FOCUS

Living Tribute:
The MAA Dedicates the Pólya Building

Maureen A. Callanan

MAA staff members grew increasingly uneasy as they completed last-minute preparations for the 1 June 1990 ceremony and reception. Despite the encouraging number of acceptances to the Association's invitation, the temperature, already an unseasonable ninety degrees, and the city's infamous Friday rush hour genuinely threatened a good turn-out.

Well before the formal dedication ceremony commenced, however, guest after guest appeared, eager to explore the Dolciani Mathematical Center. Although space was at a premium in the lobby of the Vaughn Building, nearly 100 guests and MAA staff members assembled—somewhat warm, but cheerful and expectant. The occasion drawing these visitors? Dedication of the George Pólya Building at 1527 Eighteenth Street, Northwest, Washington, DC.

Throughout the afternoon, a cordial atmosphere prevailed among the guests, and, to everyone's pleasure, the program proceeded smoothly. After President Lida K. Barrett welcomed the buildings' visitors, MAA Secretary and long-time friend of Pólya, Gerald L. Alexanderson, reviewed some of Pólya's major contributions to mathematics. Following Alexanderson's tribute, Anthony

Making Mathematics
Work for Minorities

Beverly J. Anderson

In late 1988, the Mathematical Sciences Education Board (MSEB) of the National Research Council (NRC) launched an eighteen-month project entitled *Making Mathematics Work for Minorities*. Widely publicized, dramatic successes in helping minority youth to excel in mathematics had convinced the Board that the time was ripe for mounting a coordinated, national effort. With major funding from the Exxon Education Foundation and supplemental funding from the Historically Black College Council of the Office of Naval Research and from the University of the District of Columbia, the Board's mission unfolded.

Under Phase I of the project, the MSEB conducted six regional workshops and a National Convocation. Roughly 700 individuals attended these workshops, and approximately 500 attended the Convocation. More than half of these participants either lead or significantly contribute to educational programs aimed at reversing long-term trends of underachievement and underutilization of Blacks, Hispanics, and American Indians in mathematics. Indeed, many participants direct other national organizations dedicated to such programs.

Photograph courtesy of Carol Baxter

Following the plaque unveiling, guests gathered before the newly dedicated George Pólya Building in Washington, DC. From left to right: President Lida K. Barrett, John W. Kenelly, Executive Director Marcia P. Sward, Ronald C. Rosier, and Anthony Lanyi.

(Pólya continued from front page.)

Lanyi, Pólya's great nephew and the family's representative, genially shared some personal recollections of Pólya and his wife Stella. MAA Executive Director Marcia P. Sward then chronicled the Dolciani Mathematical Center's distinguished history. Finally, after reading a moving dedication statement, President Barrett unveiled plaques inside and outside the newly christened Pólya Building. (Both President's Barrett's dedication statement and the inscription on the interior plaque appear on the opposite page.)

Photograph courtesy of Gerald L. Alexanderson

George Pólya

Following these ceremonies, staff members escorted groups of visitors around the Dolciani Center's three buildings; these tours varied in duration and style, but all concluded convivially at a reception on the second floor of the Pólya building. The Dolciani Mathematical Center has rarely hosted such a cross section of the mathematical community: mathematicians from more than a dozen federal agencies and from nearly as many local universities participated in the dedication. Retired MAA members and graduate students chatted animatedly with high school teachers, members of the MAA's Executive and Finance Committees, and representatives from the Conference Board of the Mathematical Sciences (CBMS), the American Mathematical Society (AMS), the National Council of Teachers of Mathematics (NCTM), and the National Science Foundation (NSF).

Photograph courtesy of Carol Baxter

James A. Donaldson (left) of Howard University in Washington, DC and Gerald A. Porter (right) of the University of Pennsylvania admire the Pólya building during the June 1990 dedication.

Perhaps this diversity of guests—mathematicians who discussed and delighted in their mutual appreciation of Pólya and his contributions to mathematics—assured the afternoon's success. Clearly, the participants demonstrated that Pólya's influence and reputation have extended not only to high school mathematics teachers and established NSF scientists, but also to the mathematics students of the 1990s. Their presence together, as a mathematical community, forged a living tribute to Pólya, indeed.

Maureen A. Callanan, MAA Development Assistant, and Jane S. Heckler, Executive Assistant to Marcia P. Sward, organized the Pólya dedication ceremonies and reception.

To Accredit or not to Accredit: A Dialogue within the Association

John D. Fulton

In Louisville, Kentucky, on Tuesday, 16 January 1990, the MAA ad hoc Committee on Accreditation presented its report to the Board of Governors in a plenary session of the Board. Following this session, organized discussions during lunch, and postlunch debate, the MAA Board of Governors communicated its reactions to the report through a series of straw votes. Ultimately, these straw votes and the ensuing final report of the ad hoc Committee prompted President Lida K. Barrett to appoint, in May 1990, an MAA ad hoc Committee on Guidelines.

When examined, the issue of whether or not to accredit undergraduate mathematics in America reveals a long history. Again, many recognize a lack of support for collegiate mathematics coincident with a growing demand on mathematics departments to teach a burgeoning number of students in service courses. Consequently, the accreditation issue has reemerged and demanded attention. During his term as President of the MAA, Lynn A. Steen appointed an ad hoc Committee on Accreditation, originally chaired by David P. Roselle, with Lida K. Barrett, Calvin T. Long, Frank S. Brenneman, and Karl J. Smith (for two-year colleges) as members. The committee, as constituted at the time of the 1990 Louisville meeting, was chaired by John D. Fulton, with Brenneman, Long, Jimmie L. Solomon, Smith, and Steen as members.

Fulton presented the Committee's report to the Board. Committee recommendations included:

1. That a data base which reflects the state of undergraduate mathematics be established;

2. That the *Guidebook to Departments of Mathematical Sciences*, last published in 1975, again be published on a regular basis to report the contents of the data base;

3. That the MAA and the American Mathematical Association of Two-Year Colleges (AMATYC) jointly establish an accreditation process for undergraduate mathematics; and

4. That, if the Board does not adopt an accreditation process at this time, model guidelines or standards for undergraduate mathematics be prepared.

To clarify for the Governors what these standards might entail, the Committee attached to its report a *sample* set of accreditation guidelines for undergraduate mathematics. Clearly, if the Board adopted Recommendations 3 or 4, preparation of the proposed guidelines would require major effort.

The Committee's recommendations embraced all facets of undergraduate mathematics—general education, teacher education, mathematics servicing other disciplines, and mathematics for majors in the mathematical sciences. Indeed, it rejected certification focused only on mathematics programs for majors, and, instead, **(Accreditation** continues on next page.)

George Pólya, 1887–1985

George Pólya received his PhD from the University of Budapest in 1912. He did further study at Göttingen and in Paris, accepting a position at the Swiss Federal Institute of Technology in Zürich in lage 1914. He was appointed the first international Rockefeller Fellow in 1924, working with G. H. Hardy, first at New College, Oxford, and later at Trinity College, Cambridge. A second Rockefeller grant in 1933 supported work at Princeton. In 1940 he and his wife Stella moved to the United States where he held positions first at Brown University and Smith College before moving to Stanford University where he stayed until his retirement in 1953.

His mathematical work includes numerous publications. In 1925, he collaborated with Gábor Szegő on the classic two-volume collection of problems, the *Aufgaben und Lehrsätze aus der Analysis.* As early as 1919 he had written on mathematical discovery. His most widely read work on this subject is *How to Solve it,* published in 1945 and subsequently translated into eighteen languages. This was followed by *Mathematics and Plausible Reasoning* in 1954 and *Mathematical Discovery* in 1962. In all, he wrote almost three hundred scholarly papers and fifteen books, of which those listed above and *Inequalities,* written with G. H. Hardy and J. E. Littlewood, were probably the most influential.

Pólya also contributed in many ways to the work of the Association. He was a travelling lecturer for the MAA between 1953 and 1956. He served on the Board of Governors from 1958 to 1960 and in 1963 he was awarded the second of the Association's Award for Distinguished Service to Mathematics. His popular *Mathematical Methods in Science* was published by the Association in its New Mathematical Library series.

Gerald L. Alexanderson of Santa Clara University prepared this brief biography. An expanded version of his text is etched on the commemorative plaque inside the Pólya building.

Declaration of Dedication

George Pólya Building
1527 Eighteenth Street, Northwest
Washington, DC

1 June 1990

Whereas, George Pólya distinguished himself as a mathematician par excellence in real and complex analysis, probability, combinatorics, geometry, number theory, and mathematical physics; and

Whereas, Professor Pólya had a long and distinguished career as teacher, educator, and mentor to thousands of students; and

Whereas, he contributed in many ways to the advancement of the Mathematical Association of America; and

Whereas, he greatly enhanced mathematical knowledge through his numerous articles and books, especially in the area of mathematical discovery; and

Whereas, Professor Pólya is admired and loved by his colleagues in the mathematical community;

Therefore, I, Lida K. Barrett, President of the Mathematical Association of America, and acting on behalf of the Board of Governors of the Association, do dedicate this property as the George Pólya Building as part of the Dolciani Mathematical Center in this city of Washington, DC, the nation's capital.

(Accreditation continued from previous page.)
favored an accreditation process applicable to *all* facets of undergraduate mathematics. The Committee's sample guidelines addressed undergraduate mathematical sciences programs, defined to include programs in pure and applied mathematics or mathematics education. Furthermore, it treated computational mathematics, computer science, probability and statistics, and operations research as possible concentrations, options, or tracks within the mathematical sciences programs; the sample guidelines, however, did not refer to major programs or departments of computer science, statistics, or operations research. The report also recommended adoption of the most current guidelines available—devised by the Committee on the Undergraduate Program in Mathematics (CUPM)—as the curriculum standard.

The Committee recommended the accreditation process to the Board in order:

5. To underscore the need for application of sufficient resources to improve teaching in order to meet the vigorous demand for undergraduate mathematics;

6. To nurture the concept that more college students must have successful experiences with undergraduate mathematics;

7. To influence the application of renewed vigor for undergraduate mathematics; and

8. To focus faculty energy upon the delivery of a high quality undergraduate mathematics program and upon the scholarly effort required to sustain it.

Calvin T. Long, in a personal testimony, described the lack of adequate resources for undergraduate mathematics at his home institution and presented to the Board a rationale for establishing an accreditation process. From his perspective as Vice Provost for Undergraduate Education at a major university, John Thorpe discussed grounds on which to oppose establishment of an accreditation process. Both Long's and Thorpe's presentations to the Board will appear in the October 1990 issue of FOCUS.

