

FOCUS

Volume 13, Number 1

THE NEWSLETTER OF THE MATHEMATICAL ASSOCIATION OF AMERICA

February 1993

John Kemeny, Former Dartmouth President and Computer Pioneer, Dies at 66



Professor John G. Kemeny of Dartmouth College died on 26 December, 1992 in Lebanon, New Hampshire. He was 66. He was perhaps best known as the co-author (with Tom Kurtz) of the computer programming language BASIC and as the co-developer (also with Kurtz) of the pioneering computer time-sharing system at Dartmouth. A logician, he was a member of the mathematics faculty at Dartmouth from 1953, Chair of the Department from 1955 until 1967, and President of the College between 1970 and 1982. In 1979,

he was selected by President Carter to chair the presidential commission to investigate the Three Mile Island nuclear accident. He taught at Dartmouth until 1990, and continued to be actively involved in the college until his death.

A native of Budapest, Hungary, John Kemeny immigrated to the United States in 1940. During World War II, while still an undergraduate student at Princeton, he interrupted his studies to work on the Manhattan Project in Los Alamos. Later, while a graduate student at Princeton, he was an assistant to Albert Einstein.

During his tenure as department chair at Dartmouth, he helped to guide Dartmouth to national leadership in the educational uses of computers and introduced finite mathematics into the undergraduate mathematics curriculum as an alternative to calculus for students in the social sciences. His book, *Introduction to Finite Mathematics*, co-authored with Laurie Snell and Gerald Thompson, sold over 200,000 copies.

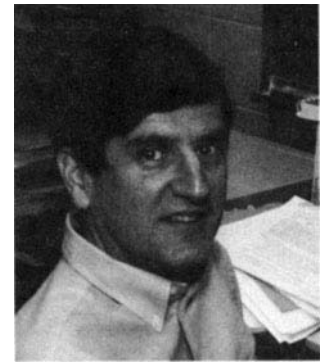
As President of Dartmouth, he oversaw the college's transition from an all-male to a co-ed institution, renewed the college's founding commitment to educate Native Americans, and initiated the Dartmouth Institute, a program of continuing education in liberal studies for business and professional people.

Throughout his career, he was deeply committed to college teaching—he taught two courses a year throughout his presidency—and was actively involved in educational issues in the school system, serving for a time as Chair of the MAA Committee on Teacher Training. A firm

Please see **Kemeny** on page 30

Carl Pomerance to be the New Pólya Lecturer

Carl Pomerance, of the University of Georgia, is to be the MAA's next Pólya Lecturer. Professor Pomerance is best known for his work in computational number theory. His 1981 *Mathematical Intelligencer* article "Recent Results in Primality Testing," won him the MAA's Chauvenet Prize in 1985.



Born in Joplin, Missouri, Pomerance earned his bachelor's degree in mathematics at Brown University in 1966 and his master's and doctorate at Harvard (1970 and 1972). Apart from short-term positions elsewhere, he has been on the faculty at the University of Georgia since 1972.

Professor Pomerance has been particularly active in trying to bring number theory to new and broader audiences. Most of this effort has been with recent developments in algorithmic aspects of number theory. His *MAA Lecture Notes* volume on primality testing has sold nearly 2000 copies. Of number theory as a vehicle for introducing newcomers to mathematics, he says:

"Number theory remains one of the most attractive areas of mathematics for beginners, partly because of the accessibility of the subject and partly because of the wealth of unsolved problems. It is very important for all of mathematics to have areas that are seen to be friendly and approachable. That is, we need to bring people into the store so that they may see some of the other items we have for sale!"

On being informed of his appointment as the new Pólya Lecturer, Professor Pomerance remarked: "It is a great honor and I am thrilled. I look forward to giving the lectures."

Massey Resigns from the National Science Foundation

Walter Massey has announced his resignation as Director of the National Science Foundation. He has been offered the position of Senior Vice President for Academic Affairs and Provost of the University of California, the number two position in the ten-campus UC system. In a statement, Massey described the offer as an opportunity he could not pass up.

NSF Funded Calculus Reform Workshop Program

Numerous projects have been undertaken over the past five years to reform the way calculus is taught in this country. Content has been streamlined, applications have been stressed, technology has been exploited, and pedagogy has been changed. So far, however, this work has been concentrated in a relatively small number of schools. The purpose of this program, funded by the National Science Foundation, is to make the fruits of this program available on a national level wherever calculus is taught: high schools, community colleges, four year colleges, and universities.

There will be 16 one-week workshops offered, 8 in the summer of 1993, 8 in the summer of 1994, at sites located throughout the country. Each workshop will have 24 participants chosen not only because they teach calculus, but because they are leaders in the high schools, community and four year colleges, and universities of the areas from which they come.

Workshop instructors will be drawn from the ranks of those who have led the reform movement. They will, in their respective workshops, illustrate the use of the particular materials and methods they have developed. They will also describe how they overcame obstacles (need for new resources, skepticism of client disciplines, colleague resistance) that confront any curricular reform.

Besides having the opportunity to actually participate in the activities of a particular approach to reform, participants will also consider the criticisms that led to the calculus reform movement, be presented with a national overview of responses that are being tried, and be asked to reflect on the goals and expectations they bring to teaching the subject. They will then be asked to consider their own situation and formulate a plan for action in their home institution.

For more information, contact Don Small, Dept. of Mathematical Sciences, USMA, West Point, NY 10996.

1993 NSF Calculus Reform Workshops (Call or write Local Contact persons for information)

30 May - 4 June 1993: "Core Approach to Calculus", Instructor: Don Small, U.S. Military Academy, West Point, NY, local contact: David Hughes, Math Dept., Abilene Christian Univ., Abilene, TX 79699, (915-674-2162)

13-18 June 1993: "Calculus in a Real and Complex World", Instructor: Frank Wattenberg, Univ. of Massachusetts, local contact: Kit Lumley, Dept. of Math, Columbus College, Columbus, GA 30460 (706-568-2294)

13-18 June 1993: Ithaca College Program, Instructors: John Maceli, Diane Schwartz, local contact: Clayton Dodge, Dept. of Math, Univ. of Maine, Orono, ME 04469 (207-581-3908)

13-18 June 1993: Harvard Consortium Program, Instructors: Jeff Tecesky-Feldman, Haverford College, Patti Lock, St. Lawrence Univ., local contact: Cynthia Siegel, Dept. of Math, Univ. of Missouri, St. Louis, MO 63121 (314-553-6425)

20-25 June 1993: Oregon State Program, Instructors: Tom Dick (Oregon State), Tom Ralley, Ohio State, local contact: Jeanette Palmiter, Dept. of Math, Portland St. Univ, Portland, OR 97207 (503-725-3658)

27 June - 2 July 1993: St. Olaf College Program, Instructors: Arnold Ostebee, Paul Zorn, St. Olaf College, local contact: Charlene Beckman, Dept. of Math, Grand Valley Street, Allendale, MI 49401, (616-895-2066)

18-23 July 1993: "Project Calc," Instructors: Lawrence Moore, David Smith, Duke Univ., local contact: David Bressoud, Dept. of Math, Penn State Univ., University Park, PA 16802 (814-865-4061)

18-23 July 1993: Iowa State Univ. Program, Instructors: Jerold Mathews, Elgin Johnston, Iowa State Univ., local contact: Lawrence Ford, Dept. of Math, Idaho State Univ., Pocatello, ID 83209 (208-236-3350)

The Eastern Pennsylvania & Delaware Section of the Mathematical Association of America 1993 Summer Workshops

A Mathematical Sampler: 1647-1900
Presented by William Dunham, Muhlenberg College
14-18 June 1993
Held on the campus of Messiah College, Grantham, PA

This five-day workshop examines a collection of significant theorems from a 250 year span of the history of mathematics. We will consider original work of Newton, the Bernoullis, Euler, Cantor, and other major figures as they addressed questions from the realms of analysis, number theory, algebra, geometry, and set theory. The theorems — all of which have relevance for the undergraduate classroom — will be amplified by biographical information and placed in historical context, but our primary focus will be on the genius of great mathematicians doing great mathematics.

The cost of this workshop, including room and board is \$270. The workshop will have an enrollment limit of 30 participants.

Symmetry and Group Theory
Presented by Doris Schattschneider, Moravian College
7-11 June 1993
Held on the campus of Gettysburg College, Gettysburg, PA

This workshop will emphasize a visual, hands-on approach to understanding the symmetry groups of two- and three-dimensional objects through the use of computer software, patterns and tilings, polyhedral models, and videotapes. Most abstract concepts encountered in group theory can be illustrated in a graphic manner using this approach. In addition, symmetry will be exploited to understand the structure of some well-known groups.

Room, board, and a modest stipend will be provided by the National Science Foundation grant #USE-9154183. The workshop is limited to 25 participants.

