAA	$ 38
Nonmember	$ 59
Employment Register	
Employer	$100
Applicant	$ 20
AMS Short Course	
Student/Unemployed	$ 10
All Other Participants	$ 30
MAA Minicourses (if openings available)	
Minicourses #2, 3, 5, 9, 10, 12	$ 35 each
Minicourses #1, 4, 6, 7, 8, 11	$ 25 each

U.S. Treasury regulation §1.162-5 allows an income tax deduction for education expenses (registration fees, cost of travel, meals, and lodging) incurred to (i) maintain or improve skills in one's employment or other trade or business or (ii) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status, or rate of compensation. This is true even for education that leads to a degree.

Registration fees may be paid at the meetings in cash, by personal or travelers' check, or by Visa or MasterCard credit card. Canadian checks must be marked for payment in U.S. funds.

There is no extra charge for members of the families of registered participants, except that all professional mathematicians who wish to attend sessions must register independently.

All **full-time** students currently working toward a degree or diploma qualify for the student registration fees, regardless of income.

The unemployed status refers to any person currently unemployed, actively seeking employment, and who is not a student. It is not intended to include any person who has voluntarily resigned or retired from his or her latest position.

Persons who qualify for emeritus membership in either the Society or the Association may register at the emeritus member rate. The emeritus status refers to any person who has been a member of the AMS or MAA for twenty years or more, and is retired on account of age from his or her latest position.

Nonmembers who preregister or register at the meeting and pay the nonmember fee will receive mailings from AMS and MAA, after the meeting is over, containing information about a special membership offer.

Registration Dates, Times, and Locations

AMS Short Course

Outside Poydras A, Hyatt Regency New Orleans

Sunday, January 5	9:00 a.m. to 2:30 p.m.

Joint Mathematics Meetings
[and MAA Minicourses (until filled)]

Regency Ballroom Foyer,

Hyatt Regency New Orleans

Monday, January 6	4:00 p.m. to 8:00 p.m.
Tuesday, January 7	8:00 a.m. to 5:00 p.m.
Wednesday, January 8 through Friday, January 10	8:00 a.m. to 4:00 p.m.
Saturday, January 11	8:00 a.m. to noon

Please note that the Joint Mathematics Meetings registration desk **will not be open after noon on Saturday, January 11.**

Registration Desk Services

AMS/MAA Information

Information on the publications and activities of both organizations may be obtained at this section of the registration desk.

Assistance, Comments and Complaints

A log for registering participants' comments or complaints about the meeting is kept at the Transparencies section of the registration desk. All participants are encouraged to use this method of helping to improve future meetings. Comments on all phases of the meeting are welcome. If a written reply is desired, participants should furnish their name and address.

Participants with problems of an immediate nature requiring action at the meeting should see the Director of Meetings, who will try to assist them.

Audio-Visual Assistance

A member of the AMS/MAA staff will be available to advise or consult with speakers on their audio-visual requirements.

Rooms where special sessions and contributed paper sessions will be held are equipped with an overhead projector and screen. **Blackboards will not be available.**

Baggage and Coat Check

Inquire at the meetings registration desk.

Check Cashing

The meeting cashier will cash personal or travelers' checks up to $50, upon presentation of the official meeting registration badge, provided there is enough cash on hand. Canadian checks must be marked for payment in U.S. funds. It is advisable that participants bring travelers' checks with them. When funds are low the meetings cashier will not be able to cash checks and travelers' checks can be easily cashed at local banks or hotels.

Local Information

This section of the desk will be staffed by members of the Local Arrangements Committee and other volunteers from the New Orleans mathematical community.

Lost and Found

See the meeting cashier.

Mail

All mail and telegrams for persons attending the meetings should be addressed as follows: Attention: Sales Department, Name of Participant, c/o Joint Mathematics Meetings, Hyatt Regency New Orleans, Poydras at Loyola Avenue, New Orleans, Louisiana 70140. Mail and telegrams so addressed may be picked up at the mailbox in the registration area during the hours the registration desk is open. U.S. mail not picked up will be forwarded after the meeting to the mailing address given on the participant's registration record.

Personal Messages

Participants wishing to exchange messages during the meeting should use the mailbox mentioned above. Message pads and pencils are provided. It is regretted that such messages left in the box cannot be forwarded to participants after the meeting is over.

Telephone Messages

A telephone message center is located in the registration area to receive incoming calls for participants. The center is open from January 6 through 11 only, during the hours that the Joint Mathematics Meetings registration desk is open. Messages will be taken and the name of any individual for whom a message has been received will be posted until the message has been picked up at the message center. The telephone number of the message center will be announced later.

Information Table

The information table at Joint Meetings of the AMS and MAA is set up in the registration area for the dissemination of information of a nonmathematical nature of possible interest to the members. The administration of the information table is in the hands of the AMS-MAA Joint Meetings Committee, as are all arrangements for such joint meetings. The following rules and procedures apply.

1. Announcements submitted by participants should ordinarily be limited to a single sheet no more than $8\frac{1}{2}" \times 14"$.
2. A copy of any announcement proposed for the table is to be sent to: H. Hope Daly, American Mathematical Society, Post Office Box 6248, Providence, Rhode Island 02940 to arrive at least one week before the first day of the scientific sessions.
3. The judgement on the suitability of an announcement for display rests with the Joint Meetings Committee. It will make its judgements on a case by case basis to establish precedents.
4. Announcements of events competing in time or place with the scheduled scientific program will not be accepted.
5. Copies of an accepted announcement for the table are to be provided by the proponent. Announcements are not to be distributed in any other way at the meeting (for example, not by posting or personal distribution of handbills).
6. It may be necessary to limit the number of events or the quantity of announcements distributed at a meeting.
7. At the close of registration, the table will be swept clean. A proponent who wishes the return of extra copies should remove them.

Transparencies

Speakers wishing to prepare transparencies in advance of their talk will find the necessary materials and copying machines at this section of the registration desk. A member of the staff will assist and advise speakers on the best procedures and methods for preparation of their material. There is a modest charge for these materials.

Visual Index

An alphabetical list of registered participants, including local addresses, arrival and departure dates, is maintained in the registration area.

Miscellaneous Information

Child Care

The Hyatt Hotel has babysitting services available which can be arranged through the Concierge desk located in the first floor lobby. The current rates are

$4.50 per hour for one child, $5 per hour for two children, and $5.50 per hour for three children. There is a four hour minimum and an additional $6.50 transportation fee for the babysitter. There will be a list of local babysitters available at the Local Information section of the registration desk.

Local Information

The Hyatt Regency will be providing free shuttle service to and from the French Quarter each evening, from Tuesday, January 7, through Friday, January 10. Further details will be available later.

Taxis cost $1.10 plus 20 cents per fifth mile or 40 seconds (whichever comes first); there is a charge of 25 cents for each additional person per trip. Most trips in the downtown area including the French Quarter cost $3.50 to $4. The Regional Transport Authority (RTA) operates a shuttle bus throughout the central business district (CBD) at 10 minute intervals, Monday through Friday, 6:30 a.m. to 6:30 p.m. The CBD Shuttle stops at the Hyatt; the cost is 30 cents per person. With all RTA buses exact change is required. The CBD shuttle does not operate on weekends. The RTA operates an extensive bus service throughout the New Orleans area. The fare is 60 cents per person for most services; the cost for express buses which run at rush hour is 75 cents (again, exact change is required). In addition, transfers for connecting service can be purchased for 5 cents when boarding the original bus. Most services run from 5:30 a.m. to midnight; a few of the main routes such as the Canal Street Line, the St. Charles Avenue Streetcar, and the Magazine Street Line run 24 hours a day.

The Gray Line Bus Service and Southern Tours both operate sight-seeing buses in New Orleans. Such attractions as the Audubon Zoo and the New Orleans Museum of Art can be reached by RTA bus service. Canal Street and the adjacent French Quarter have numerous stores and shops. Riverboat cruises are available from the foot of Canal Street; of particular interest is the riverboat trip up river to Audubon Park and the Zoo. Information about these attractions as well as the myriad others available in the New Orleans area will be available at the Local Information section of the registration desk.

Parking

There are two highrise parking garages located adjacent to the Hyatt. The rate is $7 per night, and "in-and-out" privileges are included. Guests of the Hyatt can arrange to have the parking cost added to their hotel bill. Hourly parking is also available at these garages; the rates are $2 for the first hour or portion thereof, $3.50 for one to two hours, $5 for two to three hours, and $7 for more than 3 hours. No "in-and-out" is allowed on the hourly rates.

There are also numerous parking lots around the Hyatt. The rates are $3 to $4 per day.

There is ample parking available at the Superdome. The cost is $3.50 per 24-hour day in the southeast lot, and $1.50 per day in the northwest lot. The security guard leaves at 7:00 p.m.; cars can be taken out after that time, but not returned until the next morning at 6:30 a.m. when the lots open again. Hourly parking is also available. The rates are $1.50 for the first hour and 75 cents per hour for each additional hour, with a maximum of $5.25. There is no "in-and-out" parking available.

Parking on the premises at the Days Inn is free.

There is a $5 daily parking fee with valet parking at the Ramada.

Social Event

There will be a no-host cocktail party in the Louisiana Superdome at 8:30 p.m. on Thursday, January 9.