Through a series of straw votes, the MAA Board of Governors informally rejected embarking upon an accreditation process *now.* The Board unanimously supported, however, establishment of a data base for undergraduate mathematics, republication of the MAA *Guidebook,* and creation of model guidelines or standards for undergraduate mathematics. One straw vote expressed an interest in revisiting the accreditation process after Recommendations 1, 2, and 4, are accomplished.

On 22 March 1990, the ad hoc Committee on Accreditation submitted its final report to the MAA Executive and Finance Committees. The report recommended that a Committee on Guidelines be ap-

*(**Accreditation** continued from page three.)*
pointed with representation from diverse groups, including several subcommittees of CUPM, the Committee on the Mathematical Education of Teachers (COMET), the Committee on Consultants, the American Mathematical Society's Committee on Academic Review, the AMS-MAA Committees on Data and on Employment and Educational Policy, AMATYC, and the Society for Industrial and Applied Mathematics (SIAM). Republication of a *Guidebook to Departments of Mathematical Sciences* would regularly report the data base's contents. The report also proposed that the MAA Board of Governors revisit accreditation issues after the undergraduate mathematics data base has been established, the *Guidebook* has been republished, and standards for undergraduate mathematics have been adopted.

On 5 May 1990, President Barrett appointed the MAA ad hoc Committee on Guidelines. Members include James R. C. Leitzel, David J. Lutzer, Bernard L. Madison, Marilyn E. Mays, Richard S. Millman, Donald C. Rung, John A. Thorpe, and John D. Fulton (chair). This Guidelines Committee held its initial meeting at the 1990 joint, AMS-MAA summer meetings in Columbus, Ohio. Committee members welcome your opinions on these issues.

John D. Fulton, Dean of the College of Arts and Sciences of the University of West Florida in Pensacola, chaired the MAA ad hoc Committee on Accreditation. He now chairs the MAA ad hoc Committee on Guidelines and also serves on the MAA Committee on Awards and the AMS-MAA Data Committee.

Nominations for 1991 Elections

At the 1990 summer meetings in Columbus, Ohio, the MAA Board of Governors elected a Nominating Committee to assemble slates of candidates for President, First Vice President, and Second Vice President. The Association will hold its elections during the spring of 1991. Members of the committee include Wade Ellis, Jr. of West Valley College, Doris W. Schattschneider (Chair) of Moravian College, Martha J. Siegel of Towson State University, Lynn A. Steen of Saint Olaf's College, and Alan C. Tucker of the State University of New York at Stony Brook.

The Nominating Committee would appreciate receiving suggestions from MAA members on potential candidates for its three slates. Please direct your suggestions to any of the committee members.

1989 Annual AMS-MAA Survey Highlights from the Second Report

Edward A. Connors

In 1957, the American Mathematical Society initiated an annual series devoted to enrollments and faculty characteristics in the mathematical sciences. The 1989 Annual AMS MAA Survey, the thirty-third in this series, first appeared in the November 1989 issue of *Notices,* pages 1155–1188. Corrections appeared on page 1372 of the December 1989 *Notices.* That report included details on starting salaries and faculty salaries, and listed the names and thesis titles of 1988–1989 doctorates. A supplementary list of such doctorates appeared in the May–June *Notices.* In its November-December 1989 issue, FOCUS published "Databits," from the first 1989 Annual AMS-MAA Survey. The following highlights open the Survey's Second Report.

■ The final, 1988–1989 spring count of new doctorates in the mathematical sciences records 419 US citizens among the 919 recipients of doctorates granted by US institutions from 1 July 1988 through 30 June 1989. These US citizens account for only 46% of the new mathematical doctorates awarded by US institutions.

■ The number of US citizens receiving doctorates in 1988–1989 is less than 60% of the comparable number for a range of years in the mid-1970s.

■ Women received 24% of the doctorates in mathematical sciences awarded to US citizens. This represents the largest percentage ever and a significant increase over the 20–21% awarded in the last six years. The 100 doctorates awarded to female US citizens in 1988–1989 is exceeded only by the 102 awarded in 1980–1981.

Edward A. Connors, recently appointed Director of the Office of Governmental and Public Affairs of the Joint Policy Board for Mathematics, chairs the AMS-MAA Committee on Employment and Educational Policy and the AMS-MAA Data Committee. He prepared both the above highlights and the complete 1989 report. A more detailed discussion of this 1989 AMS-MAA Survey (Second Report) appears in the July-August Notices. For a free reprint, please write: Monica Foulkes, American Mathematical Society, PO Box 6248, Providence, Rhode Island 02940; (401) 455-4113.

Photograph courtesy of Harley Flanders

For a brief moment, members of the African Mathematical Union (AMU) interrupted their first International Symposium, in Arush, Tanzania, to pose for this historical photograph. The Symposium attracted participants from several countries across the African continent. A. O. Kuku of the University of Ibadar in Nigeria and President of the AMU appears in the first row, seated, third from the left. S. O. Iyahen of the University of Benin in Nigeria and editor-in-chief of *Afrika Matematika* appears in the fourth row, far right. The author, Harley Flanders of the University of Michigan at Ann Arbor, appears in the second row, far left.

Afrika Matematika: A Key Source for Research from across Africa

Harley Flanders

In September 1988, in Arush, Tanzania, the African Mathematical Union (AMU) conducted its first International Symposium. Approximately fifty of Africa's leading, senior mathematicians (plus three foreigners) attended the week-long symposium devoted to "current research trends in mathematics, computer science, mathematics education, and industrial mathematics." It was an extraordinary meeting, indeed, and the excellent quality of the presentations impressed me. Several organizations sponsored the symposium, including the United Nations Educational, Scientific, and Cultural Organization (UNESCO), ANSTI, ICTP, the Tanzanian Commission for Science, and the University of Dares-Salaam.

The AMU operates under difficult financial and communications conditions. After a lapse of several years, however, despite these conditions, it has resumed publishing its journal, *Afrika Matematika*. The AMU has asked me to publicize this journal and to encourage libraries and individuals to subscribe to and support the publication.

Afrika Matematika, a refereed journal, first appeared in 1978. It provides a significant outlet for mathematical research undertaken in Africa and elsewhere. In addition, the journal also publishes in-depth research studies on the problems of teaching mathematics in Africa. The official languages of AFRIKA MATEMATIKA are English and French. An annual subscription costs $20 (US dollars) and may be paid to Professor Wouafo Kamga, Treasurer, African Mathematical Union, c/o Department of Mathematics, University of Yaounde, Yaounde, CAMEROONS.

Afrika Matematika publishes brief, medium, and extended research articles in all areas of mathematics, its applications, and mathematics education. It also commissions survey articles. It does not accept previously published papers or papers under consideration elsewhere. However, contributors to AFRIKA MATEMATIKA may publish abstracts of their work in other journals.

Series Two of the journal commenced in 1988. Currently, the Union publishes one issue per year. Beginning in 1991, however, two issues will appear each year—in April and October. Special editions will feature research reports of conferences and workshops organized under the AMU's auspices.

The following list of article topics and their authors from the 1988 issue suggests the AMU journal's interests and scope:

transonic integral equation, W. Ogana of Nairobi, Kenya ■ *étude d'une classe d'espaces de fonctions contenant les espaces de Lorentz,* Ibrahim Fofana of Abidjan, Côte d'Ivoire ■ *the range space in an open mapping theorem,* S. O. Iyahen of Benin City, Nigeria ■ *assessing the effect of controls on onchocerciasis,* F. W. O. Saporu of Maiduguri, Nigeria ■ *practical problems in the application of "artificial viscosity method,"* R. A. Ampomah of Gaborone, Botswana ■ *résolution d'un système gouverne par une équation parabolique fortement non linéaire,* Albert Ouedraogo of Ouagadougou, Burkina Faso ■ *skin friction of an unsteady free convection flow,* R. O. Ayeni and S. S. Okoya, both of Ile-Ife, Nigeria ■ *interpolation of infinite power series,* Yismaw Alemu of Addis Ababa, Ethiopia ■ *survey of student performance in certain states of Nigeria,* P. N. Lasa of Jos, Nigeria ■ *relatively cofat modules,* F. F. Mbuntum and C. Fomekong of Yaounde, Cameroons ■ *improving problem-solving abilities,* Lawal O. Adetula of Zaria, Nigeria ■ *sur la nonexistence du p-problème variationel régulier d'order un stable, sur l'espace de phase généralise E, par* $2 \leq p \leq dim(E) - 2$ *et* $dim(E) \geq 4$, Temo Beko de Loso et Sayinzoga of Kinshasha, Zaire.

For further information on *Afrika Matematika*, contact its Editor-in-Chief: Professor Su-Day O. Iyahen, Department of Mathematics and Computer Science, University of Benin, Benin City, NIGERIA.

Harley Flanders, Professor of Mathematics at the University of Michigan at Ann Arbor, traveled to Arush, Tanzania for the historical symposium his article describes. From 1969 through 1973, he edited the American Mathematical Monthly.

(Minorities continued from page one.)
In focused discussions at each workshop, the attendees addressed six broad questions:

1. What can and should parents and the community do?

2. What can and should teachers and educational institutions do?

3. What can and should professional organizations do?

4. What can and should business, industry, and government do?

5. How can networks and state coalitions be established?

6. What can and should the Mathematical Sciences Education Board do?

From their discussions, centered on the six societal sectors identified above, the workshop participants recommended extensive action plans.

J. Arthur Jones, President and founder of Futura Technologies, Inc. in Fairfax, Virginia—a company dedicated to providing services and products that apply existing and emerging technologies to enhance education. Dr. Jones chairs the Steering Committee for the Making Mathematics Work for Minorities Project.

In preparation for the National Convocation, national leaders consulted a synthesized version of these recommended action plans to develop draft ten-year plans for the nation. The Convocation enabled and encouraged its participants to hear, modify, and augment these plans. Then, attendees submitted these refined versions as a major component of the national plan to make mathematics work for minorities. The MSEB, as it launches Phase II, nears completion of this national plan.

From these six regional workshops of the MSEB's *Making Mathematics Work for Minorities,* a primary recommendation emerged: the creation of an alliance—a community of supportive organizations representing all segments of society. These organizations would form the core "change agents" in reversing trends of minority underachievement and underrepresentation in the mathematical sciences. In addition, at the National Convocation, a second, key recommendation developed—that the MSEB should coordinate the activities of these "change agents," linking the many action programs already underway, and suggesting how the Alliance might best remedy any omissions in its collective endeavor.