**For further information or to enroll in these workshops contact: Dr. Marvin Brubaker,
Department of Mathematical Sciences, Messiah College, Grantham PA 17027, 717-766-2511, ext. 71**

News and Highlights from the Joint Meetings



John Kenelly, Clemson University, Marcia P. Sward, MAA Executive Director, A. Wayne Rogers, Macalester College, and Project Director of the NSF grant supporting the Resources for Calculus Collection, and Thomas W. Tucker, Colgate University at the Resources for Calculus Collection Author's Reception



Barbara T. Faires, a member of the MAA's Executive and Finance Committees, and Andrew Sterrett, MAA's Assistant Director of Programs enjoy ice cream at the "Make-Your-Own-Sundae Party." More photos from the party on page 11



An international meeting ...Carole Lacampagne, U.S. Department of Education, Jordan M. Stoyanov, Bulgaria Academy of Sciences, Institute of Mathematics, and Richard K. Guy, University of Calgary, Canada

Highlights from the President's Report



MAA President, Deborah Tepper Haimo at the MONTHLY Centennial Banquet

At the San Antonio meeting, MAA President Deborah Tepper Haimo presented her last presidential report to the Board of Governors. Among the activities that the MAA has accomplished during her two year term as president, many of which she mentioned in her report, are the following:

"One of my first acts on assuming office was the approval of the proposal of our imaginative Executive Director, Marcia Sward, to develop a strategic plan to set our course and provide a better defined and more focused direction for the MAA. This effort, ably directed by Tom Tucker, has engaged us in serious analysis of all our activities. . . ."

"With our newly restored headquarters building in the nation's capital, we have created a true mathematical center. Aside from our own MAA offices, including that of Strengthening Underrepresented Minority Mathematics Achievement (SUMMA), we now also have as occupants the Conference Board of the Math-

ematical Sciences (CBMS), the Joint Policy Board for Mathematics (JPBM), and the Washington office of the American Mathematical Society (AMS). . . . Our new computer system has been installed and is functioning . . ."

"One of the most gratifying culminations of my Presidency will be the national recognition to be given to some of our most distinguished teachers of mathematics. For many years I have been concerned about the MAA's award system which provides acclaim for a variety of pursuits related to teaching but merely gives lip service to that one most fundamental activity. It is highly satisfying to have succeeded in introducing a program of awards specifically designated for distinguished teaching."

*"The future of any organization rests with its youth, and the MAA has been very active in setting up new Student Chapters and involving students in its activities. A new magazine directed to them, *Math Horizons*, is about to be launched. . . ."*

MAA and AMS vote to move 1995 January meetings from Colorado

Keith Devlin

Following an historic joint session of the MAA Board of Governors and the AMS Council at the Joint Mathematics Meetings in San Antonio, Texas, last month, the MAA Board and the AMS Council passed motions instructing the Joint Meetings Committee to move the 1995 Joint Meetings from Denver, Colorado to an alternative site yet to be decided. The MAA motion was approved, by secret ballot, by a vote of 36 in favor to 7 against, with 2 abstentions. The AMS vote, carried out simultaneously in an adjacent room, was unanimous.

At issue was whether the two organizations were willing to continue with plans to hold the 1995 January meetings in the State of Colorado in view of the amendment to the state constitution passed by the voters in Colorado last November. As it appeared on the ballot, the amendment says:

"Shall there be an amendment to Article II of the Colorado Constitution to prohibit the State of Colorado and any of its political subdivisions from adopting or enforcing any law or policy which provides that homosexual, lesbian, or bisexual orientation, conducts, or relationships constitutes or entitles a person to claim any minority or protected status, quota preferences, or discrimination?"

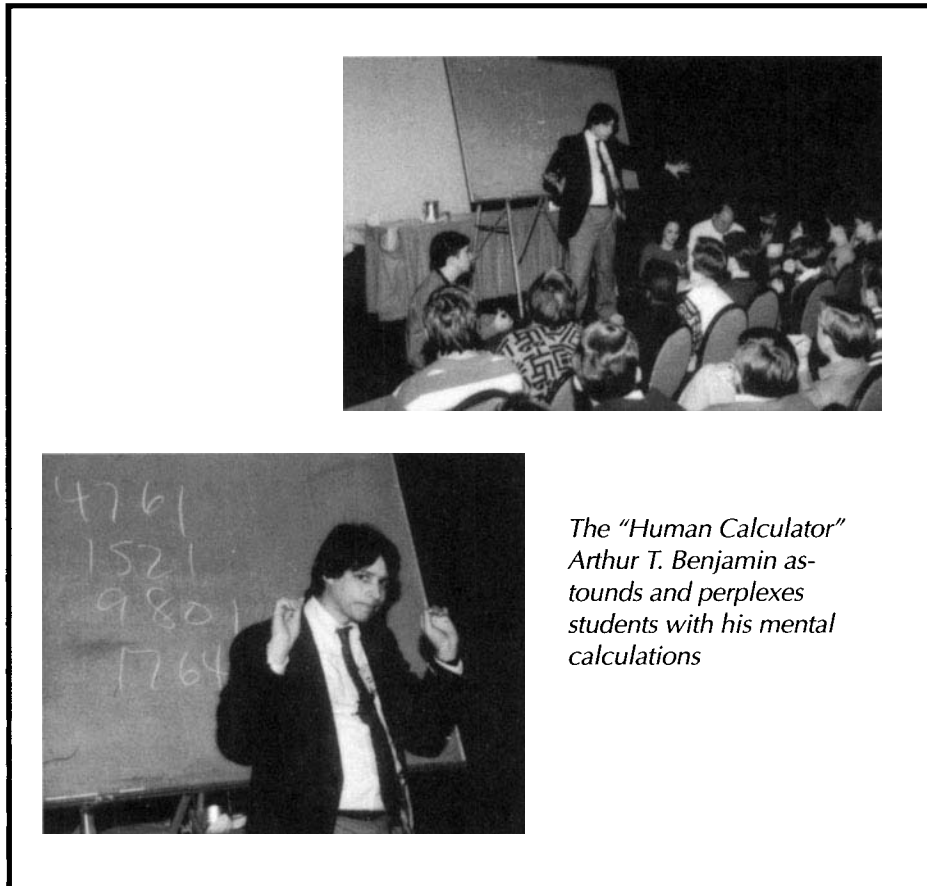
The resolution, which the MAA Board of Governors approved, reads:

"The Board of Governors of the MAA believes that the actions taken by the majority of those voting in Colorado in November 1992 with respect to discrimination were wrong. The Board of Governors of the MAA recommends that the joint meetings not take place in Colorado while language similar to that in the amendment of the November 1992 General Election passed by the voters of Colorado remains in the Colorado constitution. One of the reasons for this resolution is that the AMS and MAA have the duty to protect all participants at their meetings from possible discrimination.

The Board of Governors of the MAA delegates the responsibility for final action to the AMS Board of Trustees and the MAA Executive and Finance Committees, who will instruct the Joint Meetings Committee to make every effort to find a site for the January 1995 meeting in a state other than Colorado.

The Board of Governors of the MAA requests that the sentiments of this resolution be communicated to the Governor of Colorado."

The AMS resolution was worded the same, apart from the phrase "Council of the AMS" in



The "Human Calculator" Arthur T. Benjamin astounds and perplexes students with his mental calculations

place of "Board of Governors of the MAA."

The joint wording was a modification of earlier resolutions offered by each of the two organizations. The earlier discussions culminated in a 90-minute joint session of the MAA Board and the AMS Council on 12 January, arranged by MAA President Deborah Tepper Haimo and AMS President Michael Artin.

Opening the meeting, Haimo noted that this was a historic event, the two governing bodies having never before met together. The resolution before the session was, Haimo observed, a result of fairly equal input from both organizations.

Prior to the joint meeting, the MAA Governors and AMS Councillors had been provided with information setting out the issues and detailing the status of the planning process for the 1995 Joint Meetings, together with a draft of the resolution. The combined session was arranged in the hope that members of the two organizations would base their decision on common information and would arrive at a mutually agreed, common policy.

Though the overwhelming sentiment expressed at the session was clearly in favor of pulling out of Denver, there were a number of voices raised in opposition to such a move.

One suggestion was that it was inappropriate for an organization devoted to the pursuit of mathematics and mathematics education to

adopt what was a purely political stand. This was countered by the argument that the MAA and AMS have a duty to their own members, some of whom presumably fall under the categories mentioned in the Colorado amendment, and that this duty could not presently be fulfilled within the state of Colorado.

Another issue of concern was the financial and legal obligations facing the two organizations. Plans for the meeting were already well underway. The two organizations have a letter of agreement with the Denver Convention Bureau stating that the January 1995 meetings will be held at the downtown hotels and the Convention Center. Two contracts have already been signed with hotels. The financial implications of a pull-out at this stage are not at all clear. One figure mentioned at the San Antonio session was \$200,000, but a figure that high was disputed by others. What was agreed, was that any move would be costly to the MAA and the AMS.

However, as a number of speakers pointed out, not moving would also be costly. Given the strong sentiment many felt on this issue, it seemed likely that a meeting held in Colorado under the present circumstances would be boycotted by many members of both associations, leaving a greatly impoverished meeting. As John Kennelly, Chair of the MAA's Audit and Budget Committee succinctly put it, "Either way, we lose."

J
O
I
N
T

M
E
E
T
I
N
G
S

S
A
N
A
N
T
O
N
I
O



Michael G. Ottis, R.E. Smith, and Paul R. Bialeck, above, were among the attendees at the First Time Attendees' Social.