Travel

In January, New Orleans is on Central Standard Time.

All major domestic airlines provide service to New Orleans International Airport (MSY), which is located some 15 miles from the city center. Limousine service is available from the airport to most downtown hotels. The cost is $7 per person each way. There is also commercial Gray Line bus service between the airport and downtown; the cost is $7 per person each way. The Gray Line counter at the airport is located next to the rental car counters. The limousines and the Gray Line buses run from the airport to the downtown area on a more or less continuous basis. No reservations are required for the trip from the airport to downtown, but reservations for either the limousine services or the Gray Line bus from downtown to the airport must be made at least 24 hours in advance. Taxis are also available; the charge is $18 for three people or less, and $6 for each additional person. The trip between the airport and downtown takes approximately 20–30 minutes.

Commerical bus service from the airport to downtown is also available; the cost is 90 cents and a bus leaves every 12 to 18 minutes. This service stops only at the airport and at the corner of Tulane Avenue and Elk Place downtown, and takes approximately 45 to 60 minutes.

Most major car rental agencies maintain desks at the airport.

New Orleans can be reached by car via I-10 from the East or West; the Hyatt and the Superdome can be reached by taking any of the exits marked "Superdome" and then following the signs to the Superdome. There is a major Amtrak station in New Orleans located a few blocks from the Hyatt. Amtrak has direct service to New Orleans from Los Angeles, Chicago, and Washington, D.C.

Weather

Winters in New Orleans can vary from rather warm to rather cold. While the averge high is 62 degrees and the average low is 45 degrees, the record high is 82 degrees and the record low is 13 degrees. The average rainfall is 4.9 inches, so January tends to be a rainy month. Since the only access to the Superdome from the Hyatt is via an open walkway, it is advisable to bring warm clothing and rain gear. The pattern of weather is much easier to describe: cold fronts from the north push through the city and the weather becomes cold, dry and windy, with lows in the 20's to 30's and highs in the 40's to 50's. After a few days, the front weakens and returns as a warm front from the Gulf. The weather then becomes warm, humid and rainy. This pattern is repeated throughout the winter months.

Preregistration

Preregistration for these meetings **must be completed by November 15, 1985.** Those wishing to preregister must complete the form which appears at the back of this issue and submit it together with the appropriate preregistration fee(s) to the Mathematics Meetings Housing Bureau in Providence by **November 15**. Please note that a space has been reserved on the Preregistration/Housing Form if one wishes to have his/her nickname printed on the meeting badge.

Preregistration fees do not represent an advance deposit for lodgings. One must, however, preregister for the meetings in order to obtain hotel accommodations through the Mathematics Meetings Housing Bureau, as outlined on the facing page.

As stated, all requests for hotel accommodations **must be accompanied by one night's deposit for each room requested.** Preregistration fees and hotel deposits may be made by check payable to the American Mathematical Society (Canadian checks must be marked for payment in U.S. funds), or by providing a VISA or MASTERCARD credit card number on the Preregistration/Housing Form. Please be sure to give the name and number **exactly** as they appear on the credit card, and to include the expiration date.

Those who preregister for the Joint Mathematics Meetings pay fees which are 30 percent lower than those who register at the meetings. The preregistration fees are as follows:

AMS Short Course	
Student/Unemployed	$ 5
All Others	$25
Joint Mathematics Meetings	
Member of AMS, MAA	$57
Emeritus Member of AMS, MAA	$15
Nonmember	$87
Student/Unemployed	$15
Employment Register	
Employer	$75
Applicant	$15
Employer posting fee	$10

U.S. Treasury regulation §1.162-5 allows an income tax deduction for education expenses (registration fees, cost of travel, meals, and lodging) incurred to (i) maintain or improve skills in one's employment or other trade or business or (ii) meet express requirements of an employer or a law imposed as a condition to retention of employment, job status, or rate of compensation. This is true even for education that leads to a degree.

There will be no extra charge for members of the families of registered participants, except that all professional mathematicians who wish to attend sessions must register independently.

All **full-time** students currently working toward a degree or diploma qualify for the student registration fees, regardless of income.

The unemployed status refers to any person currently unemployed, actively seeking employment, and who is not a student. It is not intended to include any person who has voluntarily resigned or retired from his or her latest position.

The emeritus status refers to any person who has been a member of the AMS or MAA for twenty years or more, and is retired on account of age from his or her latest position.

A $5 charge will be imposed for all invoices prepared when Preregistration/Housing Forms are submitted without accompanying payment for the preregistration fee(s) and room deposits, or are accompanied by an amount insufficient to cover the total due. Preregistration/Housing Forms received well before the deadline of **November 15** which are not accompanied by correct payment will be returned to the participant with a request for resubmission and full payment. **This will, of course, delay the processing of any housing request so that it will be unlikely that the participant's first choices will still be available.**

A 50 percent refund of the preregistration fee(s) will be made for all cancellations received in Providence no later than January 2. **No refunds will be granted for cancellations received after that date,** or to persons who do not attend the meetings.

The only exception to this rule is someone who preregisters for the Joint Mathematics Meetings only in order to attend an MAA Minicourse, and is too late to obtain a slot in the Minicourse. In this case, full refunds will be made of the Joint Mathematics Meetings preregistration fee, **provided the preregistrant has checked the box** on the MAA Minicourse Preregistration Form that this was his or her intent. Individuals who preregister for both the Joint Meetings and a Minicourse and who intend to participate in the Joint Meetings, even if the Minicourse is not available, should, of course, **not** check the box on the MAA Minicourse Preregistration Form. In this case the Joint Meetings preregistration will be processed.

Those who wish to preregister for the Employment Register should read carefully the special article titled "Mathematical Sciences Employment Register" which follows this announcement of the New Orleans meetings. The attention of applicants is particularly directed to the section regarding the December issue of *Employment Information in the Mathematical Sciences.*

Please read the facing page titled **Housing** carefully before completing the Preregistration/Housing Form.

Housing

Special Bonus for Early Preregistrants!

Participants who preregister before the *early* preregistration deadline of **October 31** will be eligible for a complimentary room in New Orleans. (Multiple occupancy of these rooms is permissible.) Winners will be randomly selected from the names of all who preregister by October 31 and these lucky individuals will be notified by mail by December 31. **So, preregister early!**

Acknowledgment Form

Participants will receive an acknowledgement of their preregistration, room deposit, and hotel assignment from the Mathematics Meetings Housing Bureau, which will be followed by a confirmation of the room reservation from the hotel to which they have been assigned.

The Preregistration/Housing Form for requesting hotel accommodations will be found at the back of this issue. Use of the services offered by the Mathematics Meetings Housing Bureau requires preregistration for the meetings. Persons desiring confirmed hotel accommodations should complete the form, or a reasonable facsimile, and send it to the Mathematics Meetings Housing Bureau, Post Office Box 6887, Providence, Rhode Island 02940, **so that it will arrive no later than November 15, 1985. Housing requests received after the deadline of November 15 most surely cannot be honored.**

All reservation requests must be received in writing and will be processed through the Housing Bureau in Providence. Telephone requests will not be accepted. **Please do not contact the hotels directly.** Blocks of rooms and special rates have been set aside for the Housing Bureau, and the hotel will either refer you back to the Housing Bureau, or give you a room outside of the block, which may be at a higher rate.

Please read carefully the section on **Hotels** before completing the form. Forms sent to the wrong address and thus incurring delay in delivery to the Housing Bureau until after the deadline cannot be accepted and will, therefore, be returned.

Participants requesting hotel accommodations in New Orleans are required to submit housing deposits when preregistering. Deposits may be paid by check payable to the AMS (Canadian checks must be marked for payment in U.S. funds), or by providing a VISA or MASTERCARD credit card number on the Preregistration/Housing Form. Please be sure to give the name and number **exactly** as they appear on the credit card, and to include the expiration date. **Please read the section on Hotels carefully regarding deposits.**

The number of rooms being held by some of the New Orleans hotels at each rate is limited. Housing assignments are made on a first-come, first-served basis, so participants desiring low-cost accommodations are urged to get their housing requests in as early as possible. Participants should also be aware that the special rates being offered in the section titled **Hotels** may not be available **after December 31.**

Participants are strongly urged to rank each hotel on the housing form in the order of preference, and circle the type of room and the rate desired. Reservations will be made in accordance with preferences indicated on the reservation form insofar as this is possible. If not all hotels are ranked, and all rooms have been filled at the ranked hotels, the assignment will be made at an unranked hotel with the next lowest rate.