On 4 May 1990, at the National Convocation, the MSEB announced its intent to explore energetically the idea of an Alliance to Improve Mathematics for Minorities (AIMM), a group of organizations focused on specific activities. The members of AIMM would actively cooperate to:

1. Raise the level of consciousness among themselves and the community at-large regarding minority achievement and representation in mathematics;

2. Identify and implement programs in schools, colleges, media, business, industry, etc., necessary to solve the problems of minority underachievement and underrepresentation;

3. Coordinate these many efforts through a comprehensive plan and strategy developed by the Alliance's leadership;

A Sample of San Francisco 1991

Another excellent program awaits participants at the joint AMS-MAA annual meetings in San Francisco, California, scheduled from Wednesday through Saturday, 16–19 January 1991. A complete program, including preregistration, housing, and minicourse information, will appear in the October 1990 issue of FOCUS.

The MAA meeting program features six Invited Speakers: Harold M. Edwards of the Courant Institute at New York University; Jill P. Mesirov of Thinking Machines; Carlos Julio Moreno of Baruch College of the City University of New York; Uri Treisman of the University of California at Berkeley; and Floyd L. Williams of the University of Massachusetts at Amherst. In addition, Cristel Rotthaus of Michigan State University will present the Joint AMS-AWM-MAA Invited Address in celebration of the Association of Women in Mathematics' twentieth anniversary. Three Joint AMS-MAA Invited Speakers will also deliver addresses during the meetings—S. S. Chern of the University of California at Berkeley; Rebecca A. Herb of the University of Maryland; and Frank Morgan of Williams College.

The 1991 annual meetings program also includes several joint, AMS-MAA Special Sessions. During a panel discussion, organizers Ed Dubinsky of Purdue University and James J. Kaput of Southeastern Massachusetts University will explore *Research in Undergraduate Education.* Ben A. Fusaro of Salisbury State University and Marcia P. Sward, MAA Executive Director, will preside

at another panel discussion devoted to the timely issue of *Mathematics and the Environment.* In addition, Naomi Fisher, Harvey B. Keynes, and Philip D. Wagreich, all of the Mathematics and Education Reform Network (MER), have organized a session on *Mathematics and Education Reform.*

As usual, the AMS has also assembled an attractive program. Robert McPherson of MIT will deliver the AMS Colloquium Lectures and Sir Michael F. Atiyah of Trinity College, Oxford will present the Gibbs Lectures. AMS Invited Speakers include Maria M. Klawe of the University of British Columbia; Grigorii Aleksandrovic Margulis of the Institute of Problems of Communications in Moscow; Kenneth A. Ribet of the University of California at Berkeley; and Hector J. Sussmann of Rutgers University. In an AMS Special Session, Victor J. Katz of the University of the District of Columbia will discuss the "History of Mathematics."

In addition to these lectures, the 1991 San Francisco program offers numerous minicourses, additional panel discussions, and poster sessions. Furthermore, the Association has organized six Contributed Papers sessions—for more details on these inviting papers, please see the June 1990 issue of FOCUS, page 7.

Readers who wish to participate in any of the joint, AMS-MAA Special Sessions should submit an abstract, by **19 September 1990**, to: Josephine Faria, The American Mathematical Society, PO Box 6248, Providence, Rhode Island 02940.

(Minorities continued from previous page.)

4. Increase the scope and scale of effective action programs; and

5. Disseminate to their constituents not only the Alliance's strategies, but also descriptions of these strategies' results.

The Alliance would recruit key leaders, energized by the workshops and National Convocation, to organize, plan, and lead its programs. The ten-year action plan, developed as an outgrowth of Phase I of *Making Mathematics Work for Minorities* would form the basis for its guiding strategy.

The MSEB wishes to capitalize on the momentum its regional workshops and National Convocation generated, while, concurrently, exercising care in assembling both the Alliance and its large and complex program. It therefore proposes to devote the next year to a three-step planning and development phase, with the intent of formally launching AIMM as a long-term activity in the late summer or early fall of 1991. During the period of 1 August 1990 through 31 July 1991, the Board's activities will involve:

1. Bringing potential Alliance members together to flesh out the AIMM concept and to agree upon organization and general strategy;

2. Completing deliberation on a ten-year, national plan based on recommended action plans from the Phase I regional workshops and the National Convocation;

3. Developing guidelines and milestones for implementation of the ten-year plan;

4. Forming and convening a Steering Committee for AIMM;

5. Identifying a few new, high-impact activities AIMM organizations should undertake;

6. Sharpening descriptions of successes to be achieved over a ten-year period and designing specific procedures for measuring these successes.

Approximately thirty-five organizations publicly stated their willingness to join such an Alliance. For a complete list of these participants and additional information about the Alliance, contact: Beverly J. Anderson, Director of Minority Programs, the Mathematical Sciences Education Board, National Research Council, 2101 Constitution Avenue, Northwest, Washington, DC 20418.

Beverly J. Anderson, Director of Minority Programs for the Mathematical Sciences Education Board, and Professor of Mathematics at the University of the District of Columbia, directed all the activities attendant to the "Making Mathematics Work for Minorities" program and organized the May 1990 National Convocation.

Photograph courtesy of Beverly J. Anderson

In May 1990, the Mathematical Sciences Education Board sponsored a National Convocation to underscore the critical need for an Alliance to Improve Mathematics for Minorities. At this conference, Iris M. Carl, President of the National Council of Teachers of Mathematics, discussed issues related to the Alliance.

Mathematics Awareness Week
21–27 April 1991

Every April, during a week-long celebration, Mathematics Awareness Week (MAW) salutes the richness and relevance of mathematics. In 1991, 21–27 April, the festivities will focus on the fascinating and diverse uses of mathematics. Mark your calendars now and plan to participate in MAW's exciting and educational events.

In addition, the 1991 celebration offers an opportunity to contribute to Mathematics Awareness Week *now*—the Office of Governmental and Public Affairs (OGPA) of the Joint Policy Board for Mathematics (JPBM) seeks slogans and art work for this year's "applications" theme. The originator(s) of the selected theme and art work will receive credit on all printed materials and complimentary posters and postcards.

Please submit your ideas, by **30 September 1990**, to:

Edward A. Connors, Director
Office of Governmental and Public Affairs
1529 Eighteenth Street, Northwest
Washington, DC 20036.

Calculus Poster Session II:
CRAFTY Seeks Exhibitors

The Subcommittee on Calculus Reform and the First Two Years (CRAFTY) of the Committee on the Undergraduate Program in Mathematics (CUPM) plans another calculus project poster session for the joint AMS-MAA annual meetings in San Francisco, California, in January 1991. This session, a sequel to a similar session conducted during the 1990 Louisville meetings, will both foster an afternoon of informal discussion and disseminate recent calculus reform efforts.

Although CRAFTY welcomes participants from the previous Louisville session to join the thirty to forty 1991 contributors, the committee especially encourages newcomers to exhibit and communicate their experiences with calculus reform. Each exhibitor will receive a table and poster stand, but no computer support other than outlets.

If you wish to exhibit at the San Francisco session, please submit a one-page description of your project, as soon as possible, but not later than **1 November 1990**, to:

Thomas W. Tucker
Department of Mathematics
Colgate University
Hamilton, New York 13346
(315) 824-1000; TTUCKER@COLGATEU

In Memoriam

Ralph G. Archibald, Professor Emeritus, University of Chicago, died 25 April 1990 at the age of 88. He was an MAA member for 59 years.

Harriet M. Bailey, teacher, New York City Board of Education, died in February 1990 at the age of 42. She was an MAA member for one year.

Robert L. Blair, Professor, Ohio University, died in November 1988 at the age of 61. He was an MAA member for 35 years.

Esther Comegys, Professor, Wellesley College, died 10 April 1990 at the age of 91. She was an MAA member for 40 years.

Milton Corbett, Consulting Engineer, died 15 February 1990 at the age of 78. He was an MAA member for 14 years.

Richard D. Delauer, died in April 1990. He was an MAA member for one year.

Dianne M. Gainer, Research Chemist, Ashland Petroleum, died 10 April 1990 at the age 45. She was an MAA member for 4 years.

Michael J. Goldberg, Engineer, Bureau of Naval Weapons, the Department of the Navy, died 9 March 1990 at the age of 87. He was an MAA member for 64 years.

Dick W. Hall, Professor Emeritus, State University of New York at Binghamton, died 4 February 1990 at the age of 77. He was an MAA member for 52 years.

W. R. Harris, Jr. died 19 March 1990. He was an MAA member for 41 Years.

Albert F. Herbst, Professor Emeritus, La Verne College, died 29 April 1990 at the age of 71. He was an MAA member for 41 years.

Jewel M. Holst, Computer Scientist, Arcon Corporation, died 3 December 1989 at the age of 55. She was an MAA member for 35 years.

Walter J. Klimczak, Professor, Trinity College, died January 1990 at the age of 73. He was an MAA member for 44 Years.

Roy R. Kuebler, Jr., Professor Emeritus, University of North Carolina at Chapel Hill, died in February 1990 at the age of 78. He was an MAA member for 44 years.

Orjan Larsson, student, Stockholm School of Economics, died in 1989 at the age of 30. He was an MAA member for 2 years.

Sim Lasher, Associate Professor Emeritus, University of Illinois, died 5 January 1990 at the age of 73. He was an MAA member for 27 years.

Edwin R. Lassettre, Professor Emeritus, Carnegie Mellon University, died 16 January 1990 at the age of 78. He was an MAA member for 4 years.

George M. Lehnen, retired, Western Electric Company, died 17 November 1989 at the age of 75. He was an MAA member for 32 years.

Fred A. Lewis, Professor Emeritus, University of Alabama, died 31 October 1989 at the age of 95. He was an MAA member for 64 years.

Florence Jessie MacWilliams, Technical Staff, Bell Telephone Laboratories, died 27 May 1990 at the age of 73. She was an MAA member for 31 years.

Robert K. Meany, Associate Professor, Iowa State University, died in October 1989. He was an MAA member for 30 years.

Earnest Jackson Oglesby, Professor Emeritus, University of Virginia, died 20 May 1989 at the age of 97. He was an MAA member for 73 years.

Sallie E. Pence, Professor Emeritus, East Carolina college, died in July 1989. She was an MAA member for 62 years.

Edwin J. Purcell, Professor Emeritus, University of Arizona, died 25 September 1989 at the age of 88. He was an MAA member for 60 years.

Albert S. Rosenthal, retired, Naval Air Development Center, died 16 June 1990 at the age of 75. He was an MAA member for 28 years.

Robert R. Singleton, Adjunct Professor Emeritus, Wesleyan University, died February 1990 at the age of 76. He was an MAA member for 28 years.

James Edward Skeath, Chairman, Department of Mathematics, Swarthmore College, died 29 April 1990 at the age of 53. He was an MAA member for 30 years.

Norman P. Stein, Professor, City College of Chicago, died recently. He was an MAA member for 43 years.

Irving Sussman, Professor Emeritus, Santa Clara University, died 18 February 1990 at the age of 82. He was an MAA member for 44 years.