Eileen Wu, Menlo College, Mary McLean Bancroft, MAA's Executive Assistant, and Barbara Beechler, Claremont College, at the MAA Donor's Reception

Noting that the city of Denver has a good reputation on issues of civil rights, MAA Governor-at-Large Johnny Houston suggested that, in addition to sending a letter to the Governor of Colorado informing him of the decision to pull out, the two organizations should also write to the Mayor of Denver, expressing their support for the efforts the city of Denver is making to fight the new amendment. They should also declare a desire to hold a meeting in Denver as soon as possible after any decision to overturn the action of the Colorado voters, Houston added.

A suggestion to hold a referendum on the issue of how best to recoup any financial losses incurred as a result of a pull-out was withdrawn after some discussion of the practicality and the cost of such a move.

Towards the end of the discussion, there was some initial confusion as to how next to proceed. The joint session had been arranged to try to establish a common wording for the resolution, but any official action could only be taken by the two organizations separately. At this point, former MAA President Henry Alder, parliamentarian for the joint session, organized a series of "straw polls" from which it was evident that there was substantial agreement on the resolution as finally worded. The two bodies reconvened their separate meetings and completed the process.

Speaking about the joint meeting later, Presi-

dent Haimo observed that the two groups were in surprising agreement, saying how heartened she was by the cordial atmosphere in which the discussions were conducted.

The combined action of the two organizations took on particular significance as this is the year in which the MAA celebrates the centennial of the *American Mathematical Monthly*. Speaking to the members at the Association's business meeting two days after the vote, President Haimo said:

"In San Antonio we are celebrating the Centennial of the *American Mathematical Monthly*, a journal credited by some as being the reason for the founding of the MAA by a group of defectors from the AMS, which was the only professional organization of mathematicians in the U.S. until 1915. The Society and the Association have each grown and thrived independently, but a growing schism had developed between them over the years. It thus seems appropriate that recent efforts to bring our two organizations closer together through a number of joint activities, resulting in this major, historic joint meeting of our governing bodies to discuss and resolve a common issue and agree on an important joint resolution."

The announcement of the decision concerning the Denver meeting was greeted by a large and spontaneous round of applause from the floor.



Rogers J. Newman, Southern University, Presider at the AMS-MAA-NAM Joint Session.

JOINT MEETINGS SAN ANTONIO



Evrett Draper, Prentice Hall, and Donald D. Weddington, San Jose State



From left to right, Abdulalim Shabazz, Clark Atlanta University; Cassandra Moore, student, Rice University; Luis Ortega-Franco, Chapman University; Pamela Mitchell, student, Rice University; Richard Aló, University of Houston, Downtown; and Rogers Newman, Southern University

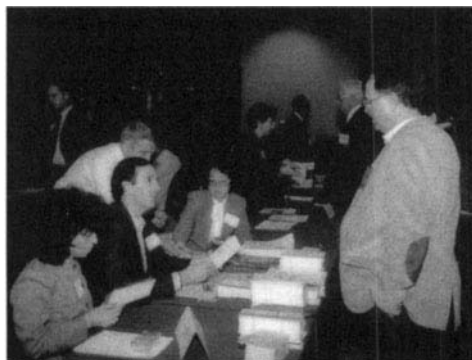


Jacqueline B. Giles-Giron, Houston Community College, MAA President Deborah Tepper Haimo, and Nancy T. King, Texas Southern University



Luis Ortiz-Franco, Chapman University, a speaker during the AMS-MAA-NAM Joint Session

The Career Fair



The Career Fair attracted over 400 middle- and high-school students. 23 companies provided valuable information about careers in mathematics.





The Employment Register gave many institutions and graduating students the chance to meet and conduct interviews



Exhibitor, Keelin M. Byrne, and Maria A. Reid, Borough of Manhattan Community College, CUNY



*David A. Smith, Duke University, leads the **Project Calc** minicourse*

MAA Approves Statement of Mission and Goals

At the San Antonio meeting, the Board of Governors of the MAA unanimously approved the section of the Strategic Plan dealing with Mission and Goals. A final draft of the entire Strategic Plan was presented to the Board for discussion.

The strategic planning process began in the spring of 1991 when MAA President Deborah Haimo appointed a 15-member Task Force charged with preparing a planning report for the Board of Governors. The Task Force was chaired by Thomas Tucker of Colgate University and included all MAA Council Chairs, as well as leaders of AMS, SIAM, NCTM, and AMATYC.

The Task Force began its work with a two-day meeting in Orono, Maine during the August 1991 summer meeting of the Association. It then met in Washington in September and in Baltimore in January to reach an agreement on general goals and objectives. Prior to preparation of the final draft considered in San Antonio, the Task Force held a number of open discussions with the Board of Governors and the Section officers, and undertook a survey of members which was published in FOCUS.

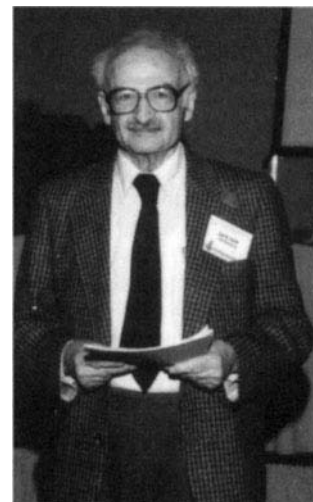
The final draft declares the mission of the MAA to be:

To advance the mathematical sciences, especially at the collegiate level.

The four major program goals that the document sets out in order for the Association to best fulfill its mission are:

- A. Education.** Stimulate active learning, promote effective teaching, and encourage appropriate assessment in the mathematical sciences.
- B. Professional Development.** Foster scholarship, professional development, and a spirit of association among mathematical scientists.
- C. Students.** Enhance the interests, talents, and achievements of all individuals in the mathematical sciences, especially of members of underrepresented groups.
- D. Public Policy.** Influence institutional and public policy through effective advocacy for the importance, uses, and needs of the mathematical sciences.

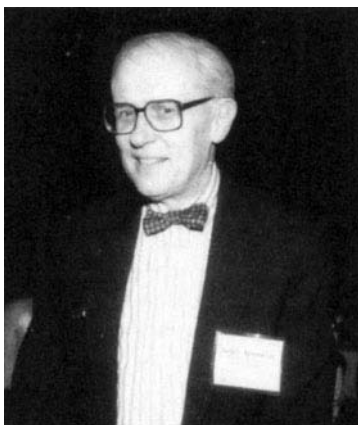
In addition, the draft plan states five goals to ensure the effective operation of the Association: strengthen local opportunities for leadership and influence of MAA members; advance quality exposition of mathematics; enhance effectiveness of MAA governance; expand MAA membership to include all who have a professional stake in college-level mathematics, and enhance financial support for current and new programs.



Lee A. Lorch, York University



Resources for Calculus Collection editors and coordinators. (L to R) Robert Fraga, editor, Andrew Sterrett, syllabus coordinator, A. Wayne Roberts, project director, Michael Jackson, editor, John Ramsay, editor, Anita Solow, editor, Underwood Dudley, editor, Philip D. Straffin, Jr., editor



*MAA Secretary
Gerald L.
Alexanderson,
Santa Clara
University*



Teaching Award Winners (L to R) Philip D. Straffin, Jr., Joseph A. Gallian, Frank Morgan, Anne Hudson, Robert V. Hogg, V. Frederick Rickey, Doris Schattschneider

**Complete coverage of all Award winners
will appear in the April FOCUS**

A REMARKABLE NUMBER

George Andrews, of Penn State University, finished the second of his two talks on Ramanujan with the following anecdote.

"My journey here was a long and tiring one, due to the bad weather in the North East, and I arrived late. When I telephoned my wife to let her know I had arrived, I remarked that the number of my hotel room, 2310, seemed a very uninteresting one. 'Oh no, she replied. It is very interesting; 2310 is the first number that is a product of five distinct primes.' "

Secretary's Report

Gerald L. Alexanderson

At its meeting in San Antonio, the Board of Governors heard optimistic reports on the state of the MAA from the President and the Executive Director and, perhaps even more important, a positive report from the Treasurer. You have probably heard the good news about the success of the Mathematical Center Fund Drive to support renovation of our headquarters buildings in Washington.

Work on the Strategic Plan continues, and the Board has approved the Mission and Goals of the Plan at the San Antonio meeting. The Association's Councils and Committees have until 15 October of this year, however, to suggest new or alternative initiatives to those in the current draft. A revised version of the whole plan will be brought to the Board for final approval in January 1994.

At the Board meeting in Quebec this past summer, one of the constituencies for the governors-at-large was changed. The Board has in recent years included governors-at-large representing high schools, teacher education, computer science, minority interests, Canadian

members, and members not in academia. People knowledgeable in computer science are now seen as being adequately represented on the Board, so the position was converted to a second position for minority interests. This position was filled at the most recent meeting of the Board when it elected David Sanchez of Los Alamos National Laboratories as a governor-at-large. The second open position, that representing high schools, was filled with Bettye Forte of the Fort Worth School District. In addition, John Neff was elected chair of the Committee on Sections to fill the term of Barbara Faires and serve in this role on the Executive Committee.