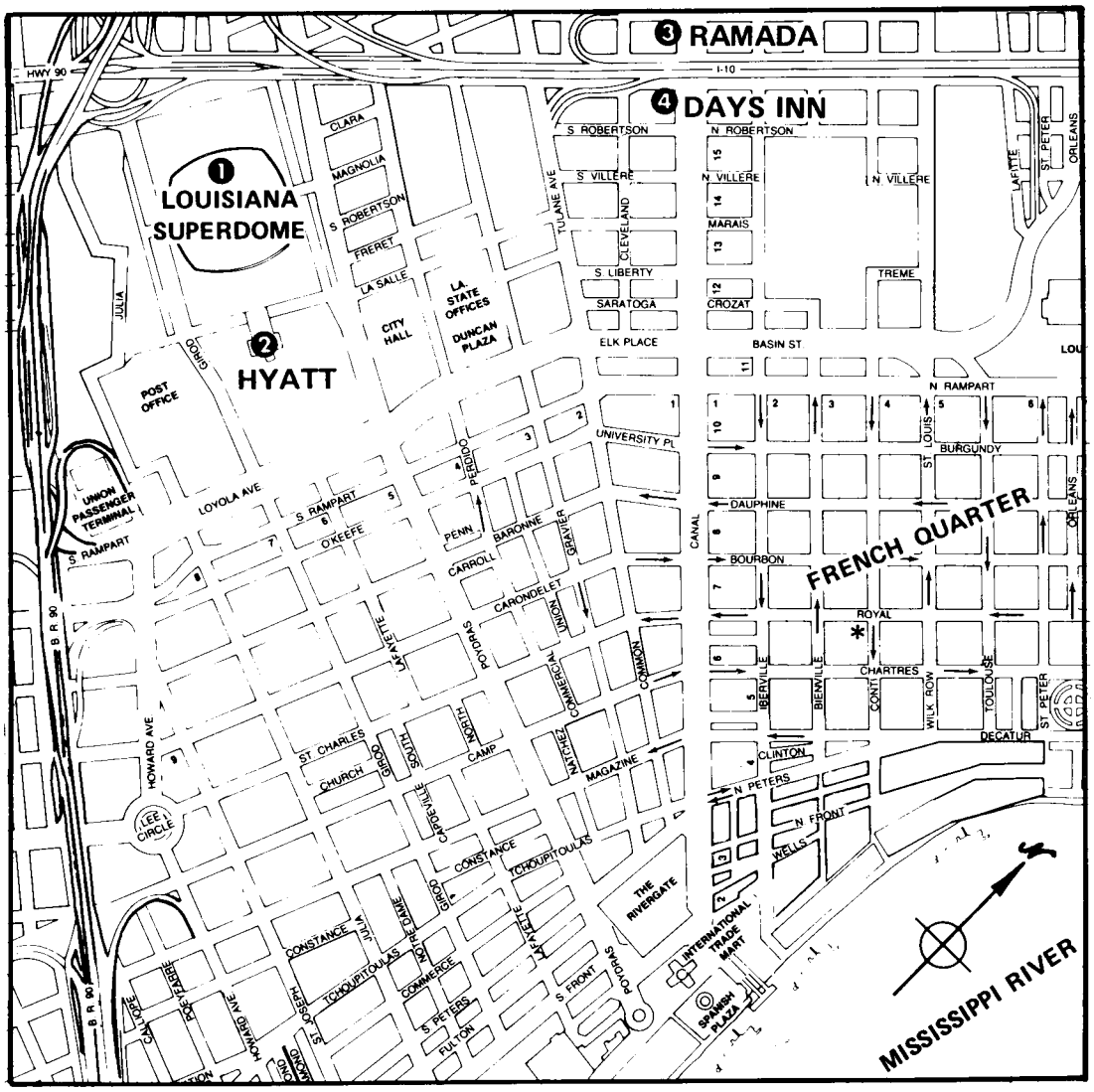
Participants who are able to do so are urged to share a room whenever possible as this procedure can be economically beneficial. The housing form should be fully completed to ensure proper assignment of rooms. Participants planning to share accommodations should provide the name(s) of the person(s) with whom they plan to occupy a room. Each participant should, however, complete a separate Preregistration/Housing Form. **In order to avoid confusion, parties planning to share rooms should send their forms together in the same envelope. The participant requesting the room should submit the deposit.**

Please make all changes to or cancellations of hotel reservations with the Housing Bureau in Providence **before January 1, 1986, by calling 401-272-9500, extension 239.** After that date, changes or cancellations should be made directly with the hotel assigned.

Please read the facing page titled **Preregistration** carefully before completing the Preregistration/Housing Form.

Please be sure to send housing deposits with Preregistration/Housing Form.

NEW ORLEANS – DOWNTOWN, FRENCH QUARTER



1 LOUISIANA SUPERDOME
2 HYATT
3 RAMADA
4 DAYS INN

SCALE OF MILES

0 ¼ ½ ¾ 1 1¼

TWO INCHES EQUALS APPROXIMATELY SIX-TENTHS MILE

PREREGISTRATION/HOUSING FORM, NEW ORLEANS, LOUISIANA

AMS Short Course
January 5-6, 1986

January 7-11, 1986

MAA Minicourses
January 8-11, 1986

MUST BE RECEIVED IN PROVIDENCE NO LATER THAN NOVEMBER 15, 1985

Please complete this form and return it with your payment to
Mathematics Meetings Housing Bureau
P.O. Box 6887, Providence, Rhode Island 02940 - Telephone 401-272-9500, Ext. 239

DEADLINES: Preregistration: November 15, 1985
Changes/Cancellations: Before January 1, 1986, make all changes to or cancellations of hotel reservations with the Mathematics Meetings Housing Bureau in Providence; after that date, changes or cancellations should be made directly with the hotel assigned.
Refunds: 50% of preregistration fee(s) will be refunded in Providence on or before January 2, 1986. After this date, there will be no refunds.

	REGISTRATION FEES Preregistration by mail by 11/15	At Meeting
JOINT MATHEMATICS MEETINGS		
Member of AMS, MAA	$57	$74
Nonmember	$87	$113
* Student, Unemployed, or Emeritus	$15	$20
AMS SHORT COURSE		
Member/Nonmember	$25	$30
* Student or Unemployed	$5	$10
EMPLOYMENT REGISTER - Employer fee	$75	$100
- Applicant fee	$15	$20
- Posting fee for job descriptions for noninterviewing employers	$10	$15

* All full-time students currently working toward a degree or diploma qualify for the student registration fees, regardless of income. The unemployed status refers to any person currently unemployed, actively seeking employment, and who is not a student. It is not intended to include persons who have voluntarily resigned from their latest position. The emeritus status refers to any person who has been a member of the AMS or MAA for twenty years or more and is retired on account of age from his or her latest position.

PREREGISTRATION SECTION: Please check the function(s) for which you are preregistering:
Joint Meetings [ ]; AMS Short Course [ ]; Employer [ ]; Applicant [ ] Posting [ ];

1) _____ Nickname for badge_____
(Please print) Surname First Middle (optional)

2) _____
ADDRESS:

_____

3) Employing institution_____ Emeritus member [ ] Unemployed [ ]

4) I am a student at_____ (5) Accompanied by spouse_____; number of children_____

6) Member of AMS [ ] MAA [ ] NONMEMBER [ ] (Member discount applies only to members of AMS, MAA)
Member of other organizations: AWM [ ] NAM [ ]

7) Joint Meetings fee $_____ (8) AMS Short Course fee $_____ (9) Employer fee $_____

10) Applicant fee $_____ (11) Posting fee $_____ (12) Hotel deposit enclosed $_____

13) TOTAL AMOUNT ENCLOSED FOR 7 through 12 $_____ NOTE: May be paid by check payable to AMS (Canadian checks must be marked "In U.S. Funds") or VISA or MasterCard credit cards.

Credit card type:_____; Card number:_____; Expiration date:_____

Telephone:_____ _____
Signature (name as it appears on credit card)

[ ] PLEASE CHECK HERE IF YOU WILL NOT REQUIRE A ROOM.

Please be sure to complete the section on next page if you will require hotel accommodations.

For office use only:

Codes:	Options:	Dates:	Hotel:	Room Type:
Special remarks:				
			Amt. pd.	CC [ ] Check [ ]

PREREGISTRATION/HOUSING FORM, NEW ORLEANS, LOUISIANA

HOUSING SECTION:

JANUARY 1986

Please rank hotels in order of preference by writing 1, 2, 3, in spaces at left on form, and by circling the requested room type and rate. If the rate requested is no longer available, you will be assigned a room at another hotel at the next available rate. If not all hotels are ranked, and all rooms have been filled at the ranked hotels, the assignment will be made at an unranked hotel with the next available rate. Rates listed below are subject to 11% hotel/motel tax.

DEPOSIT REQUIREMENTS: $50 by check, VISA or MasterCard credit cards. No other credit cards will be accepted. PLEASE SUPPLY THIS INFORMATION ON THE REVERSE together with mailing address for confirmation of room reservation.

Order of choice	Numbers in parentheses indicate location on map.	Single	Double	Twin double	Triple 2 beds	Triple 2 beds w/cot	Quad 2 beds	Quad 2 beds w/cot	Suites	Deposits
	Hyatt Regency (2)	$66	$80	$80	$86	$86	$94	$94	$225 - $500	A, B, C
	Ramada Hotel (3)	$40	N/A	$40	$40	N/A	$40	N/A	$65 (1 bed)	A, B, C
	Days Inn (4)	$44	N/A	$44	$44	$48	$44	$48	$52 (1 bed) $56 (2 beds)	A, B, C

A = $50 check; B = VISA; C = MasterCard (No other cards will be accepted.)

I will arrive on (date)_____at_____ a.m./p.m., and depart on (date)_____at_____a.m./p.m.