Robert Wanner Wagner, Professor Emeritus, University of Massachusetts at Amherst, died 22 February 1990 at the age of 76. He was an MAA member for 50 years.

Eugene Wermer, Associate Professor Emeritus, Norwich University, died 21 January 1990 at the 73. He was an MAA member for 29 years.

Susan M. T. Yeh, Actuarial Assistant, Milliman and Robertson, died 23 August 1989 at the age of 28. She was an MAA member for 7 years.

We have also received word of the following deaths:

Thomas E. Bartlett, President, Wyvern Residential Associates, Inc.; **Richard Eugene Griffin,** student, School of Industrial and Systems Engineering, Georgia Tech; **T. L. Koehler,** retired, Muhlenberg College; **Kenneth R. Kundert,** Professor, University of Wisconsin-Platteville; and **William S. Litterick,** clergyman.

EDITOR'S NOTE: We apologize for incorrectly reporting the death of Edgar Raymond Lorch in the April 1990 FOCUS. Professor Lorch, Adrain Professor Emeritus at Columbia University and Chairman of the University Seminar on Computers, Man, and Society, died 5 March 1990 at the age of 82. He was an MAA member for 54 years. Many members will recognize him for his numerous contributions to mathematics, including over one hundred articles and his publications, *Spectral Theory, Analisis Funcional,* and *Precalculus.*

FOCUS
on MAA Sections
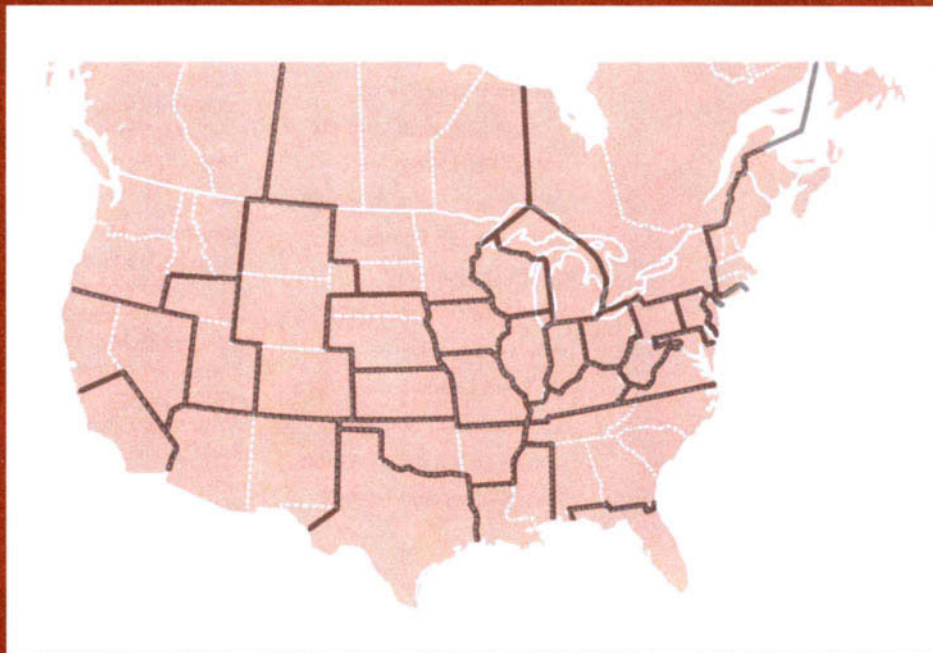
What's Happening in the Sections?

David W. Ballew, Chair, MAA Committee on Sections

ALLEGHENY   This Section, with the American Mathematical Society (AMS), sponsored a Shared Meeting at Penn State. At this meeting, Joan P. Wyzkoski Weiss taught a three-hour minicourse on "Computer Graphics" and directed an interactive student session. The Section's summer Short Course investigated "Symbolic Algebraic Computation." At the University of Pittsburgh at Johnstown, the Section conducted an "Early Mathematics Advising Programs" workshop for mathematics faculty and guidance counselors.

EASTERN PENNSYLVANIA AND DELAWARE   At this Section's spring meeting, anyone wishing to discuss strategies to attract more minority students into mathematics could gather at a special table during lunch.   The Section also enjoyed four invited speakers: Robert J. Weber, Marcia P. Sward, Herman R. Gluck, and Fred B. Schultheis.

FLORIDA   This Section has improved its triannual newsletter's format. During the past year, six of Florida's seven regions conducted their own meetings. The Section awarded *What is Calculus About*, the second volume in the MAA's New Mathematical Library series, to the thirty-five top scorers on this year's American High School Mathematics Examination (AHSME). Furthermore, to increase student participation at the national MAA meetings in January, the Section financially assisted three undergraduates from the University of West Florida's Student Chapter. Moreover, five undergraduates presenting papers at these meetings received expense payments. The Section meeting featured two minicourses: Gareth Williams' "Linear Algebra on the Microcomputer" and Bill Jordan's and Eunice F. Everett's "Graphics Calculator in the Calculus and Precalculus Classroom." Florida Commissioner of Education Betty Castor delivered a lively talk on the educational system.

ILLINOIS   This Section is proud of its strong Secondary Lecturer Program and the Illinois State High School Mathematics Contest. Furthermore, many Section members participate in the Association at both the Sectional *and* the national level. The Section received a report on the use of computers in mathematics courses at all levels. At the Section's annual meeting, a diverse audience assembled.

INDIANA   This Section hosted the 25th Annual Indiana College Mathematics Contest; teams of three undergraduate students, working together, compete in this contest; each college or university may enter several teams.

INTERMOUNTAIN   The Section's Spring meeting theme addressed "The Calculus: Past, Present and Future." Fred Rickey, complementing the theme, presented a minicourse on the "History of Calculus." A superb panel discussion centered on the "Lean and Lively Calculus." The meeting also included presentations and a discussion on the National Council of Teachers of Mathematics' (NCTM) *Standards* and on "US School Mathematics from an International Perspective: A Guide for Speakers" from the Mathematical Sciences Education Board (MSEB).

IOWA   This Section sponsored its traditional joint meeting with the American Statistical Association (ASA) and the Iowa Mathematics Association of Two-Year Colleges (IMATYC). This joint format attracts a diverse audience and substantially increases the number and variety of papers; indeed, participants could choose from as many as three parallel mathematics paper sessions.

KANSAS   Each year this Section meets with the Kansas Association of Teachers of Mathematics (KATM) and the Kansas Mathematics Association of Two-Year Colleges (KAMATYC). These meetings often attract more public school teachers than college faculty. This year participants enjoyed numerous papers and presentations including: Kendall O. Griggs' workshop on "CASIO" and Albert Delgado's workshop on "Calculus Software."

Leonard Gillman, Professor Emeritus at the University of Texas at Austin, and an MAA Past President. Professor Gillman joined the Seaway Section's 50th anniversary celebration at Colgate University as an Invited Lecturer. An enthusiastic audience enjoyed his presentation on "Classroom Notes."

culus." Marcia P. Sward, MAA Executive Director, discussed "The Challenges of the 90s," and Robert L. Devaney spoke on "Chaos, Fractals, and Dynamics." At the spring meeting, invited speakers included Harley Flanders, who investigated "Graphic Curves and Surfaces on the Computer," and Judy Green, who chronicled "Women in Mathematics before the MAA." Finally, student teams from the 1990 Mathematics Competition in Modeling reported on their activities.

MICHIGAN   This Section has updated Yousef Alavi's "Brief History of the Michigan Section." A total of 19,292 students from 502 schools participated in the Michigan Mathematics Prize Competition Examinations. In the summer, the Section sponsored a Short Course on "QuickBASIC." The annual meeting was jointly sponsored with MichMATYC. The Section has formed a committee to address issues especially relevant to mathematics department chairs in the region. In addition, the Section has recently established a Women's Study Group to improve the participation of women in MAA activities in Michigan. The Section Newsletter has launched a continuing feature, "From the Origin," to provide a forum for lively discussion of issues of importance to the mathematics community.

(Sections continued from page nine.)
KENTUCKY   This Section meets jointly with the Kentucky Section of the American Mathematics Association of Two-Year Colleges (AM-ATYC). During this joint meeting, Tylene S. Garrett taught a Short Course on "Fractals." The Section concertedly strives to attract more undergraduate students and student papers to its meetings. Its annual meeting also featured a Mathematics Reform Session to generate input to the Kentucky Mathematics Coalition.

LOUISIANA AND MISSISSIPPI   This Section notes that over 50% of its membership attended its annual spring meeting. That meeting included not only seventeen student papers, but also a team competition among fifty-seven students divided into fifteen groups. In addition, the Section awarded complimentary, one-year MAA memberships to presenters of outstanding student papers. The two best student presenters also received a $100 United States Savings Bond. The Section provided free student housing to all students who preregistered. The meeting also offered a workshop for department heads and two Short Courses: Marcus M. McWaters' "Implementing a Computer-Based Math Lab to Supplement Classroom Instruction" and Joseph J. Liang's "Arithmetic Coding Theory."

MARYLAND-DISTRICT OF COLUMBIA-VIRGINIA   This Section sponsored two successful meetings this year in addition to cosponsoring one of four Exxon meetings for students. In November, David A. Smith taught a minicourse entitled, "The Role of Writing in Cal-

At the Seaway Section's November 1989 meeting at Utica College in New York, John A. Thorpe of the State University of New York at Buffalo addressed "Mathematics Education, K through Graduate School: Critical Issues and Needed Actions."

MISSOURI   This Section's meeting attracted a wide range of audiences to its presentations on the "Year of National Dialogue." For example, on Friday night, participants could feast at a banquet and then, on Saturday, attend a Picnic Luncheon-Speakers' Forum. The Annual 5k Walk/Run preceded breakfasts for chairs and MAA representatives. A private foundation sponsored one featured speaker.

NEBRASKA   This Section's annual meeting offered two especially engrossing activities: a panel discussion on "Everybody Counts" and a presentation on Nebraska's "Jump" program. The Section assembles its program particularly to attract a diverse audience.

NEW JERSEY   This Section met jointly with the New Jersey Mathematical Association of Two-Year Colleges (NJMATYC); this meeting featured inviting talks on "The Mathematics of Christopher Columbus" by James Rubillo and "Meaningless Statements" by Fred S. Roberts. The Section actively cooperates with the State of New Jersey in MATHNET, which is concerned with curriculum and the teaching of mathematics in two- and four-year colleges. Furthermore, the Section was instrumental in getting a proclamation signed by the New Jersey Governor for Mathematics Awareness Week.
(Sections continues on next page.)

Simon Hellerstein of the University of Wisconsin at Madison delivered a talk on calculus reform at the Wisconsin Section's spring 1990 meeting in Richland.