The Board approved, pending some additions concerned with non-discrimination and sexual harassment, a new report on Guidelines for Departments of Mathematics prepared by a committee chaired by John Fulton. This set of guidelines will provide some valuable recommendations that mathematics departments can use both internally and to convince administrators to provide certain minimal conditions for a department to operate effectively.

There was discussion of the site for the 1995 winter meetings, Denver, in light of the action of Colorado voters who approved a constitutional amendment denying local governments the right to pass laws outlawing discrimination based on sexual preference. In an historic joint session, the AMS Council and MAA Board of Governors met to discuss the issue and voted separately to instruct the Joint Meetings Committee to look for an alternate site for the winter 1995 meetings.

This was the last meeting of the Board at which President Haimo will preside. The Board passed a resolution of thanks and gave her a standing ovation at the end of the meeting.

At the Business Meeting of the Association, certificates of appreciation were presented to the three former directors of the Women in Mathematics Program, Eileen Poiani, Carole Lacampagne, and Alice Kelly, for their many contributions to this valuable program. Professor Poiani was unable to be present. In addition, Professor Patricia K. Rogers was presented, in absentia, a certificate recognizing her service to the Association as the second Pólya Lecturer.

The MAA Book Sale, the largest and most successful in MAA history, was a central attraction in the exhibit hall.

J
O
I
N
T

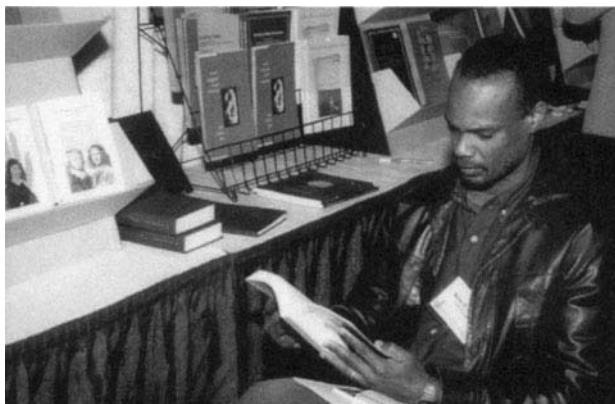
M
E
E
T
I
N
G
S

S
A
N

A
N
T
O
N
I
O



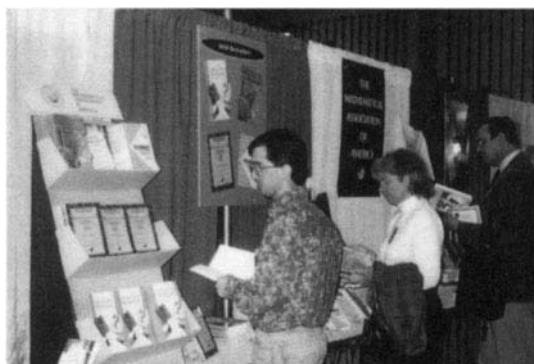
*L. Alayne Parson, Ohio State, checks out Underwood Dudley's latest book, **Mathematical Cranks***



Walter O. Walker, Eckerd College, at the MAA Book Sale



Elaine Pedreira, MAA Marketing Manager (seated), helps keep the lines at the Book Sale short



With so many good books to choose from, many participants made two or three trip to the MAA Book Sale



The new Resources for Calculus Collection gathered a lot of attention



Donald J. Albers, MAA Associate Executive Director for Publications and Programs (in background), sneaks a peak at what's selling.

The Monthly Centennial Celebration was one of the highlights of the meetings

J
O
I
N
T

M
E
E
T
I
N
G
S

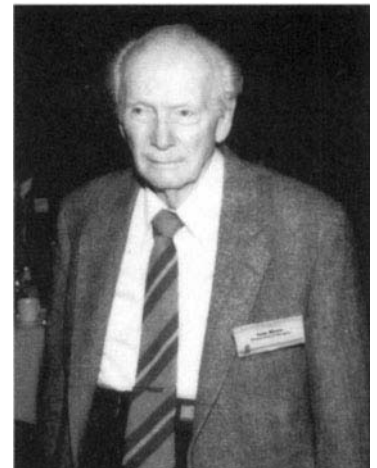
S
A
N
T
O
N
I
O



John Ewing, Current MONTHLY Editor



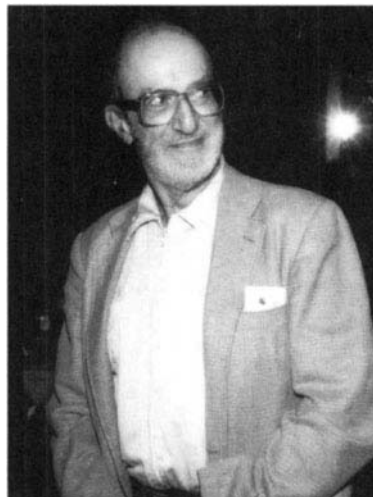
Raoul Hailpern, former MAA Editorial Director, and his wife, Fanny.



Former MAA President, Ivan Niven, University of Oregon



Robert A. Rosenbaum, Wesleyan University, Former MONTHLY Editor (1967-68)



Paul Halmos, Santa Clara University, Former MONTHLY Editor (1982-86)



Alvin M. White, Harvey Mudd College, and MAA Executive Director, Marcia P. Sward

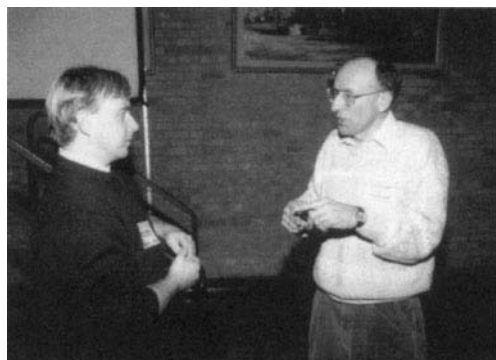


MAA Executive Director Emertius, Alfred B. Willcox and his wife, Shirley.



New MAA President, Donald Kreider, and Former MAA President G. Bailey Price

Joseph A. Gallian's *Touring a Torus* Lecture



After his lecture, Gallian takes time to talk with the students, and perhaps, enjoy a sundae



During the meetings, Gallian was awarded one of the first Distinguished Teaching Awards

Followed by the "Make-Your-Own-Sundae Party" for students



Students examine the ice cream scoops, looking for the perfect sphere

After Joseph A. Gallian's *Touring a Torus Lecture*, students were able to enjoy custom made sundaes, courtesy of MAA's Assistant Director of Programs, Andrew Sterrett.



Andrew Sterrett and students discuss the mathematics of sundaes



Did you say "Ice Cream"?



Ice cream and mathematics — the perfect mix



Andrew Sterrett dishes it out

BEWARE OF THIS PROBLEM —

Can a square be divided into an odd number of non-overlapping triangles of equal area.

From the American Mathematical MONTHLY 77 (1970), pp.161—164, discussed by former Monthly editor Harley Flanders in his San Antonio talk:

This problem was solved, but not at all in the way you might expect.

J
O
I
N
T

M
E
E
T
I
N
G
S

S
A
N
A
N
T
O
N
I
O

The Dolciani Mathematical Center Fund Donors Reception

Deborah Tepper Haimo, MAA President (l), and Marcia P. Sward, MAA Executive Director (r), present John Kenelly, Chair of the Dolciani Mathematical Center Fund Committee, with an engraved crystal bowl to thank him for helping MAA to go "over the top" for the Dolciani Mathematical Center Fund goal



Gloria F. Gilmer, Math Tech, Inc., and Ronald M. Davis, DeKalb College



Kenneth A. Ross, University of Oregon, and Lowell W. Beineke, Indiana University - Purdue University at Fort Wayne

BACKLOG, WHAT BACKLOG?

From the editorial of Vol 1, No. 1 of the American Mathematical Monthly, January 1894.

"All problems, solutions, and articles intended for publication in the February Number, should be received on or before February 1st, 1894. Solutions to problems in this Number will appear in March Number, but should be mailed to the Editors before February 15th."

Of course, they did not have word-processors or e-mail back then.

Minority Participation During the San Antonio Meetings

Dr. Sylvia Bozeman, Chair of the Mathematics Department at Spelman College and co-chair of the MAA Committee on Minority Participation in Mathematics, gave an invited address in San Antonio on "Processing our image of minorities in mathematics." She presented a series of propositions to support the necessity of embracing diversity in the mathematics community and commented on possible consequences for the country's future otherwise. She called for the support of college and university faculty in increasing the number of minority teachers of mathematics in grades K-12 and the number of minority baccalaureate, master's, and doctoral degrees in mathematics.

Bozeman presented statistics on the small number of degrees awarded to U.S. minorities in mathematics. She expressed how important it is to evaluate the degree of comfort that all students experience in a mathematics department and gave some measures from successful programs. Professor Bozeman also spoke about various efforts underway within the mathematics community, including the MAA's SUMMA Program, to alter the "image."