List other room occupants:

FULL NAME ARRIVAL DATE DEPARTURE DATE

_____

_____

_____

MAA MINICOURSE PREREGISTRATION FORM, NEW ORLEANS, LOUISIANA

January 7-11, 1986

MUST BE RECEIVED IN WASHINGTON, DC, NO LATER THAN NOVEMBER 15, 1985

Please complete this form and return it with your payment for Minicourse(s) only to

Mathematical Association of America
1529 Eighteenth Street, NW, Washington, DC 20036
Telephone: 202-387-5200

DEADLINE: Preregistration fee(s) for Minicourse(s): November 15, 1985

NOTE: All Minicourse registration fees paid to MAA for professional mathematicians are tax deductible.

IMPORTANT: Please be sure to send Joint Meetings preregistration form and fee to the Mathematics Meetings Housing Bureau, PO Box 6887, Providence, RI 02940.

[ ]] I plan on preregistering for the Joint Meetings only in order to attend the MAA Minicourse(s) indicated below. It is my understanding that, should the course(s) of my choice be filled, full refund of the Joint Meetings preregistration fee will be made.

MINICOURSE PREREGISTRATION

1) _____
(Please print) Surname First Middle

2) _____
Mailing address for confirmation of Minicourse(s)

3) _____

4) Employing institution_____

5) Please enroll me in the following Minicourse(s). Enclosed is my payment of $_____ (Make check payable to MAA. Canadian checks must be marked "In U.S. Funds".) Method of payment:

Check [ ] VISA [ ] MasterCard [ ]

Credit card number_____; expiration date_____

_____
Signature (name as it appears on the credit card)

FEE	NO.	MINICOURSES - Participants are limited to two Minicourses each.
$25	1	Introduction to actuarial mathematics (Ellen Torrance, M&R Services, Inc.)
$35	2	muMATH workshop (Wade Ellis, Jr., West Valley College)
$35	3	Discrete mathematics using difference equations (James T. Sandefur, Jr., Georgetown University)
$25	4	Data analysis and regression (Susan J. Devlin, Martin A. Koschat, and Paul A. Tukey, Bell Communications Research)
$35	5	Microcomputer software for teaching linear algebra and calculus (David A. Smith, Duke University and Benedict College, and David P. Kraines, Duke University)
$25	6	Discrete algorithmic mathematics (Stephen B. Maurer, Swarthmore College)
$25	7	Introductory computer science (J. Arthur Seebach, St. Olaf College)
$25	8	Teaching experiential applied mathematics (TEAM) (Jeanne Agnew, James R. Choike, John Jobe and Marvin Keener, Oklahoma State University)
$35	9	Introduction to computer graphics (Joan Wyzkoski, Fairfield University)
$35	10	The use of computing in the teaching of linear algebra (Eugene A. Herman, Grinnell College)
$25	11	The teaching of applied mathematics (Gilbert Strang, Massachusetts Institute of Technology)
$35	12	PROLOG (Frederick Hoffman, Florida Atlantic University)

First choice [ ] Second choice [ ]

Alternate [ ] Alternate [ ]

Mathematical Sciences Employment Register

January 1986 Meeting in New Orleans

The Mathematical Sciences Employment Register, held annually at the Joint Mathematics Meetings in January, provides opportunities for mathematical scientists seeking professional employment to meet employers who have positions to be filled. Job listings (or descriptions) and résumés prepared by employers and applicants are displayed at the meeting for the participants so that members of each group may determine which members of the other group they would like to have an opportunity to interview. A computer program assigns the appointments, matching requests to the extent possible, using an algorithm which maximizes the number of interviews which can be scheduled subject to constraints determined by the number of time periods available, the numbers of applicants and employers, and the pattern of requests. The report below outlines the operation of the register, indicating some of the procedures involved for the benefit of those not familiar with its operation.

The Mathematical Sciences Employment Register is apparently unique among employment services offered by professional organizations in the sciences, engineering and the humanities. The computer programs used are constructed around a matching program, devised by Donald R. Morrison and based on an algorithm described in his paper "Matching Algorithms" in *Journal of Combinatorial Theory*, volume **6** (1969), pages 20 to 32; see also "Matching Algorithms" (abstract) *Notices*, August 1967, page 630. The number of interviews arranged by the program is significantly greater than the number possible at the employment registers of other organizations, in many cases greater by an order of magnitude.

1986 Employment Register in New Orleans

The Employment Register will take place in the Louisiana Superdome on Wednesday, Thursday, and Friday, January 8, 9, and 10, 1986. A short (optional) orientation session will be conducted by the AMS-MAA-SIAM Committee on Employment Opportunities at 9:00 a.m. on Wednesday, January 8. The purpose of the orientation session is to familiarize participants with the operation of the Register and with the various forms involved. Following orientation, participants in the Employment Register should pick up their Interview Request Forms. Computer-scheduled interviews will be held on Thursday and Friday, January 9 and 10. No interviews will be held on Wednesday.

Fifteen-minute intervals are allowed for interviews, including two or three minutes between successive interviews. The interviews are scheduled in half-day sessions: Thursday morning and afternoon, and Friday morning and afternoon, amounting to four half-day sessions for interviews. There are ten time periods (9:30–11:45 a.m.) in which interviews can be scheduled in the morning and fourteen time periods (1:15–5:00 p.m.) in the afternoon. It is possible that an applicant or employer may be scheduled for the maximum number of interviews in a session. Requests for interviews will be accommodated depending on the availability of participants. The scheduling program does not have a provision allowing participants to specify particular times for interviews beyond the choice of session (day, and morning or afternoon). Such requests cannot be accommodated.

Requests for interviews taking place during the two sessions on Thursday must be submitted on Wednesday between 9:30 a.m. and 4:00 p.m. Requests for interviews to take place during the Friday sessions must be submitted on Thursday before 4:00 p.m. Those who fail to do so cannot be included in the pool of available participants when the matching program which schedules the interviews is run on the computer that night. This applies to all employers and applicants.

On Thursday and Friday mornings at 9 a.m. all schedules for applicants and employers for the day (both morning and afternoon sessions) will be available for distribution in the Louisiana Superdome.

The Saturday afternoon session is the annual "employers' choice" session. For this session interviews will be scheduled on the basis of requests made by employers. Applicants do not submit specific interview requests for this session; but, in order to participate they must indicate their availability for the session by returning the Interview Request Form for Friday, indicating that they will attend the afternoon session that day.

Applicants should be aware of the fact that interviews arranged by the Employment Register represent only an initial contact with employers, and that hiring decisions are not ordinarily made during or immediately following such interviews. **Applicants are advised to bring a number of copies of their vitae or résumés so that they may leave them with prospective employers.**

The Mathematical Sciences Employment Register is sponsored by the American Mathematical Society, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics; it is operated by members of the AMS staff under the general supervision of the joint AMS-MAA-SIAM Committee on Employment Opportunities.

Anyone with questions about the Employment Register should contact Carole Kohanski at the American Mathematical Society at 401-272-9500, extension 286. A telephone number to be used after the Register begins will be announced later. Participants should note that this number will be for those who will be participating in the Employment Register and is not for contacting participants or taking messages. Those who wish to leave messages should call the message center telephone number found in the New Orleans meeting announcement.

Pregistration

Applicants and employers (including all interviewers) who wish to preregister for the Employment Register must also register for the Joint Mathematics Meetings. Forms for preregistration, the applicant résumé form, and the employer form are located in the back of this issue. Preregistration for

Background of Applicants

Statistics from previous Employment Registers have shown employers sought to fill approximately 180 positions, 10 of which were nonacademic jobs. For 98% of the positions, holders of doctoral degrees were preferred, for 65% of the positions only applicants with doctorates were acceptable, for 30% of the positions, holders of masters degrees were considered eligible. Few of the nonacademic employers indicated an interest in holders of bachelors degrees in mathematics.

the Employment Register, in addition to permitting inclusion in the printed lists, has the advantage of reduced fees and the services of the Mathematics Meetings Housing Bureau, and has the further advantage of helping to reduce waiting times at the meeting in New Orleans.

Forms must be received in Providence by **November 15, 1985**. Forms received after the November 15 deadline cannot be included in the printed booklet. For details on registration and preregistration for the New Orleans Joint Mathematics Meetings, please refer to the information on these subjects which may be found elsewhere in this issue.

Employers and applicants who have preregistered for the Employment Register may pick up their MSER material after 9:30 a.m. on Wednesday, January 8, in the Louisiana Superdome. This material includes the Interview Request Forms which are handed out at the meeting only. These are not the forms that are submitted with preregistration.

Preregistered Applicants

In addition to the Joint Meetings preregistration fee, there is an applicant fee of $15 payable prior to the November 15 deadline. These fees must be accompanied by the Preregistration/Housing Form.

Applicants' résumés will be made available to employers in printed form, so that they may be studied carefully at leisure. The December issue of *Employment Information in the Mathematical Sciences* which will be printed a few weeks before the meeting will contain photographic reproductions of the résumés of applicants who have preregistered **by November 15**. Forms not received in time cannot be included in this issue. **See the section on preparation of résumés elsewhere in this announcement.**

Employers' job listings will be posted at the meeting, so that applicants may study them when choosing which employers they wish to interview.