*(**Sections** continued from previous page.)*

NORTH CENTRAL   This Section's 1989 Summer Workshop at Carleton College, "The Mathematics of Computer Graphics," featured superb presentations by principal lecturer Jack Goldfeather and many fascinating complementary lectures and graphics demonstrations. The excellence of this workshop inspired participants to award a special "Teapot Award" to Goldfeather and workshop organizer Steve Galovich. The Section presented this unique award at a surprise ceremony during the fall meeting. The Section prompted the Governor of Minnesota to declare one week in April as "Mathematics Awareness Week."

NORTHEASTERN   The attraction of more student papers ranks as a priority with this Section and, towards this goal, it received funding from Exxon for one of four Student Chapter conferences in spring 1990. The Section is also considering organizing a series of regional dinner meetings which would include representatives of state Departments of Education and various local mathematics teacher organizations. The Section is writing a detailed history of its activities. The Section's annual meeting theme focused on the "Year of National Dialogue." Robert L. Devaney and Marilyn B. Durkin taught a minicourse on "Chaos, Fractals, and Dynamics: Computer Experiments in Mathematics." Finally, Frank R. Giordano and D. Maurice Weir delivered their popular Summer Short Course "Outline for Teaching Differential Equations with Modeling and a Computer Algebra System."

Photograph courtesy of Sylvan Burgstahler

At the North Central Section meeting, Jack E. Goldfeather (left) and Steve Galovich (right), both of Carlton College in Northfield, Minnesota, received "Teapot Awards" for their 1989 summer workshop, "The Mathematics of Computer Graphics."

NORTHERN CALIFORNIA   This Section's annual meeting featured several presentations: Tony Barcellos' "Unreal Analysis"; Marcia P. Sward's "Everybody Counts"; William B. Gragg's "The Constructive Approach to Linear Algebra"; Elwyn R. Berlekamp's "The Games of Dots and Boxes"; and Gilbert Strang's "Careful Changes in the Calculus."

OHIO   George H. Andrews' summer Short Course, "Additive Number Theory," received enthusiastic reviews, as did Zaven A. Karian's fall microcourse, "Computer Algebra Systems," designed for students and Donald B. Parker's microcourse "The Sound of the Vibrating String." Thirty-three students delivered papers at the annual meeting. Especially interesting meeting events included a graduate school swap session, an informative discussion for prospective

Photograph courtesy of Gary L. Britton

During the Wisconsin Section's 1990 spring meeting at the University of Wisconsin at Richland, Linda G. Thompson (second from left) of Carroll College and Section Chair, congratulated recipients of the Outstanding High School Mathematics Teaching Award. Recipients, from left to right: Ron Donahoe, Thompson, Coy Kohn, and Charles Gunderson.

graduate students, and a session on "The Role of Women in the Section." This last session collected ideas on encouraging women to enter the mathematics profession.

OKLAHOMA AND ARKANSAS   This Section sponsored one of four Exxon Student Conferences, and its annual meeting included several excellent student papers. Students also attended a special workshop on "Chaos and Fractals" while faculty participants enjoyed a workshop on the "History of Mathematics in the Classroom." J. W. Neuberger delivered the Annual N. A. Court Lecture on "Differential Equations." The Section's Secondary Lectureship Program has sponsored forty talks in Oklahoma and forty-three in Arkansas.

PACIFIC NORTHWEST   De Witt L. Sumners conducted a Short Course on "Knot Theory and DNA," an interesting look at the insights the theory of knots provides to the chemistry of DNA molecules. This Section's meeting also demonstrated new instructional software for the I-81 Graphing Calculator. One evening, during the meeting, participants enjoyed an excursion to Ponzi Winery for wine tasting.

ROCKY MOUNTAIN   In 1992, this Section tentatively plans to meet with the Intermountain Section; in the early 1970s, a single section divided to form these two Sections. Since then, they have not assembled jointly. In addition, Robert L. Devaney organized an extremely successful Summer Short Course on "Chaos and Dynamical Systems."

SEAWAY   This Section's 50th anniversary meeting, held at Colgate University, site of the founding of the Section in 1940, was the highlight of the year. Paul Schaefer prepared a fifty-year history of

Photograph courtesy of Stephen R. Cavior

William O. J. Moser of McGill University and Invited Lecturer at the Seaway Section's 50th anniversary meeting, discussed "Problems in Discrete and Combinatorial Geometry." Here Moser expands upon his discussion with meeting participant, James Glasenapp.

Leon A. Henkin, (holding his Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics) attended the Northern California Section meeting with his students from the University of California at Berkeley. Jean B. Chan (second from left) of Sonoma State University and WAM Coordinator for the Northern California Region joined them.

(Sections continued from page eleven.)
the Section for distribution at the celebration. The Section also presented a plaque commemorating its founding and 50th anniversary to Colgate University. William O. J. Moser discussed "Problems in Discrete and Combinatorial Geometry" and Marshall M. Cohen, the Annual Harry M. Gehman Lecturer, spoke on "Combinatorial Group Theory: A Geometric Subject." The Section's microcourse focused on "Teaching and Learning Mathematical Concepts with ISETL."

SOUTHEASTERN   With 413 registrants, this Section enjoyed its largest attendance ever—indeed, as many participants have attended some joint summer meetings. These registrants included seventy-two students; fifteen presented student papers. Sixteen institutions participated in the TA RUSH, and Harvey Carruth's Short Course, "Creating an Alternative for a Freshman Mathematics Course," received highly favorable reviews. In addition, the Section featured a new panel—five mathematicians from industry describing how their profession uses mathematics. Furthermore, the Section presents its own biennial Distinguished Service Award and its newsletter contains advertisements from some of the graduate programs in the Section. Finally, department chairs met to discuss assessment, certification, etc.

SOUTHERN CALIFORNIA   The annual fall meeting, a joint endeavor with the American Mathematical Society (AMS), featured a workshop on "Calculus and the Computer" by William A. Harris, Jr., Ronald Miech, and Al Shenk. In addition, Uri Treisman discussed "Changing Demographics and the Future of Our Profession," and a panel discussion addressed "Equity Issues and Minority Access

The Seaway Section Hall of Fame: nine former section chairs and the incumbent convened on the campus of Colgate University in Hamilton, New York for that Section's 50th anniversary. From left to right, first row: Kenneth D. Magill, Jr., Malcolm W. Pownall, Rebecca E. Hill, and Francis D. Parker; second row: Kenneth Wooster, Paul T. Schaefer, Howard E. Bell, Erik Hemmingsen, Robert D. Larsson, and Charles R. Diminnie (the incumbent).

to Mathematics." The Section will again meet with the AMS in the fall of 1990. This meeting will promote the "Year of National Dialogue" as its theme and will sponsor a panel discussion on "Leading Mathematics Education into the 21st Century." Following this discussion, six parallel workshops will explore major issues addressed during the panel: assessment, access and equity; the curriculum; technology; pedagogy; and teacher education.

SOUTHWEST   This Section met jointly with the Arizona Mathematics Consortium and has concluded that such joint meetings attract a larger audience—an important consideration in sparsely populated regions like the Southwest. At the Section's request, the Governor of New Mexico issued an Official Proclamation recognizing Mathematics Awareness Week.

In February 1990, the Northern California Section assembled at the US Naval Postgraduate School in Monterey. As an Invited Speaker, Gene H. Goloub of Stanford University explored the "History of Numerical Linear Algebra."

TEXAS   This Section's annual meeting attracted 270 participants and featured a minicourse on "*Mathematica*," four invited addresses, forty-two contributed papers, four student papers, five short invited calculus papers, a panel discussion, and a banquet. In addition, department heads, institutional representatives, two-year college members, and MAA Student Chapter sponsors met in special sessions. Furthermore, its meeting format promotes informal exchange among participants. The Section's Long Range Planning Committee continues to prove an effective vehicle for calling attention to issues of importance to mathematics and mathematicians in the Section. Recent actions include a position paper on the equipment needs of mathematics departments and a movement to establish a Texas Mathematical Sciences Education Board. The Section also influences state political groups and regulatory agencies which impact mathematics and mathematics education.

WISCONSIN   This Section's Committee on Mathematics Curriculum and Articulation attracted many high school teachers to its meeting; the committee contacted these teachers with information about the meeting and then encouraged their attendance. In addition, this Committee recently released a paper identifying twelve issues which they strongly feel need to be addressed in the current efforts to improve the college preparatory mathematics curriculum.

Cultivating Mathematical Talent

In the April 1990 FOCUS, Howard Anton, Chair of the Committee on Student Chapters, reported on a recent, $20,000 grant from the Exxon Education Foundation to support the MAA proposal, *Cultivating Mathematical Talent: Pilot Programs for MAA Student Chapters.* That grant provided support to four MAA Sections to experiment with pilot student projects that hold promise for future implementation at national meetings. Grant recipients included: the Maryland-District of Columbia-Virginia, Ohio, Oklahoma-Arkansas, and Northeastern Sections. Soon thereafter, the Maryland-District of Columbia-Virginia Section invited the Eastern Pennsylvania-Delaware and New Jersey Sections to collaborate on its student conference. Thus, six Sections participated in the MAA's initiative.

The Exxon grant enabled these Sections to design meeting programs particularly appealing to students. Together, the meetings attracted more that 200 students and generated considerable enthusiasm for mathematics among the participants. The following descriptions of these programs' student activities will especially interest those Sections wishing to plan similar programs.

Northeastern Section Meetings Encourage Student Participation with Diverse and Appealing Activities

Karen J. Schroeder, Bentley College

During its annual spring meeting at Roger Williams College in Bristol, Rhode Island, 8 and 9 June 1990, the Northeastern Section organized a comprehensive program with features particularly appealing to students. This customized student program included a three-hour minicourse, a talk by Herbert S. Wilf of the University of Pennsylvania, student paper sessions, and a Student Chapter swap session.

Professors Robert L. Devaney of Boston University and Marilyn B. Durkin of Bentley College taught a two-part minicourse entitled "Chaos, Fractals and Dynamics: Computer Experiments in Mathematics," to approximately thirty-five students and to some faculty. Part One described iteration, the basic operation in dynamics, explored a mathematical description of chaos, and demonstrated how fractals arise naturally as the chaotic set of a dynamical system.   The discussion focused on the sine and cosine functions, which, when iterated, lead to complicated and unpredictable behavior. Part Two employed techniques developed in the first session to examine the exponential function.   Students responded to this minicourse with overwhelming enthusiasm; indeed, already, several participants have eagerly requested copies of the videotape.

The Northeastern Section attracted many students to its spring 1990 meeting at Roger Williams College in Bristol, Rhode Island. These participants clearly enjoyed the diverse student-oriented activities the Section organized.