At the Donors Reception for the Dolciani Mathematical Center Fund Campaign, it was announced that among the continuing room-naming campaigns are two to honor minority mathematicians—Benjamin Banneker (1731-1806) and Joaquin Basilio Diaz (1920-1978). Banneker was a self-taught mathematician, astronomer and free man of color who did all the astronomical observations for the survey of the District of Columbia in 1791, calculated ephemerides for 1792-1802 and authored almanacs for 1792-1797.

Dr. Diaz was a Puerto Rican mathematician who earned his doctorate in mathematics at Brown University in 1945, perhaps the first Hispanic American to receive a mathematical sciences doctorate. He worked in the Institute for Fluid Dynamics and Applied Mathematics at the University of Maryland for 16 years and later was Albert Einstein Professor of Science and Professor of Mathematics at Rensselaer Polytechnic Institute from 1967 until his death.

EDITORIAL

"It's time for change." We heard those words many times during the recent presidential election campaign, and the election of the man who kept uttering that sentence, Bill Clinton, suggests that the thought resonated throughout the country.

At the same time that the presidential election campaign was underway, we at FOCUS were asking ourselves if there were any changes we should be making to the MAA newsletter. If it is to continue to survive, and indeed to thrive, mathematics must not allow itself to stand still, and the same is true of a mathematics newsletter such as FOCUS.

The very first issue of FOCUS appeared in March 1981, edited by Marcia Sward, newly appointed MAA Associate Executive Director. It was eight pages long. The average issue size in 1992 was 38 pages.

The idea of a newsletter had long been championed by Ed Beckenbach, then chair of the MAA's Committee on Publications. Prior to the arrival of Ed Beckenbach, the MAA published perhaps one book every other year or so. But once he took over, things soon started buzzing. The *MAA Studies* were developed, the *Dolciani Series* was started, and the *New Mathematical Library* was transferred from Random House to the MAA, the *College Mathematics Journal* appeared, and *Mathematics Magazine* was re-invigorated. Beckenbach's notion of a good publications program also included the introduction of a newsletter, fashioned after *SIAM News*. When Marcia Sward was hired as Associate Executive Director, starting such a newsletter was a primary assignment.



ISSN: 0731-2040

FOCUS is published by The Mathematical Association of America, 1529 Eighteenth Street Northwest, Washington, DC 20036-1385, six times a year: February, April, June, August, October, and December.

Editor: Keith J. Devlin, Colby College

Associate Editors: Donald J. Albers, MAA Associate Executive Director and Director of Publications and Programs
Barbara Trader Faires, Westminster College

Production Specialist: Amy E. Stephenson, MAA

Chair of the MAA Newsletter Editorial Committee: Joseph A. Gallian, University of Minnesota at Duluth

Subscribers should address letters and articles for publication to the editor: Keith Devlin, Department of Mathematics and Computer Science, Colby College, Waterville, Maine 04901; telephone and fax: (207) 872-3257; e-mail: kjdevlin@colby.edu. All employment advertisements and announcements should be sent to the editorial offices: FOCUS, MAA, 1528 Eighteenth Street, NW, Washington, DC 20036-1385, e-mail: FOCUS@MAA.ORG

The annual FOCUS subscription price to individual members of the Association is \$6.00, included in the annual dues. (Annual dues for regular members, exclusive of annual subscription prices for MAA journals, are \$68.00. Student and unemployed members receive a 66 percent discount; emeritus members receive a 50 percent discount; new members receive a 40 percent discount for the first two membership years.)

© by The Mathematical Association of America (Incorporated) 1993. Educational institutions may reproduce articles for their own use, but not for sale, provided that the following citation is used: "Reprinted with permission of FOCUS, the Newsletter of The Mathematical Association of America (Incorporated), 1993."

Second-class postage paid at Washington, DC and additional mailing offices. Postmaster: Send address changes to FOCUS, Membership and Subscriptions Department, The Mathematical Association of America, 1529 Eighteenth Street Northwest, Washington, DC 20036-1385.

Printed in the United States of America.

Marcia continued to edit FOCUS until Volume 6, when Peter Renz took over. Peter kept the helm until Volume 10, when Andy Sterrett became interim editor. I took over from Andy with Volume 11, Number 4.

Throughout this period, the principal aim has remained the same: to keep the MAA's members fully informed of the activities of their association. Indeed, with a membership so widespread, both geographically and within the spectrum of academic life, for many people FOCUS is the MAA, and their one regular contact with Association activities.

When I was asked to take over from Andy Sterrett as editor in January 1991, I felt very honored. Through my long-running mathematics column in *The Guardian* in England and my Penguin book *Mathematics: The New Golden Age*, I had earned my spurs as an expository writer of mathematics, but I had never before edited a magazine or newsletter. I was fairly new to the MAA, having only arrived in the United States some three years previously, a casualty of the educational savaging wrought by the Thatcher administration in my native England. I was aware of the magnitude of the trust that Executive Director, Marcia Sward and the new Publications Director, Don Albers, were putting in me. And we were all putting our trust into modern electronic communications, since I was to be FOCUS's first off-site editor.

My assignment was a simple one: to build on the tremendous progress that had already been made with FOCUS, while maintaining its principal role as the MAA's informational backbone. This building process has included a gradual increase in the number of mathematical news stories carried by the newsletter, the introduction of a regular editorial—designed to be provocative at times—an occasional, and hopefully equally provocative, "personal opinion" section, and a regular feature on computer networking for mathematicians. Though there does not seem to be sufficient demand for a regular letters section, readers' letters have been published at times.

One thing that has not changed over the years is the overall appearance of FOCUS. The issue you are currently reading looks exactly the same as that first issue back in 1981. Now, in these days of desktop publishing, there can surely be few mathematicians who are not now aware that the appearance of a document can be as important as the contents—indeed, some would argue that the appearance is an inseparable part of the contents. So along with our thoughts on the contents of the newsletter, we (the "we" being myself and the FOCUS editorial staff in Washington, D.C.) took a long hard look at the design, soliciting expert advice from professional design consultants. The result was the decision that it was time for change.

Starting soon, FOCUS will have a different look. We decided to keep the distinctive size, and the durable, thick paper. However, the newsletter will look different; not drastically different, but enough to reflect what we perceive to be the dynamic image today's Association has within the mathematical, and broader academic, community. While we realize that it is not possible to please all of the people all of the time, we hope that you like the changes.

One further change is that from now on, FOCUS will appear at regular two-month intervals, in February, April, June, August, October, and December, alternating with UME Trends.

The above are the opinions of the FOCUS editor, and do not necessarily represent the official view of the MAA.

PERSONAL OPINION

The Japanese University Entrance Examinations in Mathematics

Richard Askey

The December issue of FOCUS included a special supplement on the Japanese University Entrance Examinations. In this month's Personal Opinion column, Professor Richard Askey of the University of Wisconsin at Madison, considers some of the issues raised by the appearance of that document.

The National Educational Goals include having U. S. students first in the world in mathematics achievement by 2000. I hope all of us know this is impossible, although the mathematical community has not said so publicly as far as I know. However, impossible or not, it is necessary to try to improve our mathematics education, and it is useful to look at the rest of the world to see what students can learn.

Japan has an excellent educational system, and information on it at most levels is now available in English. Preschool is very important for socializing the students for school.[1] Elementary schools are the backbone of their success.[2] There is an excellent video[3] which shows what goes on in some Japanese and Taiwanese elementary school classrooms. At the lower secondary school level it is now possible to look at translations of text books.[4]

The exams published in[5] provide an opportunity to see what students have learned.

First, there is very little which is learned by rote. That is already true in elementary school, as one can see in the video[3]. It continues to be true as seen in these exams.

Second, when our SAT is compared to the Japanese UECE exams, we see part of our problem. We ask one-step problems, they ask many-step problems. While either type of question will probably give a similar ranking to a large group of students, the message being sent about how well one needs to learn something is completely different.

Third, many of those active in the calculus reform movement have decided that the algebra skills of our students are so poor that they get in the way of students learning the ideas of calculus, and so we have looked for ways around this. I worry very much about the message we are sending back to schools about the lack of importance of technique. Seeing what the Japanese students can do in the way of algebraic calculations makes it clear that most students can be taught this.

The way in which answers are given in the UECE exams is very interesting, and is so much better than the way we give answers in multiple choice exams that I felt stupid for not having thought of this alternative for giving machine-graded exams. I hope a new method will be adopted both for national exams and for placement tests when it is necessary to grade a large number of exams in a very short time. The care with which the UECE exams are analyzed after they are given is impressive, and we should do something similar. Here the Japanese have an advantage over us, since they have a real national curriculum rather than the *de facto* one we have. As a result they are better able to spot places where the essential ideas were not learned by enough students, and can modify future texts appropriately. This would be much harder for us to do, but we do not even try. Some readers will comment on the absence of many applied problems. These exist, but are given in the science

exams. When all of the students have a good mathematical background, science courses can be more mathematical than ours are.