Preregistered Employers

In addition to the Joint Meetings preregistration fee there is a $75 fee for employers, if paid prior to the November 15 deadline. These fees must be accompanied by the Preregistration/Housing Form. This registration fee for employers covers the cost of a copy of the December Issue of *Employment Information in the Mathematical Sciences* (EIMS). This publication contains printed copies of the résumés of applicants who preregistered prior to the deadline; it also contains a copy of the Winter List of Applicants. **It is requested that employers submit both employer and Preregistration/Housing Forms with appropriate fees in the same envelope. It would also be helpful if the names of cointerviewers would be listed on the employer form. If possible, these individuals should also preregister at the same time.**

It is the policy of some institutions to pay for employer fees. These payments do not always accompany the preregistration forms but are sent in after the deadline has passed, or when the meeting is over. It is important that the institution's fiscal department indicate the name of the participating employer so that proper credit can be made in Providence.

Employers are encouraged to provide more than one interviewer, when they are able to do so, in order to increase the number of interviews which may be scheduled. **Please take care to indicate on the form the number and names of interviewers for whom simultaneous interviews may be scheduled. Note that all interviewers are expected to register for the Joint Meetings.** (If all interviewers will be interviewing for the same position, or for the same set of positions, only one form should be submitted and only one employer code number will be assigned; therefore, each interviewer would then receive a separate computer schedule and separate table number.) More than one employer code will be required if some interviewers will not interview for all positions. Thus, if there are two disjoint sets of positions, two forms are required and two employer codes will be assigned.

A coded strip at the bottom of the form summarizes the information on each form. All employers are required to complete the Summary Strip. This is used to prepare a computer-printed list of preregistered employers for distribution to the applicants.

Nonpreregistered Applicants and Employers

Employers and applicants who wish to participate in the Register who have neither preregistered nor paid the Employment Register fee must first go to the Joint Mathematics Meetings registration desk in the Regency Ballroom Foyer of the Hyatt Regency New Orleans in order to complete their registration. **No provision will be made to handle cash transactions at the site of the Employment Register in the Louisiana Superdome.** Registration for the Joint Meetings is required for participation in the Employment Register. It is also required that all participating employer interviewers register for the Joint Mathematics Meetings.

Onsite registration for the Employment Register is $100 for employers and $20 for applicants. This registration fee for employers covers the cost of a copy of the December Issue of *Employment Information in the Mathematical Sciences* (EIMS). This publication contains printed copies of the résumés of applicants who preregistered prior to the deadline and a copy of the Winter List of Applicants.

After registration has been completed, applicants and employers should come to the Louisiana Superdome to fill out the forms necessary to participate in the Employment Register.

Nonparticipating Employers

Employers who do not plan to participate in the Employment Register, but wish to display job descriptions, may obtain special forms from Carole Kohanski, MSER, P. O. Box 6248, Providence, RI 02940. These job descriptions, subject to approval, must be received in the Providence office by **November 15** in order to qualify for the reduced fee of $10. There is a $15 fee for listings received after the November 15 deadline.

Employers who attend the Joint Mathematics Meetings but do not want to interview, can post job descriptions at the Employment Register. Postings will not be allowed in the Joint Meetings registration area. A fee of $15 will be charged payable to the cashier at the Joint Mathematics Meetings registration desk. Participants should be sure to inform the cashier that they would like to post a job description but are not planning to interview and obtain the proper receipt in order to receive the form necessary for posting at the Employment Register desk.

Applicants Not Planning to Attend

Applicants for professional positions in the mathematical sciences, who do not plan to attend the meeting in New Orleans and participate in the Employment Register, may also submit résumés for publication in the December issue if they use the MSER Form for Applicants at the back of this issue and observe the deadline of November 15. **(It is, of course, not necessary to preregister for the meeting or pay the Employment Register registration fee if one is not going to attend the meeting. Résumés will not be posted if the participant is not attending the meeting.)**

Winter Lists of Applicants and Employers

The Winter List of Applicants, which is a summary of the résumés of preregistered applicants, will be available for sale

at the AMS Exhibits and Book Sale at the meeting. The price at the meeting is $3 each. Any copies remaining after the meeting will be available from the Providence office of the Society for $5 each.

The Winter List of Employers consists of summaries of the position listings submitted by the employers who preregistered for the meeting; it will be distributed to the applicants participating in the Register. Others may purchase the Winter List of Employers at the AMS Exhibits and Book Sale at the meeting or from the Providence office after the meeting. The prices are the same as stated in the previous paragraph.

Please note that these lists will not be updated with onsite employers or applicants after the Employment Register has concluded.

December Issue of Employment Information in the Mathematical Sciences

For several years the periodical *Employment Information in the Mathematical Sciences* (EIMS) has published six issues per year listing open positions in academic, governmental and industrial organizations, primarily in North America, along with a few listings from countries in other parts of the world. EIMS is a joint project of the American Mathematical Society (publisher), the Mathematical Association of America, and the Society for Industrial and Applied Mathematics.

The December issue of EIMS contains résumés of persons seeking professional positions in the mathematical sciences. Résumés of applicants taking part in the Employment Register will be included in the December 1985 issue provided they are received before the November 15 deadline and are in satisfactory condition. Other mathematical scientists who wish to be included may have their résumés printed if the same deadline is observed and if the copy supplied meets the same technical requirements described in the following section.

Copies of the December issue of EIMS will be distributed both to subscribers and to the employers who participate in the Employment Register. Job applicants planning to participate in the Employment Register in New Orleans are therefore strongly urged to preregister so that their résumés can appear in the December issue. Please note that the December issue of EIMS contains the Winter List of Applicants, but does not contain the Winter List of Employers.) Additional copies of the December Issue of EIMS will be available for sale at the AMS Book Sale at the meeting. Prices at the meeting are $6 each for the December issue. Any copies remaining after the meeting will be available from the Providence office of the Society for $11.

Preparation of Applicants' Résumés for the December issue of EIMS

The December issue of EIMS will be printed using photographic reproductions of forms completed and submitted by applicants. For this reason, special care must be exercised by those who prepare the forms in order to assure that the results are of good quality, and will be clear and legible after they have been photographed, reduced in size, and printed.

Because an employer's first impressions of an applicant are likely to be based on the appearance of the printed form, applicants are strongly advised to study the suggestions given below before the forms are filled out, so that the original copy will be neither marred nor damaged.

The forms **must be** carefully typed using a new black ribbon. The best results are obtained by using a modern typewriter with a carbon-coated polyethylene film ribbon, but satisfactory results may be obtained with a ribbon made of nylon or other woven fabric if suitable care is exercised. It is important that the keys be clean and make a sharp clear impression, which must be a uniform dark black. Gray, blue, or other colors will not reproduce and should, therefore, not be used. Do not use an eraser, as it will cause smudges which reproduce when photographed. Use a correcting typewriter, or correction tape or fluid, if necessary.

Only an original copy of the form should be submitted, a photocopy or xerographic reproduction will not reproduce as well and may not be accepted for publication. It is therefore important to exercise care in order to assure that the results are satisfactory.

Submission of copy of good quality is entirely the responsibilty of the applicant. The Society (which will print this material) must be the final judge of what copy is capable of being reproduced adequately, and therefore of what is acceptable for inclusion in the printed booklet. The Society will not correct or replace inadequate copy, and cannot prepare original copy. In the event the quality of a résumé, submitted by an applicant participating in the Employment Register, does not meet the necessary conditions for inclusion in the December issue, the résumé will be returned if time allows; otherwise the résumé will be posted at the Employment Register in New Orleans, along with those of the other participants. **Forms received past the deadline will be returned.**

The Summary Strip

Information provided on the summary strip will be used to prepare a printed list of applicants for distribution to employers. Please supply all information requested, and confine your characters to the boxes provided. Use the codes below. Circled letters identify corresponding items on the form and the strip.

(A) Specialties

AL = Algebra	AN = Analysis
BI = Biomathematics	BS = Biostatistics
CB = Combinatorics	CM = Communication
CN = Control	CS = Computer Science
CT = Circuits	DE = Differential Equations
EC = Economics	ED = Mathematical Education
FA = Functional Analysis	FI = Financial Mathematics
FL = Fluid Mechanics	GE = Geometry
HM = History of Math	LO = Logic
MB = Mathematical Biology	ME = Mechanics
MO = Modelling	MP = Mathematical Physics
MS = Management Science	NA = Numerical Analysis
NT = Number Theory	OR = Operations Research
PR = Probability	SA = Systems Analysis
ST = Statistics	TO = Topology

(B) Career Objectives

AR = Academic Research	AT = Academic Teaching
NR = Nonacademic R&D	NC = Nonacad. Consulting
NS = Nonacademic Supervision	

(H) (I) Duties

T = Teaching	U = Undergraduate
G = Graduate	R = Research
C = Consulting	A = Administration
S = Supervision	IND = Industry
GOV = Government	DP = Data Processing

Location

E = East		S = South
C = Central		M = Mountain
W = West	O = Outside U.S.	I = Indifferent

(L) U.S. Citizenship Status

C = U.S. Citizen	P = Permanent Resident
T = Temporarily in U.S.	N = Non-U.S. Citizen

MATHEMATICAL SCIENCES EMPLOYMENT REGISTER

APPLICANT FORM January 8-10, 1986 NEW ORLEANS, LOUISIANA

APPLICANT: Name_____

Mailing address (include zip code) _____

Ⓐ Specialties_____

Ⓑ Career objectives and accomplishments

ACADEMIC: ☐ Research, ☐ Teaching

NON-ACADEMIC: ☐ Research and Development, ☐ Consulting, ☐ Supervision

Near-term career goals_____

Significant achievements or projects, including role_____

Honors and offices_____

Other (e.g., paper to be presented at THIS meeting)_____

Selected titles of papers, reports, books, patents_____

Ⓒ Degree Year Institution

____ ____ _____

____ ____ _____

____ ____ _____

Ⓓ No. of abstracts, internal reports____

Ⓔ No. of papers accepted____

Ⓕ No. of books and patents____

EMPLOYMENT HISTORY:

	Present	Previous	Previous
Ⓖ Employer			
Position			
Ⓗ Duties			
Years	____ to ____	____ to ____	____ to ____

DESIRED POSITION:_____

Ⓘ Duties_____

Ⓙ Available mo.____ /yr.____ Location_____ Salary____

Ⓚ References (Name and Institution)

Ⓛ Citizenship _____

Ⓜ AVAILABLE FOR INTERVIEWS:

(Interviews for Session 4 scheduled on the basis of employer's request only.)