Photograph courtesy of Laura L. Kelleher

The current chair and the last three chairs of the Northeastern Section gathered at that Section's 1990 spring meeting. From left to right: W. Thurmon Whitley of the University of New Haven, Karen J. Schroeder of Bentley Collge (current Chairperson), Steve K. Ingram of Vermont Technical College, and Dennis M. Luciano of Western New England College.

On Saturday morning, Herbert S. Wilf, editor of *The American Mathematical Monthly,* delivered a talk to students on "The Josephus Problem." His lecture, presented to a large audience of both students and faculty, illustrated this problem, yet unsolved (except in a few instances), and various attempts to develop an algorithm to solve it with computer aid.

At the student papers session—a regular feature of Northeastern Section meetings—eleven students delivered papers on diverse topics. Students from Rutgers University in New Jersey, Western New College and Cedar Crest College, both in Pennsylvania, the University of Massachusetts, the University of Maine, and the University of New Hampshire participated in this session. The Northeastern Section paid all registration fees and room and board for student paper presenters. All presenters also received a certificate of merit, a book, and a one-year membership in the MAA.

On Saturday afternoon, at a Student Chapter swap session, students exchanged details about successful Chapter activities with each other and with the Section's Student Chapter Coordinator, Thurmon Whitley of the University of New Haven. Ideas for future activities included: speakers (MAA, faculty, alumni, and student); membership drives; joint social and mathematical meetings with nearby chapters; and service activities (tutoring nearby high school students). Many of these Chapters had existed for less than three months and, as their members astutely recognized, their newly formulated ideas for activities lacked the refinement of experience. Consequently, the students agreed to organize another swap session for the fall meeting in November 1990. This later gathering would enable additional Student Chapter members to participate in the meeting and their ideas, by then tested and evaluated, promised an even more fruitful swap session.

At both Friday's banquet and Saturday's lunch, students, at their request, dined together—during these social events, they grew better acquainted with one another and informally shared their experiences as Student Chapter members.

A grant to the MAA from the Exxon Education Foundation paid all conference fees for twenty-three Student Chapter members. Students participating in this program attend the following colleges: Bentley College, Framingham State College, Western New England College, the University of Lowell, and the University of Massachusetts, all in Massachusetts; Roger Williams College in Rhode Island; St. Michael's College and the University of Vermont, both in Vermont; and the University of Maine. Bentley College subsidized an additional student's conference fees.

Three Sections Collaborate to Promote Lively Student Involvement

Deborah A. Frantz, Kutztown University

This chronicle documents some thoughts relative to the planning and implementation of the MAA Student Conference, "Cultivating Mathematical Talent," held 21 April 1990 at Goucher College in Towson, Maryland. Ben A. Fusaro of Salisbury State University received funding from the Exxon Education Foundation for this endeavor as a pilot project for the summer meetings in Columbus, Ohio. Exxon announced its award In mid-January, during the MAA national meetings, in Louisville, Kentucky. The MAA then invited me, as Student Chapter Coordinator for the Eastern Pennsylvania-Delaware Section, to participate in the planning and implementation of the project. Two other Sections—Maryland-District of Columbia-Virginia and New Jersey—joined us in this exciting venture.

Fortunately, Ben had already devised a preliminary budget and the shell of a healthy agenda, including possible speakers. Then, acting promptly, he arranged for the printing of posters. By early March, Student Chapter Advisors and MAA Institutional Representatives had received our informational mailing. During many subsequent telephone conversations, Ben and I discussed several activities we could incorporate into the student conference day. We debated prizes for student presentations . . . Cash? T-shirts? Plaques? Other? . . . and ideas on the program's time line. We ventured so far as to speculate that perhaps we could attract, at most, 40 students. We could include twenty-eight of these participants in the fractals workshop Michael Barnsley had agreed to present. While Ben and I deliberated on these meeting arrangements, he also continued to obtain commitments from speakers from industry and business.
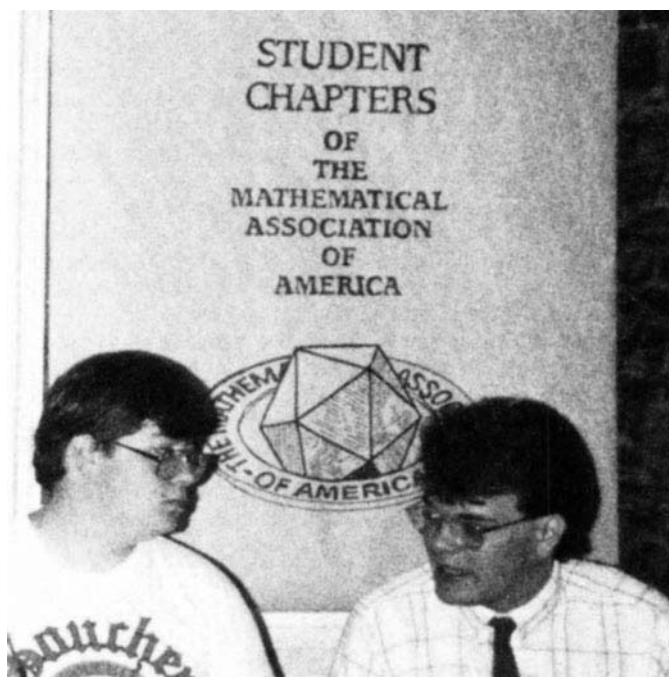
Students at Goucher College in Towson, Maryland welcome participants to the April 1990 MAA Student Conference, "Cultivating Mathematical Talent." Ben A. Fusaro of Salisbury State University and Deborah A. Frantz of Kutztown University organized this conference—a three-section collaboration—along with other members of the Maryland-District of Columbia-Virginia Section, the Eastern Pennsylvania-Delaware Section, and the New Jersey Section.

Students Respond to Oklahoma-Arkansas' Expanded Repertoire

Robert C. Eslinger, Hendrix College

The Oklahoma-Arkansas Section responded to the MAA's initiative, "Cultivating Mathematical Talent: Pilot Programs for MAA Student Chapters," with expanded and more substantial student activities at its meeting at John Brown University in Siloam Springs, Arkansas, 30 and 31 March 1990. The section supplemented its existing student paper sessions with a student workshop, a congenial student-faculty reception, awards for outstanding student papers, an information booth to promote the establishment of MAA student chapters, and a luncheon for student chapter advisors. The Section's Student Chapter leaders organized these activities with support from a $1,500 grant from the Exxon Education Foundation.

WORKSHOP   On the Friday morning before and the Saturday afternoon after its meeting, the Oklahoma-Arkansas Section conducted two three-hour student workshops on "Chaos and Fractals." Paul R. Goodey of the University of Oklahoma presented this session to sixty students from nineteen schools. Although the Section required preregistration, it did not charge for participation in the workshop. Goodey's session integrated theoretical and computational aspects of chaotic dynamical systems and the fractals they generate. In addition, he masterfully explored the material at a level and pace appropriate for the students—virtually all undergraduates

unfamiliar with the subject. Each student received a spiral-bound collection of the computer programs Goodey used to demonstrate the properties of chaotic systems.

RECEPTION   The student workshop ran concurrently with the Section's faculty workshop on the "History of Mathematics in the Classroom." Before separating for these workshops, both groups enjoyed a continental breakfast reception where students associated with mathematicians in an informal, yet professional setting. In addition, approximately every fifty minutes, the sessions broke for refreshments and brief conversation.

STUDENT PAPERS   For nearly two decades, the Oklahoma-Arkansas Section has included student paper sessions as an integral component of its meetings. This year, fourteen undergraduates delivered ten student papers—one-sixth of all contributed papers presented! This considerable student representation typifies their participation in previous years.

AWARDS   Awards for the best student papers delivered at the Section meeting continued the student workshop theme—"Chaos and Fractals." A panel of faculty judges selected the three most accomplished presentations and awarded the winners copies of Peitgen and Richter's *The Beauty of Fractals*. The first place winner also earned a diskette of *The Game of Fractal Images*, compliments of Springer-Verlag, Inc. Moreover, all student speakers received a complimentary, one-year Association membership.

*(**Three Sections** continued from previous page.)*
Approximately three weeks before the project's debut, sixty-one students (and seventeen faculty) had expressed a genuine interest in attending the conference. This unexpected response forced us to consider expanding the student program to include two workshop session. This, of course, created some headaches for Ben and me, not to mention the folds at Goucher College tirelessly preparing local arrangements. Fortunately, our promotional material had not pointedly advertised the day's activities schedule and, after several juggles, we decided to tighten the agenda and create a second fractals workshop. Barnsley graciously agreed to present this second session without a break.

During the week prior to 21 April 1990, however, another major concern befell us. Barnsley, a key player, could not attend our conference. He did, however, provide a substitute—John H. Elton of Georgia Tech. As Ben dealt with this change, I continued monitoring plans for student presentations and the Student Chapter swap sessions.

The Student conference day finally arrived. At 8:00 am, Student Chapter Coordinators from the three participating sections—Bill M. Sanders of James Madison University, Maryland-District of Columbia-Virginia Section; Dave Goloff of Johns Hopkins University, New Jersey Section and myself—met with Ben and Lee H. Seitelman, a lunch speaker, to discuss last-minute preparations. We decided Lee would moderate the student presentation session and that at least three Student Chapters coordinators would form the judging panel. I designed scorecards for the judges.

The student paper session proceeded beautifully. Lee proved the ideal moderator. Indeed, of all of the contributed paper sessions I have attended, I have never before witnessed the interaction that flourished on Goucher's campus. Between presentations, Lee's

ability to comment insightfully and provocatively on the diverse topics prompted other comments and questions from the audience. There was actually a dialogue of mathematics taking place! (At the session's conclusion, I counted sixty-eight people in the room.) During these presentations, Ben, with a student and Tony D. Berard of King's College, loaded software into the computers for the workshops. We had decided to limit enrollment in each workshop to twenty students (and no faculty). The participants responded to these workshops with considerable enthusiasm.

A superb lunch followed the student paper session. The noise level in the lunch room clearly indicated to me the conversation's liveliness. The judges discussed their opinions of the speakers and *(**Three Sections** continues on page sixteen.)*

In April 1990, at Goucher College in Towson, Maryland, three sections gathered for the MAA Student Conference, "Cultivating Mathematical Talent." During this conference, several students presented contributed papers that inspired a memorable and animated "dialogue of mathematics" among students and faculty.

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*(**Oklahoma-Arkansas** continued from previous page.)*
INFORMATION BOOTH   The Central Arkansas Student Chapter sponsored a booth in the Section meeting's exhibition area to provide information to others interested in establishing Student Chapters at their institutions. Both students and faculty advisors from existing Chapters tended the booth and distributed brochures, posters, application forms, and chapter resource packets from MAA headquarters. The booth also afforded a relaxed setting in which students from different chapters could cultivate friendships.