Japanese cram schools exist, and the Japanese educational establishment has made it clear that that do not like them. I was pleasantly surprised to learn that when asked if it was sufficient to have just studied their texts to prepare for the UECE exams: even a majority of the humanities students said "Yes". The exams given by individual universities are in general harder, and here some extra preparation is probably useful. There are high school mathematics magazines completely unlike any we have. The best is a monthly of almost 90 pages, and in addition to many problems and solutions, has articles about more advanced mathematics. A colleague, H. Terao, said he learned about groups and some of their properties from reading one of these magazines when he was in high school. We need something similar here to supplement *Quantum*, which has a different focus.

The individual exam which surprised me most was the one for the Education Division of Shiga University. Shiga is one of the prefectures, so the students taking this exam are similar to the students studying education at a school like the University of Wisconsin. After having taught one of our two courses for elementary school teachers, I have a "modest proposal". Our elementary school teachers will teach mathematics every day, so they should know as much mathematics when they graduate from college as future elementary school teachers in Japan know when they graduate from high school. At present the best of the 24 students I had last semester should be about ready to start the Japanese 9th grade after they take our second course for teachers. This goes a long way toward explaining where some of our problems are. This is our responsibility, for we teach these teachers. Our texts are also part of our problem. They have too many worked examples, homework problems are just like the examples in the book, and there are too few problems where the students have to think. Here some of the reform efforts are good, but I am frightened by comments like those in an interview in the last newsletter from the Harvard Calculus Consortium. After saying that students' manipulative skills have become much weaker, Anthony Phillips says, "And the HCC curriculum makes a great virtue out of this necessity. By eliminating some of the symbolic manipulation from calculus, they were able to make the course more accessible to students." There are important ideas behind successful symbolic manipulation, and when this is not realized and taught, we cheat our students. The Japanese recognize this, we must also.

1 L. Peak, *Learning to Go to School in Japan: The Transition from Home to Preschool Life*, Univ. of California Press, 1992.

2 H. Stevenson and J. Stigler, *The Learning Gap: Why Our Schools Are Failing and What We Can Learn from Japanese and Chinese Education*, Summit Books, New York, 1992.

3 *The Polished Stones*, video available from Center for Human Growth and Development, Univ. of Michigan, 300 N. Ingalls, Ann Arbor, MI 48109.

4 *Japanese Grade 7 Mathematics*, (also grade 8 and grade 9), *The Univ. of Chicago School Mathematics Project*, 1992.

5 Ling-Erl Eileen T. Wu, *Japanese University Entrance Examination Problems in Mathematics*, Mathematics Association of America, 1992.

The opinions expressed in the above article are those of the author, and do not necessarily represent the views of the MAA. Richard Askey is a professor at the University of Wisconsin-Madison.

NETWORKS IN FOCUS

The Internet and BITNET - an Agora for Mathematicians

R. W. DeGray

The explosive growth of electronic communications via the Internet and BITNET offers an exciting meeting place for the mathematics community [1], [2]. If we want peer or other contact, stimulation of new ideas, instant delivery for data and information, opportunities for sharing or publishing notes or special bibliographies, access to remote library card catalogues or gateway e-mail to other networks, then turn to the Internet/BITNET.

It is, in general, an avenue which can be used to enhance professional development and a medium for: the discussion and evaluation of progress in research, joint authorship, collaborative projects, discussion groups about teaching and curriculum reform, electronic magazine subscriptions; and exchange of knowledge between academia and government agencies, research centers, business and industry.

The opportunity for meeting other academicians has never been so great as it is with e-mail. We can exchange ideas and documents with peers in Crete as easily as with peers across campus. We can continue conversations initiated at professional meetings and maintain contact with colleagues or students while on sabbatical leave. We can even send or receive hand-outs intended for distribution at professional meetings and thus avoid the problem of carrying sufficient paper copies.

If you are fortunate enough to have access to the Internet then e-MATH is your center of the Agora. Information about e-MATH is often found in the AMS NOTICES, [3]. e-MATH is the repository of instantaneous information about network services appropriate for the mathematics community. Watching the NOTICES or regularly telnetting to e-MATH will keep one in touch with its development.

On telnetting to e-math.ams.com with login and password e-math, one will see a menu of services, similar to the following:

- [0] EXIT
- [1] DIRECTORY INFORMATION (CML)
- [2] PROFESSIONAL OPPORTUNITIES
- [3] SOFTWARE
- [4] DOCUMENT DELIVERY
- [5] MATH REVIEWS CLASSIFICATION SCHEME
- [6] MATH REVIEWS SUBMISSION
- [7] WELCOME MESSAGE
- [8] SUGGESTION BOX
- [9] MATH REVIEWS AUTHOR LOOKUP
- [10] AMS MEETINGS
- [11] BULLETIN OF THE AMS
- [12] DIRECTORY OF LISTS
- [13] HELP

We can, by using [1] DIRECTORY INFORMATION (CML), search the AMS, MAA, SIAM Combined Membership List and, in fact, we can search it in ways never before practical. For example, we can search the CML for members who have a particular primary and secondary

field of interest (in accordance with the AMS 1991 Mathematics Subject Classification codes) and who at the same time are associated with a particular institution.

Menu item [3] SOFTWARE, contains information on how to get specific directions for downloading TeXware modules from e-MATH via FTP and lets us locate software via Archie.

Archie is a computer program developed and maintained by the School of Computer Science at McGill University that allows users to query a database of directory listings from about 600 Internet software archive sites. For example, if we want to locate a particular operating system version of the computer program ISETL, we can send the "search string" ISETL to Archie. The archive sites will be searched and the FTP site addresses, directory specifications and file names with file types will be returned. We can then use this information to fetch ISETL via FTP.

As seen under menu items [4] through [12], respectively, there are: a document delivery service for reference material collected by the AMS, access to the Mathematical Reviews Subject Classification Scheme, an opportunity to retrieve the Mathematical Reviews submission guidelines via e-mail, a welcome message announcing new features, a suggestion box, Mathematical Reviews and Current Mathematical Publications, author look-up for items appearing since 1985, announcements of meetings, information from the BULLETIN of the AMS, and, a directory of lists with information about the existence of academic discussion groups, electronic journals, or newsletters.

A discussion group is typically under the control of LISTSERV software located at a node of the network. A LISTSERV makes possible an electronic forum for the exchange of ideas and information. There are forums on topics in physics and in almost any discipline. There are forums called: Calculus/Linear Algebra/Differential Equations Reform, Cryptology, Commutative Algebra, European Women in Mathematics, Graph Theory, Number Theory, and Statistics.

A recent session on e-MATH revealed the following discussion groups, for example:

There is a discussion group on e-MATH devoted to the reform of curriculum and pedagogy for calculus and elementary linear algebra, including differential equations. The list is:

calc-reform@e-math.ams.com

There are two discussion groups, each of them devoted to an important aspect of SGML (Standard Generalized Markup Language) that have an impact on publishing in the mathematical sciences. They are:

sgml-math@e-math.ams.com

sgml-tables@e-math.ams.com

For further information, send an e-mail message to LISTSERV@e-math.ams.com with the single word HELP as a one-line message.

Much of the information obtainable by telnetting to e-MATH is also obtainable via BITNET e-mail. The existence of LISTSERV discussion groups can be determined by including a LIST GLOBAL /topic command as the first line of a BITNET mail message to LISTSERV@YALEVM. The following is an excerpt of information received by issuing the LIST GLOBAL /MATH command:

NETWORKS IN FOCUS

Networks from page 15

Excerpt from the LISTSERV lists known to LISTSERV@YALEVM on 2 Apr 1992 9:20 search string: MATH

| Network-wide ID | Full address | List title |
|-----------------|---------------------|--|
| 'SUSIG' | SUSIG@MIAMIU | (Peered) A discussion on Teaching in the Mathematical Sciences with Spreadsheets |
| ALLIANCE | ALLIANCE@NCSUVM | North Carolina Science and Mathematics Alliance |
| CEM-L | CEM-L@UTDALLAS UTD | Center for Engineering Mathematics |
| CRYPTO-L | CRYPTO-L@JPNTOHOK | Forum on Cryptology and Related Mathematics |
| | CRYPTO-L@JPNTUVM0 | Forum on Cryptology and Related Mathematics |
| EWM | EWM@ICNUCEVM EWM | European Women in Mathematics |
| MATHDEP | MATHDEP@IRLEARN UCD | Maths Department Distribution List |
| MPSYCH-L | MPSYCH-L@BROWNVN | Society for Mathematical Psychology |
| TECHMATH | TECHMATH@TECHNION | TECHMATH - Technion Mathematics Net |
| TURKMATH | TURKMATH@TRMETU | (Peered) Turkish Mathematician's Discussion List |
| UICMATH | UICMATH@UICVM UIC | Mathematics |

Not all discussion groups relating to mathematics are revealed by using MATH as the topic. One should be judicious in the choice of a topic. One might want to use STAT or CALC instead.

The following is the result when looking for a discussion group about the computer algebra system, MAPLE:

LISTSERV lists known to LISTSERV@YALEVM on 2 Apr 1992 18:45
Search string: MAPLE

| Network-wide ID | Full address | List title |
|-----------------|-----------------|---------------------------------------|
| MAPLE-L | MAPLE-L@IRLEARN | MAPLE-L Discussion on MAPLE Software. |

Sometimes a discussion group exists but is not revealed by the LIST GLOBAL /topic command. There is, for example, a discussion group and archives of packages and notebooks concerning MATHEMATICA run by Steven M. Christensen. The address for more information is, mathgroup-request@yoda.physics.unc.edu.