Session 1 ☐	Session 2 ☐	Session 3 ☐	Session 4 ☐
Fri. AM 9:30-11:45	Fri. PM 1:15-5:00	Sat. AM 9:30-11:45	Sat. PM 1:15-5:00

I do not plan to attend the Winter Meeting ☐

SUMMARY STRIP

Family Name, First Name, Mailing Address,

Address (cont'd.), Address (cont'd.), State & Zip Code, Ⓐ Specialties,

Ⓑ Career objectives, Ⓒ Highest Degree, Ⓒ Yr., Ⓒ Institution, Ⓓ, Ⓔ, Ⓕ, Ⓖ Most recent employer,

Ⓗ Present duties, Ⓘ Desired duties, Ⓙ Available mo./yr., Ⓛ, Ⓜ Sessions

EMPLOYER FORM MATHEMATICAL SCIENCES EMPLOYMENT REGISTER NEW ORLEANS, LOUISIANA JANUARY 8-10, 1986

INSTRUCTIONS: Please read carefully before completing form below. Circled letters identify corresponding items in the FORM and the SUMMARY STRIP; abbreviations to be used are provided in the notes below. Please print or type in black ink. Block capitals are suggested. The FORM itself will be placed on display at the Register exactly as submitted. The SUMMARY STRIP will be used to prepare a computer printed list of summaries for distribution at the Register sessions. Employers are encouraged to provide more than one interviewer when they are able to do so, in order to increase the number of interviews which may be scheduled. Please take care to indicate on the Form the number of interviewers for whom simultaneous interviews may be scheduled. (If all interviewers will be interviewing for the same position, or for the same set of positions, only one form should be submitted and only one employer code number will be assigned; therefore, each interviewer would then receive a separate computer schedule and separate table number.) More than one employer code will be required if some interviewers will not interview for all positions. Thus, if there are two disjoint sets of positions, two forms are required and two employer codes will be assigned. **(Please refer to the section on the Employment Register following the New Orleans meeting announcement.)**

EMPLOYER FORM Institution_____ Dept._____

Name of Interviewer(s) 1._____ 2._____

3._____ 4._____

City, State, Zip_____

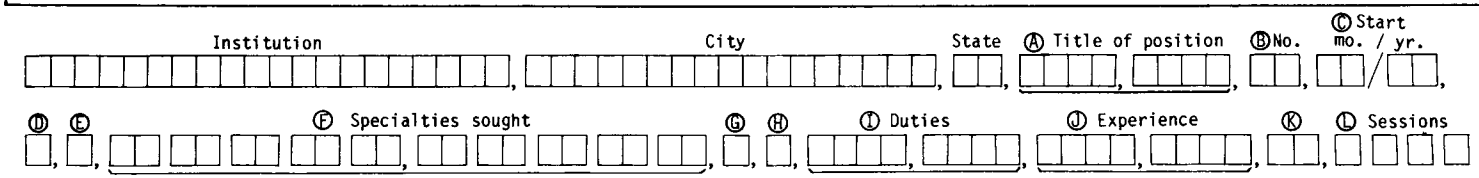
Ⓐ Title(s) of Position(s)_____ Ⓑ Number of Positions_____ Number of People Supervised_____

Ⓒ Starting Date _____/_____ mo. yr. Salary_____ D Term of Appointment_____ yrs. Ⓔ Renewal ( ) Possible ( ) Impossible Tenure Track Position Yes ( ) No ( ) Unknown ( )

Teaching hrs./week_____ Ⓕ Specialties Sought_____

Ⓖ Degree Preferred_____ Ⓗ Degree Accepted_____ Ⓘ Duties_____ Ⓙ Experience_____ Ⓚ Citizenship Restriction_____

Ⓛ **Available for Interviews**	**Session 1 ( )** **Fri. AM, 9:30-11:45**	**Session 2 ( )** **Fri. PM, 1:15-5:00**	**Session 3 ( )** **Sat. AM, 9:30-11:45**	**Session 4 ( )*** **Sat. PM, 1:15-5:00**
Ⓜ **Number of Interviewers:**	_____ **Interviewers**	_____ **Interviewers**	_____ **Interviewers**	_____ **Interviewers**



NOTES: Ⓐ Inst, Lect, Asst Prof, Asso Prof, Prof, Dean, Open, MTS (Member Technical Staff), OPAN (Operations Analyst), PREN (Project Engineer), RESC (Research Scientist); Ⓒ Date 01/86, e.g.; Ⓔ Possible=P, Impossible=I; Ⓕ Algebra=AL, Analysis=AN, Biomathematics=BI, Biostatistics=BS, Combinatorics=CB, Communication=CM, Control=CN, Computer Science=CS, Circuits=CT, Differential Equations=DE, Economics=EC, Mathematical Education=ED, Functional Analysis=FA, Financial Mathematics=FI, Fluid Mechanics=FL, Geometry=GE, History of Mathematics=HM, Logic=LO, Mathematical Biology=MB, Mechanics=ME, Modeling=MO, Mathematical Physics=MP, Management Science=MS, Numerical Analysis=NA, Number Theory=NT, Operations Research=OR, Probability=PR, Systems Analysis=SA, Statistics=ST, Topology=TO; Ⓖ Ⓗ Bachelor=B, Master=M, Doctor=D; Ⓘ Ⓙ Teaching=T, Undergraduates=U, Graduates=G, Research=R, Consulting=C, Administration=A, Supervision=S, Industry=IND, Government=GOV, Data Processing=DP, No experience required=N; Ⓚ U.S. Citizen=C, U.S. Citizen or permanent resident=CP, No restriction=NR; Ⓛ Periods available for interviews: List 1, 2, 3, and/or 4, see the FORM above.

* Interviews are scheduled in this session on the basis of employers request only.

Meritorious Service Awards Presented in Laramie

Five individuals who have given extraordinary service to their Sections were awarded Certificates for Meritorious Service at the MAA Business Meeting in Laramie, Wyoming, last August. Each year, five MAA Sections are invited to select a member to be honored nationally. The first awards were made in August 1984.

The names and affiliations of the individuals honored this year, and brief biographical sketches provided by the Sectional Governors follow:

Maryland-DC-Virginia Section

Dorothy L. Bernstein, Brown University (retired)

During her approximately 20 years as a faculty member at Goucher College in Baltimore, Maryland, Bernstein held virtually every elected office in the Section. She also served on many national committees, including one which recommended the purchase of the Dolciani Mathematical Center and one which reviewed the various MAA rules and bylaws and organized them into a coherent body.

Bernstein was elected President of the Association, serving as President-Elect during 1978, as President from 1979-80, and as Past-President during 1981.

Intermountain Section

C. Edmund Burgess, University of Utah

Burgess, an MAA member since 1956, served as Governor of the Intermountain Section from 1980 to 1983. During his 34 years as a member of the Department of Mathematics at the University of Utah, including 10 years as chairman, he wrote over 30 research papers and directed 10 doctoral students. He has lectured at universities across the United States, Canada, and Europe.

Burgess served on a number of national MAA committees, including national meeting program committees. He has been an MAA Visiting Lecturer and an invited hour speaker at various Section meetings.

Oklahoma-Arkansas Section

John M. Jobe, Oklahoma State University

Jobe served as Governor of the Oklahoma-Arkansas Section from 1975-1978. Since then he has provided dynamic leadership in the Section as Secretary-Treasurer.

Jobe has also rendered distinguished service to the MAA through the development and dissemination of resource materials on education and career awareness in mathematics. As director of the MAWIS (Mathematics at Work in Society) and TEAM (Teaching Experiential Applied Mathematics) projects, Jobe has overseen the production of video tapes and other materials which are now in use in high school and college classrooms across the United States.

Allegheny Section

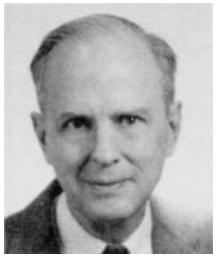
Earle F. Myers, University of Pittsburgh (Professor Emeritus)

Earle F. Myers, an MAA member for 35 years, served as Governor of the Allegheny Section from 1975 to 1978. He has been a member or chairman of many Section committees, including committees involved in preparations for the national meetings held in Pittsburgh in 1958 and 1981. For many years, he was in charge of the High School Lectureship Program for the Section.