ADVISORS' LUNCHEON   Prior to the Section meeting, Student Chapter faculty advisors gathered for lunch to discuss student activities during the meeting and to share experiences of their respective chapters. Topics included institutional support of chapter activities, especially travel to the section meetings, activities for chapter meetings, the relationship between student chapters and honorary societies like Pi Mu Epsilon, and membership renewal procedures.

EVALUATION   The Oklahoma-Arkansas Section designed and administered its project primarily to experiment, at the section level, with prototypes of student activities suitable for eventual implementation at the national meetings. In formal evaluations, students and faculty responded positively to the Section meeting. Furthermore, several activities effected results indicative of their potential efficacy at national meetings. Most significantly, student attendance at the Section meeting increased dramatically; the meeting attracted sixty-eight students—one-third of all its participants and a threefold gain from the previous year. Almost all these students attended the workshop—a clear suggestion that such an activity formed the pri-

mary meeting attraction for students. In fact, the student workshop achieved such noteworthy success that the Section determined to incorporate this event as a regular feature of its meetings—provided it could establish adequate funding for such an endeavor.

Furthermore, the meeting appeared to stimulate student involvement at the local level. Indeed, the Section meeting's focus on student activities may have fostered the subsequent establishment of three new MAA Student Chapters within the region. The students' considerable expression of interest at the meeting suggests more Student Chapters will surely follow.

CONCLUSIONS   Student participation at national MAA meetings, especially summer meetings, resembles their participation at Oklahoma-Arkansas Section meetings before Spring 1990: students socialize at student receptions and deliver papers at either Pi Mu Epsilon meetings or MAA student paper sessions. The Oklahoma-Arkansas project strongly suggests that the addition of one or more student minicourses (comparable to existing faculty minicourses) at the national meetings may effectively stimulate student participation at those meetings. These minicourses, in conjunction with student paper sessions, social events designed specifically for students, meetings among Student Chapter members and advisors, and student access to ongoing activities such as invited addresses, could form a core of student-oriented activities. Ultimately, this core of activities would realize the MAA's objective—to attract students into the mathematical mainstream through the establishment of Student Chapters. We have not yet determined, however, how to make attendance at national meetings affordable for students.

(Three Sections continued from page fifteen.)
determined the winners of the two calculators from the Joint Policy Board for Mathematics (JPBM). (Students from Lafayette College and from Salisbury State University won first and second awards, respectively.)

During the awards presentation, each student speaker received an MAA certificate (thanks to Andrew Sterrett, Interim Associate Director for Programs at MAA headquarters), a simple calculator, and a reprint of Lynn A. Steen's article, "Patterns" (thanks to Donna Murray, assistant to Alfred B. Willcox, then JPBM Executive Director). Student speakers also accepted Section nomination forms to complete and return. Most students chose membership in the MAA.

Our two lunch speakers continued the student program: Lynn O. Wilson of AT&T Bell Laboratories considered "Industrial Environments, An Inside View" and Lee H. Seitelman of Pratt and Whitney Aircraft revealed "The Best Course You Never Took."

Bill Sanders and I moderated the Student Chapter swap sessions. I opened each session with questions relative to the students' mathematical activities. These questions fostered a free-flow discussion among students and faculty on activities of mutual interest as well

as on suggestions for continued MAA support. Bill did a superb job keeping on track! After approximately one hour, students in this first session animatedly chattered among themselves, exchanging information and contributing to the blue and yellow "scrolls" tacked to the wall. The enthusiastic clamor from their conversation permeated the entire floor and did not cease until 3:25 pm, when they departed for the workshop!

Unfortunately, I acquired a pounding headache during the first hour of the swap session (having nothing to do with the activity!). When the second session began, my head still throbbed. Despite this headache, I tried to repeat my performance in the first session, but I did not anticipate the reactions of this second group to my questions. In the group, two faculty and eight students from active Student Chapters participated. In my opinion, these students need little, if any, motivational help to continue their Student Chapter activities. They, too, however, added their thoughts to the blue and yellow "scrolls."

I left Goucher an exhausted woman! Reflections on my return drive to Pennsylvania revealed that Ben had superbly organized the conference. The day had provided an overwhelmingly positive mathematical experience for the student participants.

Ohio Section Meetings Emphasize Student and Faculty Interaction

Alan C. Stickney, Wittenberg University

On the 27 and 28 April 1990, members of the Ohio Section convened at the University of Cincinnati for that region's annual spring meeting. For many years now, this spring meeting has attracted students as well as faculty, with several activities designed especially to interest students. Furthermore, a grant from the Exxon Education Foundation contributed significantly to the realization of a meeting both educational and enjoyable for students.

Photograph courtesy of Denison University.

During the spring 1990 Ohio Section meeting at the University of Cincinnati, Zaven A. Karian of Denison University engaged numerous students with his microcourse, "Computer Algebra Systems."

For example, student activities included both a student paper session and a festive pizza party. On Saturday morning, Donald B. Parker of the University of Cincinnati presented a two-hour minicourse on the "The Sound of a Vibrating String." Zaven A. Karian of Denison University taught another microcourse, "Computer Algebra Systems," designed particularly for students. John W. Dawson, Jr. of Pennsylvania State University delivered the Section's Invited Address on "The Life and Work of Kurt Gödel," while Olaf P. Stackelberg of Kent State University discussed "Number Theory and Probability." Many students attended both these events. Furthermore, of the sixty-two student participants, thirty-five delivered thirty-three papers and thirty en-

rolled in the minicourse. At the pizza party, students from regions throughout Ohio met and shared their thoughts on their schools, mathematics, and whatever else came to mind. A lively time, indeed, was had by all.

Finally, the Section announced that it will compile its first edition of an Ohio Speakers List, scheduled to appear in late 1990. The List will provide a key resource for MAA Student Chapters and other undergraduate mathematics groups around the state as they organize their programs.

minorities in mathematics, and the teaching of statistics in mathematics departments. Representatives of federal agencies that fund mathematical sciences projects will also participate. Registration fee for all sessions, materials, related meals, and social activities: $160.00. For futher information, contact the BMS at: National Research Council, 2102 Constitution Avenue, Northwest, Room NAS 312, Washington, DC 20418; (202) 334-2421.

2 and 3 November *Fifth Annual Pi Mu Epsilon Regional Undergraduate Mathematics Conference,* St. Norbert College, DePere, Wisconsin 54115-2099. Open to all students, faculty, and others interested in mathematics. Invited speaker: Jeanne LaDuke of DePaul University. For further information, contact: R. Poss of St. Norbert College at (414) 337-3198.

5–8 November *Second SIAM Conference on Linear Algebra in Signals, Systems, and Control,* Cathedral Hill Hotel, San Francisco, California. Organizers: Biswa Datta of Northern Illinois University and David Carlson of San Diego State University. For further information, contact: SIAM Conference Coordinator, Department CC0590, 3600 University City Science Center, Philadelphia, Pennsylvania 19104-2688; (215)382-9800; siam-confs@wharton.upenn.edu. FAX: (215) 386-7999.

UME TRENDS

News and Reports on Undergraduate Mathematics Education

UME TRENDS, devoted to issues concerning undergraduate mathematics education, is published by the Joint Policy Board for Mathematics on behalf of the American Mathematical Society, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics.

TRENDS appears six times a year, in March, May, August, October, December, and January. Volumes 1 and 2 were published with a grant from the National Science Foundation.

Beginning with Volume 3 in March 1991, UME TRENDS ends its period of full support from NSF, AMS, MAA, and SIAM. The partially subsidized subscription rate is $12. Subscribers outside the United States should add $8 for mailing.

To receive Volume 3, those currently receiving TRENDS need simply return the reminder sent in August along with the appropriate payment. New subscribers should send their orders and payments to

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The Mathematical Association of America's more than 30,000 members all receive FOCUS and its "Employment Advertisements" section as a standard membership benefit. Most of these FOCUS readers describe themselves as mathematicians teaching in secondary schools, colleges and universities, or working in business, industry, and government. FOCUS ads cost approximately 60 cents per word; such text will yield roughly sixty-six words per eight lines and slightly more than eight lines per column inch.

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The Association publishes FOCUS six times per year. Advertisement copy deadlines include:

■ November–December 1990 issue
   Friday, 28 September 1990

■ January–February 1991 issue
   Friday, 30 November 1990

After these deadlines, we advise potential advertisers to telephone MAA headquarters to inquire about advertising space availability in these issues. *The Association will accept postdeadline advertisements on a discretionary basis only.*

HEAD
DEPARTMENT OF MATHEMATICS

Ferris State University invites nominations and applications for the position of Head of the Department of Mathematics. The Department of Mathematics has 23 faculty and is responsible for undergraduate education in math and computer science and for baccalaureate programs in Applied Mathematics and Actuarial Science. *QUALIFICATIONS:* An earned doctorate in mathematics or applied mathematics, or an earned doctorate in mathematics edu-

cation with a master's in mathematics; professional development and teaching experience appropriate to senior rank; familiarity with a broad spectrum of math instruction; ability to work with others in a broad array of disciplines; and personal qualities of integrity, industriousness, organization, leadership, and interpersonal skills.

Ferris State University is a career-oriented, open-admissions, state-funded institution, located in western Michigan with 11,800 students and over 120 degree programs. Its schools include Allied Health, Arts and Sciences, Business, Education, Pharmacy, Technology, and the College of Optometry.

Review of applications will begin August 30, 1990, with tentative start date of December 1, 1990. Send letter of interest, curriculum vitae, 3 letters of reference, and official transcripts to: George Wales, Search Committee Chair, Starr 120, Ferris State University, Big Rapids, MI 49307.

ASSISTANT DEAN
Engineering/Science/Math

Ocean County College reopens search for this 12 month position. Master's degree req'd, earned doctorate desired. 5 yrs teaching exp in appropriate subject area at post-secondary level & demonstrated leadership in education administration, preferably at dept. level, req'd. Competitive salary, outstanding benefits. Position presently open; reporting date to be 8/15/90, 1/1/91, or 7/1/91, as arranged with successful candidate. Search will remain open until position is filled. Send application/resumé to: OCEAN COUNTY COLLEGE, Personnel Dept., CN2001, Toms River, NJ 08754. AA/EOE.

CLARE BOOTH LUCE PROFESSORSHIP
HARVEY MUDD COLLEGE
Department of Mathematics

Harvey Mudd College invites applications from outstanding women candidates for appointment to a *Clare Booth Luce* assistant/associate professorship in the Department of Mathematics starting in 1991/1992. Preference will be given to applicants whose research and teaching interests are in differential equations, dynamical systems, or applied analysis.