EDSTAT-L is a discussion group on teaching statistics. The internet address is LISTSERV@ncsuvm.cc.ncsu.edu and the BITNET address is: LISTSERV@NCSUVM.

A recently formed discussion group is called ILAS. The following information was obtained on subscribing to a LISTSERV called NEW-LIST at ndsuvvm1. Information about subscribing to a LISTSERV, such as ILAS, is noted below:

ILAS - The International Linear Algebra Society - was constituted dur-

ing the Combinatorial Matrix Analysis Conference in Victoria, May 1987. The general goal of ILAS is to encourage activities in linear algebra.

ILAS aims to encourage and support existing groups and individuals active in organizing meetings and publications in all aspects of linear algebra. Our purpose is international co-ordination, to assist the development of linear algebra. We welcome activities in all applications of linear algebra and we desire a proper share for theoretical matrix analysis and abstract linear algebra.

Among others, ILAS operates ILAS-NET, an electronic news service. We transmit announcements of ILAS activities and circulate other notices of interest to linear algebraists. Announcements for ILAS-NET or requests to be on the mailing list for ILAS-NET, should be sent to Danny Hershkowitz (e-mail address: mar23aa@technion.bitnet).

Subscription to ILAS-NET is independent of membership in ILAS and is free.

To subscribe to ILAS-NET, send the following command to LISTSERV@TECHNION (or LISTSERV AT TECHNION. TECHNION.AC.IL) in the BODY (text) of MAIL or in an interactive message: SUBSCRIBE ILAS-NET Your full name For example: SUBSCRIBE ILAS-NET Joe Shmoe

Archives of ILAS-NET are kept. Send the command INDEX ILAS-NET to LISTSERV@TECHNION. TECHNION.AC.IL.

You can also use anonymous FTP to host 132.68.1.6 at directory MAT to retrieve ILAS-NET notebooks.

Owner : Danny Hershkowitz <mar23aa@technion.BITNET>
<mar23aa@technion.technion.ac.il>

Special interest databases are being developed. For example, there is STIS (Science and Technology Information System at the National Science Foundation) with address stis@nsf.gov or stis@nsf.bitnet; COSMIC, a NASA software archive with address service@cosack.cosmic.uga.edu and several databases in biology and other sciences.

NETLIB [4] is a system for the distribution by electronic mail of numerical software and may be of interest to anyone teaching numerical analysis, and STATLIB is a system for the distribution of statistical software and data sets which may be of interest to anyone teaching statistics. There are vast amounts of information here and we can begin to see this by sending the following command, SEND INDEX, as the first line of a mail message to NETLIB@ORNL.GOV for information about NETLIB or to STATLIB@LIB.STAT.CMU.EDU for information about STATLIB.

If we are interested in issues in science and mathematics policy, we can subscribe to an electronic newsletter called TIDBITS (not to be confused with the newsletter TidBITS at Stanford, with a duplicate at RICEVM1 for Mac users). To subscribe, send an e-mail message to Lisa Thompson, Assistant for Governmental Affairs Joint Policy Board for Mathematics, Washington, DC. The address is: jpbm@athena.umd.edu [5].

The National Science Foundation (NSF) is offering U.S. scientists and engineers access to scientific information from Japan, [6].

The following information about NACSIS was obtained from NETWORK-NEWS, [7]:

>From PACS-L via Cristina Yu (yu@lib.wfunet.wfu.edu): NACSIS: NSF Gateway to Japan's University-Based National Science Information System.

The National Science Foundation (NSF) offers U.S. scientists and

NETWORKS IN FOCUS

engineers free search services for scientific information from Japan. NSF employs a Japanese-language-capable operator who assists U.S. researchers with:

1. Requested Searches: Bibliographic searches are made upon request and the findings summarized in English.

2. Personal Searches: Researchers may also arrange to come to NSF and use the facility in person.

NSF's purpose is to provide the maximum amount of information to the American research community with the resources available. Two general limits concerning the output of the data base searches must be considered: the total amount of output generated by an inquiry, and the Japanese to English translation required.

To request a search, to reserve time on the system, or to obtain further information, please call the NACSIS operator at 202-357-7278 between 1 and 4 p.m., EST, on weekdays. At other times, NSF's voice messaging system will record inquiries. Alternatively, you may send messages by electronic mail to

nacsis@nsf.gov (Internet) or nacsis@NSF (BITNET)

If you wish to have more information on this service, send a request for the JAPAN.TXT file to noonan@msus1.msus.edu.

Another Internet resource is the online access to libraries. There are over 250 academic and public libraries around the world that now make their library catalogues available on the Internet.

For example, the University of California's MELVYL* LIBRARY SYSTEM is accessible by telnetting to 31.1.0.11.

The following is an example of a search of the Stanford database for publications by the author Gilbert Strang:

Enter AUTHOR'S name: GILBERT STRANG GILBERT STRANG
Catalog Headings/Search: FindAUTHOR GILBERT STRANG
Result filed under 2 headings:

1) Author: Strang, Gilbert (7 Books) 2) Author: Strang, William Gilbert, 1934- (1 Book)

Heading 1) Author: Strang, Gilbert (7 citations) Citation 1.1

It is also possible to get the complete citations. For example, searching for author Donald Knuth and selecting a full citation gave rise to:

AUTHOR: Knuth, Donald Ervin, 1938- TITLE: 3:16 : Bible texts illuminated / by Donald E. Knuth. Bible. English. Selections. 1990. Three, sixteen. IMPRINT: Madison, Wis. : A-R Eds., c1991. p. cm.

LOCATION: Item CSUG90-B84168 not yet cataloged; consult Special Collections (may also be available at Stanford Bookstore)

There is a document called "UNT's Accessing On-Line Bibliographic Databases", by Billy Barron, billy@unt.edu which contains the Internet addresses of libraries accessible via the Internet. A copy can be obtained by anonymous FTP at FTP.UNT.EDU (129.120.1.1).

This article only gives a hint about the services of the Internet and BITNET. The information on the network is substantial and non-static, i.e., all the previous information given here is subject to change.

A good source of information about current network happenings is the electronic newsletter, CCNEWS, from BITNIC, [8]. Send the LIST GLOBAL /news or LIST GLOBAL /net command to your nearest LISTSERV in order to find the addresses of a variety of newsletters. CCNEWS and BITNIC have accepted articles (which are retrievable) about calculus reform and teaching statistics using computers.

For a paper source of network and computer information in education refer to Educom Review, [9].

The underpinning of the Internet is the NSFNET Backbone. The following is an excerpt from the February 1992 statement called, "The NSFNET Backbone Service Acceptable Use Policy":

THE NSFNET BACKBONE SERVICES ACCEPTABLE USE POLICY

GENERAL PRINCIPLE:

(1) NSFNET Backbone services are provided to support open research and education in and among US research and instructional institutions, plus research arms of for-profit firms when engaged in open scholarly communication and research. Use for other purposes is not acceptable.

The full copy can be retrieved via anonymous FTP from nis.nsf.net. The file is called acceptable.use.policies/nsfnet.txt or nsfnet.ps for a PostScript version.

e-MATH is a truly remarkable resource and should serve as an exemplar for other academic disciplines. Academics is about creating and disseminating knowledge. The ever increasing way of doing this is by means of networks. We should maximize this new opportunity and use it to promote mathematics.

BIBLIOGRAPHY

[1] John S. Quarterman, *The Matrix: Computer Networks and Conferencing Systems Worldwide*; Digital Press, 1989.

[2] Scientific American, *Communications, Computers and Networks*, Special Issue, September 1991.

[3] Index, Inside the AMS, *Notices of the American Mathematical Society*, December 1991, Volume 38, Number 10, p. 1412.

[4] Jack J. Dongarra and Eric Grosse, *Distribution of Mathematical Software via Electronic Mail*, *Communications of the ACM*, May 1987, Volume 30, Number 5, pp. 403.

[5] News and Announcements, Electronic Newsletter - Tidbits, (Access via e-mail, Lisa Thompson, jpbm@athena.umd.edu. *Notices of the American Mathematical Society*, December 1990, Volume 37, Number 10, p. 1375.

[6] News and Announcements, NSF Links Researchers to Japan, *Notices of the American Mathematical Society*, July/August 1990, Volume 37, Number 6, p. 685. (Access via e-mail: nacsis@nsf.gov or nacsis@nsf.bitnet.)

[7] NETWORK-NEWS, sponsored by Metronet, Number 2, November 1, 1991, noonan@msus1.msus.edu.

[8] Articles Archive of CCNEWS, the *Electronic Forum of Campus Computing Newsletter Editors on BITNET*, a service of EDUCOM (Subscriptions to: LISTSERV@BITNIC or to: CCNEWS@BITNIC for contributions to the Articles Archive and the CCNEWS Newsletter.)

[9] Educom Review, *Computing and Communications in Colleges and Universities*, Volume 27, Number 1, January/February 1992.