The Mathematics Council of Western Pennsylvania recently instituted the Earle F. Myers Award, to be presented annually to two mathematics student teachers, in recognition of Myers' extensive work with mathematics teachers. The award was presented for the first time in October 1984.

New Jersey Section

Emory P. Starke, Rutgers University (retired)



Starke joined the MAA in 1933 and took part in the activities of what was to become the New Jersey Section long before the sectional organizations were formed. Throughout his long career at Rutgers, which began in 1919 and ended with his retirement in 1961, he helped organize meetings, round up speakers, supervise arrangements, and do the various other jobs needed to keep the Section running.

Starke served as Editor of the problems section of the *American Mathematical Monthly* for nearly 30 years, from 1945 through 1973. He continues to be recognized in that section of the *Monthly* as "Editor Emeritus."

A. W. Tucker Prize Established

The Mathematical Programming Society has established the A. W. Tucker Prize in the amount of $750 to be awarded for an outstanding paper in mathematical programming authored by a student, graduate or undergraduate.

An awards committee will choose up to three finalists for the first award of the Tucker Prize, to be made in 1988. The finalists will be invited to make oral presentations of their work at a special session of the Society's 1988 International Symposium.

For more information, write to Professor R. Bland, Operations Research Department, Cornell University, Ithaca, New York 14853.

Highlights *(continued from page 4)*

the Board. As the name suggests, the Committee is developing a plan—with the help of MAA committees, Sections, and individual members—for how the MAA should spend its energy and financial resources over the next few years.

The Committee expects to have a detailed plan ready for the Board's consideration at its meeting in August 1986 in Berkeley.

Grants Received

The Board gratefully received the following grants:

- For the support of the Women and Mathematics program:
  - —$12,500 from the IBM Corporation
  - —$2,000 from Tektronix Foundation
  - —$5,000 from General Electric Foundation.
- For the support of the USA Mathematical Olympiad (USAMO) and International Mathematical Olympiad (IMO) teams:
  - —$10,000 from the IBM Corporation for the USAMO Awards Ceremony
  - —$13,520 from the Office of Naval Research for the IMO Training Session
  - —$7,872 from the Army Research Office for travel by the USA Team.
- $203,775 from the National Science Foundation for the first year of a three-year project titled "Applications in Mathematics: Instructional Materials for High School Students." The project will be directed by John M. Jobe of Oklahoma State University. More information about this project will appear in the November issue of *FOCUS*.

Planned Giving Program

The Board approved a Planned Giving Program as part of the new MAA development effort. This program will create opportunities for members and other donors to make substantial gifts to the MAA while achieving income tax and/or estate tax savings for themselves and their heirs. For more information contact: MAA Development Office, 1529 Eighteenth Street, N.W., Washington, D.C. 20036.

In Memoriam

Richard A. Bieberich, Ball State University, died January 9, 1985, at the age of 41. He was an MAA member for 8 years.

James Dugundji, University of Southern California-Los Angeles, died January 8, 1985, at the age of 65. He was an MAA member for 13 years.

Thomas H. Dyer of Sykesville, Maryland, died January 5, 1985. He was an MAA member for 30 years.

Mary P. Dolciani Halloran, Hunter College, died August 5, 1985, at the age of 62. She was an MAA member for 40 years. The three-building MAA Headquarters complex in Washington, D.C. and the MAA book series *Dolciani Mathematical Expositions* are named in her honor.

Kenneth W. Miller of Chicago, Illinois, died February 19, 1985, at the age of 86. He was an MAA member for 49 years.

George Pólya, Professor Emeritus at Stanford University, died September 7, 1985, at the age of 97. He was an MAA member for 43 years. Pólya received the MAA Award for Distinguished Service to Mathematics in 1963. The George Pólya Award for articles in the *College Mathematics Journal* is named in his honor.

Julia B. Robinson, Professor Emeritus of the University of California, Berkeley, died on July 30, 1985, at the age of 65. She was an MAA member for 5 years. An article about her life, written by her sister, Constance Reid, will appear in the January 1986 *College Mathematics Journal*.

Louis Robinson, IBM Corporation, died March 28, 1985 at the age of 58. He was an MAA member for 33 years.

Harry Sitomer of Huntington, New York, died February 19, 1985 at the age of 81. He was an MAA member for 20 years.

Gabor Szego, Professor Emeritus of Stanford University, died on August 7, 1985, at the age of 90. Szego, who headed Stanford University's mathematics department for 22 years, co-authored with George Pólya the renown book *Problems and Theorems in Analysis*.

Modeling Competition to be Held February 7

The second Mathematical Competition in Modeling (MCM) will be held on college campuses the weekend of February 7, 1985. According to MCM Project Director B.A. Fusaro, announcements of this undergraduate contest will be mailed to mathematics department chairs this month.

In 1985, the first year of the competition, 90 teams submitted papers. It is expected that in 1986 about 200 three-student teams will send in solution papers. As in the MCM 1985 contest, each three-student team will choose one of two problems and will have a weekend to work on it. The team may use reference works and computers. The problems will be realistic, and therefore are not likely to have unique or formal solutions. Analysis and design are important, and partial solutions are acceptable.

There are two ways in which interested MAA members can learn more about this contest. Pergamon will publish six of the outstanding solution papers in a special issue of *Mathematical Modeling*. These are "upper bound" paradigms of what three motivated undergraduates can do in a weekend. Advisors who register a team for the 1986 contest will receive a copy of the journal (while supplies last). Others may call or write the Project Director, B.A. Fusaro, Mathematical Sciences, Salisbury State College, Salisbury, MD 21801; (301) 543-6470 (office) or (301) 742-9170 (home).

Members of the MCM Advisory Board are available to give presentations to potential team advisors or to a general audience. There is a limited budget to defray presenters' travel expenses. Interested MAA Section Program Chairs should contact B.A. Fusaro.

The Mathematical Competition in Modeling is funded by a grant from FIPSE (Fund for the Improvement of Post-Secondary Education) of the Department of Education. The grant is administered by COMAP (Consortium for Mathematics and Its Applications).

MAA Offers Twelve Minicourses in New Orleans

The MAA will offer a record-breaking twelve minicourses at the Annual MAA Meeting in New Orleans, January 9-11, 1986. The first minicourse was offered at the August 1979 meeting in Duluth. Since then, minicourses have grown rapidly in popularity and the number and variety of minicourses offered have been greatly expanded.

The twelve minicourses being offered at the New Orleans meeting are described below. Persons interested in registering for any of the minicourses should see the program in this issue of *FOCUS* for further information and for registration forms. The registration fee for Minicourses #2, #3, #5, #9, #10, and #12 is $35 each. The registration fee for the other minicourses is $25 each. The deadline for registration is November 15.

The minicourses are open only to persons who have registered for the Joint Mathematics meetings and paid the Joint Meetings registration fee.

Minicourse #1: *Introduction to actuarial mathematics* is being organized by Ellen M. Torrance, M&R Services, Inc. Part A is scheduled from 10:30 a.m. to 12:30 p.m. on Friday, January 10, and Part B from 3:30 p.m. to 5:30 p.m. on Saturday, January 11. Total enrollment for this Minicourse is limited to 80 persons.

This Minicourse is designed to (1) give the participant a basic understanding of the nature, pricing and reserving of various insurance products (including annuities); and (2) provide simple "real world" applications that can be included in undergraduate probability courses. The use of spreadsheet software or simple computer programs for calculations will be discussed briefly. Most of the material will be based on mathematical expectation and conditional probability; a few applications will involve definite integrals. The Minicourse will consist of lectures with question-and-answer periods.

Minicourse #2: *muMATH workshop* is being organized by Wade Ellis, Jr., West Valley College. Part A is scheduled from 1:00 p.m. to 3:00 p.m. on Thursday, January 9, and Part B from 8:00 a.m. to 10:00 a.m. on Friday, January 10. Total enrollment for this Minicourse is limited to 30 persons.

muMATH, a computer symbolic algebra system developed by David Stoutemyer and Albert Rich, is based on a LISP-like programming language. The system contains many specialized mathematically-oriented functions and operators. In the Minicourse, each participant will use muMATH on an IBM Personal Computer. No prior knowledge of computer programming will be assumed. The first session will begin with a demonstration of the muMATH formula entry conventions and computing environment. participants will then work through hands-on guided exercises to become familiar with muMATH's built-in operations and the muSIMP computer language. The second session will be devoted to muMATH modules on calculus, linear algebra, and differential equations. A discussion period including a brief comparison of muMATH with other mathematical computer environments will conclude the workshop.

Minicourse #3: *Discrete mathematics using difference equations* is being organized by James T. Sandefur, Jr., Georgetown University. Part A is scheduled from 7:00 p.m. to 9:00 p.m. on Wednesday, January 8, and Part B from 3:30 p.m. to 5:30 p.m. on Thursday, January 9. Total enrollment for this Minicourse is limited to 30 persons.

This course is a nonstandard approach to discrete mathematics in which standard topics, such as linear algebra and probability theory, are interspersed with the study of finite difference equations so that many complex and interesting mathematical models, such as Markov processes and predator-prey relationships, can be studied. This provides a structure to the course, as well as giving students an appreciation of the power and versatility of mathematics. The Minicourse begins with the study of difference equations, both linear and nonlinear. The linear equations will be used to study linear mathematical models, such as amortization of loans, while nonlinear difference equations, consisting of the study of linearization and bifurcation theory, will be used to study nonlinear mathematical models, such as the growth of populations and how this growth varies when a species is hunted. Microcomputers will be used to enhance our understanding of the mathematical models studied, through both the numerical calculation of solutions, and the generation of graphical solutions.