The successful candidate will be expected to teach courses in her area of specialization, as well as general introductory calculus and differential equations courses, and to pursue an active research program. The *Clare Booth Luce Professorship* provides substantial supplemental funds for five years which can be used to cover professionally related expenses.

Harvey Mudd College is a selective institution specializing in engineering, mathematics, and the sciences. It is a member of the Claremont colleges, an internationally renowned group of five independent, undergraduate colleges plus a graduate school which offers a PhD program in mathematics and provides opportunities for graduate level teaching and thesis supervision. The applied mathematics program includes the Mathematic Clinic, a mode of instruction pioneered in Claremont which attracts projects funded by industrial organizations.

Interested women should send a *curriculum vitae,* a statement of current research interests, and information on teaching experience. Candidates should arrange to have three letters of reference sent and those candidates at the beginning assistant professor level should also arrange for official transcripts to be sent. All application materials should be sent or mailed as soon as possible, but, at the latest, to meet an October 1, 1990 deadline. Please address inquiries and applications to:

Dr. H. Krieger, Chair
Department of Mathematics
Harvey Mudd College
Claremont, CA 91711
(714) 621-8000, ext. 3618/8023
FAX: (714) 621-8465

Harvey Mudd College is an equal opportunity, affirmative action employer.

WASHINGTON AND LEE UNIVERSITY
Department of Mathematics
Lexington, VA 24450

RADFORD PROFESSOR AND DEPARTMENT HEAD

The Radford Chair of Mathematics will be filled in September 1991. An applicant should have a background that warrants tenure and the rank of full professor, a record of effective teaching and scholarship, and a commitment to mathematics education in a liberal arts setting. The Radford Professor will assume the position of department head for a five-year term.

The mathematics faculty numbers seven, all with PhDs. The University is primarily a liberal arts college with 1,600 undergraduates. It is 240 years old and is located in the lower Shenandoah Valley. *Address inquiries to: Prof. R. S. Johnson, Search Committee, Mathematics Department. The selection process will begin in November 1990.*

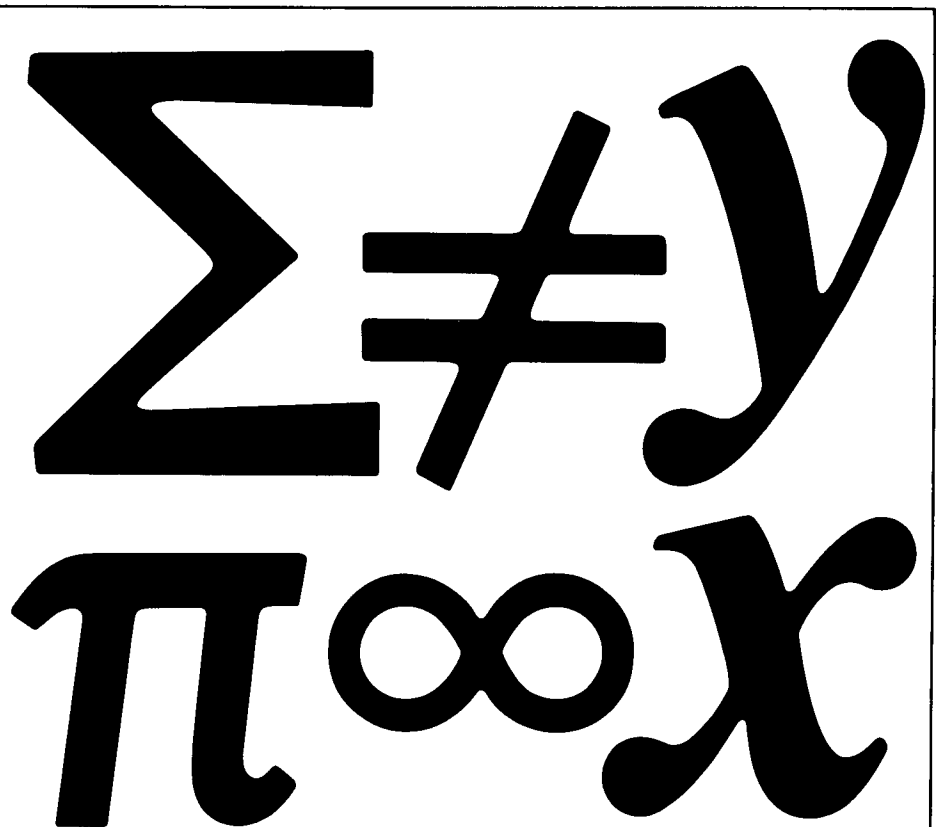## ASSISTANT PROFESSOR OF MATHEMATICS
Roanoke College

Tenure-track appointment at the assistant professor level beginning August 1991. PhD in mathematics required. Salary commensurate with qualifications. Excellent teaching emphasized, active scholarship encouraged. Commitment to liberal learning expected. Roanoke College is a private, liberal arts college affiliated with the Lutheran Church and located in the Roanoke Valley of Virginia. Position is open until filled. Send vita, graduate transcript, and three letters of recommendation to: Dr. W. D. Ergle, Department of Math, Computer Science, and Physics, Roanoke College, Salem, VA 24153; (703) 375-2449. AA/EOE.

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Lawrence Tech, Michigan's largest, single-campus, independent university, invites applications for a tenure-track position. Either a PhD in computer science with a strong mathematics background or a PhD in mathematics with a master's in computer science is required. A strong commitment to undergraduate teaching is essential. Send a letter of application, curriculum vitae, and three letters of reference to: Dr. William C. Arlinghaus, Chairperson; (313) 356-0200. Position is open until filled.

Calendar

National MAA Meetings

16–19 January 1991 74th Annual Meeting, San Francisco, California (Board of Governors, 15 January 1991)
8–11 August 1991 67th Summer Meeting, Orono, Maine (Board of Governors, 7 August 1991)
8–11 January 1992 75th Annual Meeting, Baltimore, Maryland (Board of Governors, 7 January 1992)

Sectional MAA Meetings

Eastern Pennsylvania and Delaware University of Delaware, Newark, Delaware: 10 November 1990
Florida Eckerd College, St. Petersburg, Florida: 1 and 2 March 1991
Illinois Eastern Illinois University, Charleston, Illinois: 26 and 27 April 1991
Indiana Valparaiso University, Valparaiso, Indiana: 12 and 13 October 1990; Anderson University, Anderson, Indiana: 23 March 1991
Intermountain Ricks College, Rexburg, Idaho: 5 and 6 April 1991
Iowa Drake University, Des Moines, Iowa: Spring 1991
Kansas Southwestern College, Winfield, Kansas: 5 and 6 April 1991
Kentucky Northern Kentucky University, Highland Heights, Kentucky: 5 and 6 April 1991
Louisiana and Mississippi University of Mississippi, Biloxi, Mississippi: 1 and 2 March 1991
Maryland–District of Columbia–Virginia Towson State University, Towson, Maryland: 16 and 17 November 1990; Virginia Commonwealth University, Richmond, Virginia: Spring 1991
Michigan Calvin College, Grand Rapids, Michigan: 10 and 11 May 1991
Missouri The University of Missouri at Rolla, Rolla, Missouri: 5 and 6 April 1991
Nebraska Nebraska Wesleyan University, Lincoln, Nebraska: 26 and 27 April 1991
New Jersey Seton Hall University, South Orange, New Jersey: 10 November 1990
North Central South Dakota State University, Brookings, South Dakota: 26 and 27 October 1990
Northeastern Framingham State College, Framingham, Massahcusetts: 16 and 17 November 1990
Northern California California State University at Hayward, Hayward, California: February or March 1991
Ohio Marietta College, Marietta, Ohio: 19 and 20 October 1990
Oklahoma and Arkansas Cameron University, Lawton, Oklahoma: 29 and 30 March 1991
Pacific Northwest Seattle Pacific University, Seattle, Washington: 20–22 June 1991
Rocky Mountain University of Northern Colorado, Greeley, Colorado: Spring 1991
Seaway State University of New York at Oswego, Oswego, New York: 2 and 3 November 1990; State University of New York at Oneonta, Oneonta, New York: Spring 1991
Southeastern University of South Alabama, Mobile, Alabama: 5 and 6 April 1991
Southern California University of California at Irvine, Irvine, California: 10 November 1990
Southwestern New Mexico State University, Las Cruces, New Mexico: 5 and 6 April 1991
Texas Stephen F. Austin State University, Nacogdoches, Texas: 4–6 April 1991
Wisconsin University of Wisconsin, Oshkosh, Wisconsin: 26 and 27 April 1991

Other Meetings

28 and 29 September *Linear Algebra and Its Applications,* Miami University, Oxford, Ohio 45056. Principle speakers include Charles Curtis of the University of Oregon, Gilbert Strang of MIT, and Hans Zassenhaus of Ohio State University. For further information, contact: John Skillings of Miami University's Department of Mathematics and Statistics.
5–7 October Mathematical Sciences Institute (MSI) *Workshop on Partial Differential Equations,* at Cornell University. Topics include non well-posed problems, isoperimetric inequalities, and finite time blowup. For further information concerning the scientific program, contact: Alfred Schatz, Department of Mathematics, Cornell University, 303 White Hall, Ithaca, New York 14853; (607) 255-2318; schatz@mssun7.msi.cornell.edu. To attend the workshop, contact MSI at: 201 Caldwell Hall, Ithaca, New York 14853-2602; (607) 255-7740.
13 October *Underrepresented Groups in Mathematics: Overcoming the Obstacles,* Community College of Philadelphia. Sponsor: MAA Eastern Pennsylvania and Delaware Section. Speakers: Uri Treisman of the University of California at Berkeley and Swarthmore College, and Johnny Houston of Elizabeth City State University and Executive Director of the National Association of Mathematicians. In addition, panelists from the Philadelphia region will describe local programs and activities concerned with underrepresented groups in the mathematical sciences. For further information, contact: Joanne Darken, Department of Mathematics, Community College of Philadelphia, 1700 Spring Garden Street, Philadelphia, Pennsylvania 19130; (215) 751-8721 or 8410.
18–21 October *Sixteenth Annual Convention of the American Mathematical Association of Two-Year Colleges,* the Fairmont Hotel, Dallas, Texas. For further information, contact Eddie W. Robinson, Cedar Valley College, 3030 North Dallas Avenue, Lancaster, Texas 75134-3799; or Tommy Thompson, Brookhaven College, 3939 Valley View Lane, Farmers Branch, Texas 75244-4997.
19 and 20 October The National Research Council's Board on Mathematical Sciences (BMS) will sponsor its *1990 Mathematical Sciences Department Chairs Colloquium,* Washington, DC. Theme: "Departmental Outreach." Program includes panel presentations and discussions on departmental outreach, women and *(Calendar continues on page sixteen.)*