Minicourse #4: *Data analysis and regression* is being organized by S.J. Devlin, E.B. Fowlkes and P.A. Tukey, Bell Communications Research. Part A is scheduled from 7:00 p.m. to 9:00 p.m. on Wednesday, January 8, Part B from 3:30 p.m. to 5:30 p.m. on Thursday, January 9, and Part C from 7:00 p.m. to 9:00 p.m. on Friday, January 10. Total enrollment for this Minicourse is limited to 80 persons.

Multiple least squares regression is one of the most widely used and abused tools in data analysis and statistics. Its problem-solving potential requires the understanding of not just the least squares algorithm but also of other data analytic techniques, frequently graphical, to help select models, interpret results, and detect and adjust for frequently encountered problems. After a brief review of linear least squares regression, the course will discuss some of the following topics: transformations, variable selection, residual analysis, outlier protection/robust regression, influential observations, multicollinearity/correlated variables, computational issues, new advances/related topics. Lectures will be followed by workshops where participants will interpret results from several real data examples.

Minicourse #5: *Microcomputer software for teaching linear algebra and calculus* is being organized by David A. Smith, Duke University. Part A is scheduled from 10:30 a.m. to 12:30 p.m. on Saturday, January 11, and Part B from 3:30 p.m. to 5:30 p.m. on Saturday, January 11. Total enrollment for this Minicourse is limited to 30 persons.

A wide variety of instructional software is becoming available for use with IBM-compatible microcomputers. It varies in nature, and in quality. In this Minicourse various types of software which would be useful in college linear algebra or calculus courses will be demonstrated and issues related to their use will be discussed. Minicourse participants will have the opportunity to work with the software on IBM-PC microcomputers.

Minicourse #6: *Discrete algorithmic mathematics* is being organized by Stephen B. Maurer, Swarthmore College. Part A is scheduled from 1:00 p.m. to 3:00 p.m. on Thursday, January 9, and Part B from 8:00 a.m. to 10:00 a.m. on Friday, January 10. Total enrollment for this Minicourse is limited to 80 persons.

The organizer will present his ideas on how to give a freshman-sophomore mainstream discrete mathematics course which is neither "finite math" nor "discrete structures" and which highlights the algorithmic point of view. He will discuss how to glue the course together using induction/iteration/recursion; how to avoid the Scylla of dull play with definitions and the Charybdis of too many subtle proofs; how to make the course valuable to all students, not just computer science students; and how you don't have to be an expert in combinatorics or computer science to teach it, because it is based on ideas all mathematicians are familiar with in other contexts.

Minicourse #7: *Introductory computer science* is being organized by J. Arthur Seebach, St. Olaf College. Part A is scheduled from 1:00 p.m. to 3:00 p.m. on Thursday, January 9, and Part B from 8:00 a.m. to 10:00 a.m. on Friday, January 10. Total enrollment for this Minicourse is limited to 80 persons.

(continued on page 8)

Minicourses *(continued from page 7)*

This Minicourse will present a number of the most central concepts of the conceptual core of the 1978 Association for Computing Machinery recommended courses in machine organization and data structures. The key structural or logical issues will be presented for mathematicians, starting with the use of binary arithmetic to represent the actual state of a computer. Next the course will introduce the representation and manipulation of data. The latter part of the Minicourse will discuss what is involved in more complex and higher-level organization of data and instructions. This will include several important data structures and the concepts of assemblers and operating systems. In addition, if time and the interest of the audience permit, the course might close with a brief foray into programming languages or input/output techniques. This is not a programming course nor is a programming background expected. Binary modular arithmetic, intuitive logic, and curiosity about what all the fuss and fancy jargon are about are the appropriate tools for this course.

Minicourse #8: *Teaching experiential applied mathematics* (TEAM) is being organized by Jeanne L. Agnew, James R. Choike, John M. Jobe and Marvin S. Keener, Oklahoma State University. Part A is scheduled from 7:00 p.m. to 9:00 p.m. on Friday, January 10, and Part B from 1:00 p.m. to 3:00 p.m. on Saturday, January 11. Total enrollment for this Minicourse is limited to 80 persons.

This Minicourse will feature applied mathematics multi-media learning modules for use in college classrooms which were produced by a project called TEAM and funded by a grant to the MAA from the Fund for the Improvement of Postsecondary Education (FIPSE). TEAM learning modules consist of video cassettes, written materials, and (for some modules) microcomputer software. In these real-world industrial problems, solutions are presented by industrial representatives who have actually encountered these problems in their work. The Minicourse will introduce participants to the six TEAM learning modules produced during the first two years of this project. Of special interest to those already familiar with TEAM modules, this Minicourse will mark the first official release of three new TEAM learning modules. Each participant will receive a complete set of TEAM written materials. Participants will be shown how these modules can be used (1) to present a course in applied mathematics at the upper division level or at the lower division level; (2) to offer students independent study projects; or (3) to provide a lecture presentation of an application in industry.

Minicourse #9: *Introduction to computer graphics* is being organized by Joan P. Wyzkoski, Fairfield University. Part A is scheduled from 10:30 a.m. to 12:30 p.m. on Friday, January 10, and Part B from 8:00 a.m. to 10:00 a.m. on Saturday, January 11. Total enrollment for this Minicourse is limited to 30 persons.

Graphs and illustrations of geometrical objects are useful tools in the teaching of mathematics. Computer graphics simplifies the production of these teaching aids. This Minicourse will present some of the mathematical techniques used to produce realistic pictures on graphics display devices. Some of the topics to be discussed are curve and surface sketching, 2D and 3D transformations, perspective drawing, and hidden line removal. Suggestions will be given for the use of these techniques to complement mathematics instruction. Since personal computers will be available for demonstrations and in-class implementations, programming experience is necessary.

Minicourse #10: *The use of computing in the teaching of linear algebra* is being organized by Eugene A. Herman, Grinnell College. Part A is scheduled from 7:00 p.m. to 9:00 p.m. on Friday, January 10, and Part B from 1:00 p.m. to 3:00 p.m. on Saturday, January 11. Total enrollment for this Minicourse is limited to 30 persons.

A major reason that linear algebra is now taught to so many students so early in their education is that the computer has made linear algebra much more useful to scientists than it was 35 years ago. Yet computing has not had a significant effect on how undergraduate linear algebra is usually taught. This Minicourse explores the possibilities and consequences of putting powerful matrix computation packages in the hands of beginning linear algebra students. Two such packages will be demonstrated and participants will experience using them. Topics discussed will include the mathematical algorithms incorporated in the software, the importance of the user interface, the probable changes needed in the course, the kinds of application problems that can be then assigned to students, the demands such a course puts on instructors and students, and the possible effects of the course. The capabilities possessed by the packages include: LU-factoring, QR-factoring, finding least square solutions, finding complete sets of eigenvectors and associated eigenvalues, orthonormalizing vectors, and finding Jordan and rational canonical forms.

Minicourse #11: *The teaching of applied mathematics* is being organized by W. Gilbert Strang, Massachusetts Institute of Technology. Part A is scheduled from 7:00 p.m. to 9:00 p.m. on Thursday, January 9, and Part B from 10:30 a.m. to 12:30 p.m. on Friday, January 10. Total enrollment for this Minicourse is limited to 40 persons.

The organizer will discuss one possible framework for an introduction to modern applied mathematics. After basic courses in calculus and linear algebra, there is an important need that is not met by the traditional advanced calculus. The course should include both discrete and continuous problems, and numerical and combinatorial algorithms, bringing out their analogies and developing the mathematical ideas that are shared by different applications. The organizer is convinced that this syllabus is also the right way to organize the mathematics needed by engineers and computer scientists; that subject does not have to be old-fashioned and boring. Topics from several areas will be presented exemplifying this unifying approach. Participants will be invited to discuss effective ways to teach applied mathematics.

Minicourse #12: *PROLOG* is being organized by Frederick Hoffman, Florida Atlantic University. Part A is scheduled from 7:00 p.m. to 9:00 p.m. on Thursday, January 9, and Part B from 1:00 p.m. to 3:00 p.m. on Friday, January 10. Total enrollment for this Minicourse is limited to 30 persons.

The intention of this Minicourse is to introduce the programming language PROLOG (PROgramming in LOGic) to an audience of mathematicians. PROLOG is many things: mechanized logic; a good programming language for beginners; a major artificial intelligence language, with applications to game playing, theorem proving, robot motion, natural language understanding and expert systems development; a powerful tool for database management; and the initial choice for the "machine language" of the Japanese Fifth Generation Computer Project. In the Minicourse, PROLOG will be described, evidence will be given that these statements are at least arguable, and some hands-on experience with microPROLOG will be provided. No computer background will be assumed; those attending should have seen a syllogism before, but no advanced knowledge of logic is required.

FOCUS
Mathematical Association of America
1529 Eighteenth Street, N.W.
Washington, D.C. 20036

Second class postage paid at Washington, D.C. and additional mailing offices.