Mathematics Software Database

Ladnor Geissinger, of the University of North Carolina at Chapel Hill, writes to tell me about Mathematics Software Database, an Internet resource started by David Smith and Steve Cunningham in the late 1980s. Maintained since 1989 by Jon Wilkin of Northern Virginia Community College, it is now available for access at the site GANDALF.IAT.UNC.EDU (the Institute for Academic Technology at Chapel Hill). To download the database to your home computer, use anonymous ftp (i.e., enter the command "ftp GANDALF.IAT.UNC.EDU" and log in with the name "anonymous") and look in the directory MATHSWDB.

Other resources available at the same site include the highly useful article "Understanding the Internet" by Diana Oblinger.

Keith Devlin

Joint Summer Meetings in Vancouver

Kenneth A. Ross

The MAA and American Mathematical Society (AMS) are meeting jointly with the Canadian Mathematical Society (CMS) in Vancouver, Canada, 15-19 August 1993. This special five-day meeting has been in the planning stage for over four years and will combine the best features of our summer and winter meetings. The CMS-MAA program will have many elements that will be familiar to participants who attend summer meetings. The AMS-CMS program includes a strong emphasis on current research similar to the traditional winter meetings. And the setting, Vancouver in August, couldn't be better.

The MAA Hedrick Lectures will be given by Sir Michael Atiyah, F.R.S., Trinity College, Cambridge. A special joint AMS-CMS-MAA-NAM, Invited Address will be given by Aderemi O. Kuku. Dr. Kuku is President of the African Mathematical Union and will speak on "Mathematical Research and Education in Africa: Problems and Prospects." There will be four CMS-MAA Invited Speakers: Jonathan Borwein, Simon Fraser University, Gilles Brassard, University of Montréal, Deborah Hughes-Hallett, Harvard University, and Uri Treisman, University of Texas. The MAA Student Lecturer will be Richard K. Guy, University of Calgary. In addition, there will be minicourses, sessions of contributed papers, panel discussions, student sessions and other special programs.

The AMS Colloquium Lectures will be given by Yuri I. Manin. The CMS Jeffrey Williams Lecture will be given by James G. Arthur. There will be a Pi Mu Epsilon J. Sutherland Frame Lecture. There will also be several AMS-CMS Invited Addresses, special sessions and contributed paper sessions. The meeting will kick off with an opening banquet at which the AMS, CMS, and MAA will present prizes and awards. There will be a concurrent supervised children's program so that all participants may attend the banquet.

Vancouver is considered one of the world's most beautiful cities. Bordered by the Pacific Ocean, spectacular mountains, and lush forests, Vancouver offers a range of summertime activities. The city also offers rich cultural diversity. Native American heritage is an inherent part of the city, and its Chinatown is the second largest in North America. Hundreds of ethnic restaurants provide international dining at its best. Summer is the perfect time of year to visit the beautiful and exciting city of Vancouver, so join us at the AMS-CMS-MAA meeting this August.

Preliminary Call For Papers Vancouver, British Columbia, Canada 15-19 August 1993

The fifth annual MAA Undergraduate Student Paper Sessions, in co-ordination with Pi Mu Epsilon, will be held at the joint MAA/AMS annual summer meetings in Vancouver, British Columbia, Canada in August. Nomination forms for fifteen-minute papers from Sections of MAA, departments of mathematics, and other interested parties, along with additional information may be obtained from Ron Barnes, Dept. of Applied Mathematical Sciences, University of Houston- Downtown, One Main St., Houston, Texas 77002-1094, or via e-mail from barnes@dt3.dt.uh.edu. Expected deadline for nominations and submission of abstracts: 15 June 1993.

Free Copy!

UME Trends

Every other month UME Trends brings you :

- Reviews of the latest in computer software, instructional videos, books, and much more.
- The *Whens* and *Wheres* of mathematics education meetings.
- Tried and tested suggestions for teaching undergraduate mathematics you can use in your classroom.

Don't miss these exciting articles:

Who Got the Money? — The National Science Foundation has granted over \$7 million for Calculus Reform and other curriculum reform projects. Who got it and for what?

Advice on Advising — A new MAA committee asks readers to contribute examples of successful advising experiences, locally created materials, and innovative advising programs.

Professional Rewards for Contributions to Education — Discusses the fundamental changes that are emerging in the system of rewarding faculty to take into consideration work in course development, teaching methods, and research in learning.

Yes! Please send me a free copy of UME Trends.

And enter my trial subscription for one year at the low rate of \$16 (foreign \$24). If I am not completely satisfied I can return your invoice marked "cancel" and will owe absolutely nothing. The first issue is mine to keep. This offer is for new subscribers only. This offer is good through 1 April 1993

Name _____

Address _____

City _____

State _____

Zip _____

Please send this form to: UME Trends, 1529 Eighteenth Street, NW, Washington, DC 20036, or call 202/387-5200 / fax 202/265-2384

THE 1993 MAA INVENTORY REDUCTION SALE

Dear Customer:

Help us clean house. We need space to make room for the growing number of new MAA titles, and so we are able to offer you some great prices on a wide range of MAA books. **Your total order must be \$25.00 or more to qualify for these special prices.** Make your selection from the \$5, \$8, \$10, \$15, \$18, and \$20 lists of books described below. You may order on the special order form provided on page 25 and 26.

All Books On This Page \$5.00

LIST A

All Books On This Page \$5.00

Hungarian Problem Book I—1894–1905 Eötvös Competitions

J. Kürchak, Translated by Elvira Rapaport Strasser
Problems and solutions included.

111 pp., 1963, ISBN 0-88385-611-5, Catalog Number NML-11

From Pythagoras to Einstein

K. O. Friedrichs

Starting with area and dissection proofs of the Pythagorean theorem, Friedrichs proceeds step by step, to cover vectors, coordinates, elastic and inelastic impacts, and relativistic space-time—ending with a derivation of a contemporary formula rivaling the Pythagorean theorem in fame, $E=mc^2$.

88 pp., 1965, ISBN 0-88385-616-6, Catalog Number NML-16



Geometric Transformations II

I. M. Yaglom, Translated by Allen Shields

Similarity transformations lead to the study of shape independent of size. This volume also includes further results on isometries.

189 pp., 1968, ISBN 0-88385-621-2, Catalog Number NML-21

Geometric Transformations III

I. M. Yaglom, Translated by Abe Shenitzer

Affine and projective transformations and their associated geometries.

237 pp., 1973, ISBN 0-88385-624-7, Catalog Number NML-24

Undergraduate Mathematics Education in the People's Republic of China: Report of the 1983 American Delegation

Lynn Steen, Editor

American mathematicians visit China and give us their impressions. 100 pp., 1984, ISBN 0-88385-053-2, Catalog Number NTE-03

American Perspectives on the Fifth International Congress on Mathematical Education

Warren Page, Editor

A compilation of discussions on mathematical instruction from kindergarten through university, held at the 1984 ICME Congress in Adelaide, Australia.

134 pp., 1984, ISBN 0-88385-055-9, Catalog Number NTE-05

Computers and Mathematics: The Use of Computers in Undergraduate Instruction

D.A. Smith, G.J. Porter, L.C. Leinbach, and R.H. Wenger, Editors
This book contains contributions from 25 experts on the use of computers in teaching.

160 pp., 1988, ISBN 0-88385-059-1, Catalog Number NTE-09



All Books On This Page \$5.00

LIST A

All Books On This Page \$5.00



Critical Variables in Mathematics Education: Findings From a Survey of the Empirical Literature

E.G. Begle (James W. Wilson and Jeremy Kilpatrick, Editors)

Provides a review of the effects of variables on student learning in mathematics.

165 pp., 1979, ISBN 0-88385-430-9, Catalog Number CVM

Two-Year College Mathematics Readings

Warren Page, Editor

Covers areas in algebra, geometry, number theory, calculus, probability, and computers.

312 pp., 1982, ISBN 0-88385-435-X, Catalog Number TCR

Mathematical Time Exposures

Isaac J. Schoenberg

Topics include Fibonacci and Lucas numbers, the tuning of instruments, Helly's theorem on convex sets, finite Fourier series, spline functions and numerical analysis, the arithmetic-geometric mean, the motion of a billiard ball in a box, Peano curves, and the Kakeya problem.

228 pp., 1983, ISBN 0-88385-456-2, Catalog Number TEP

Discrete Mathematics in the First Two Years

Anthony Ralston, Editor

Discrete mathematics and courses devoted to it have become more sharply defined recently, in part due to the initiatives of the Alfred P. Sloan Foundation and to the experimental courses that it funded. 112 pp., 1989, ISBN 0-88385-064-8, Catalog Number NTE-15

A Source Book for College Mathematics Teaching

Alan Schoenfeld, Editor

This book provides the means for improving instruction, and describes the broad spectrum of mathematical skills and perspectives our students should develop.

80 pp., 1990, ISBN 0-88385-068-0, Catalog Number SRCE



An Annotated Bibliography of Expository Writing in the Mathematical Sciences

M.P. Gaffney and L.A. Steen

This resource gives references, many of them annotated, to expository articles in the mathematical sciences.

282 pp., 1976, ISBN 0-88385-422-8, Catalog Number BIB

Fifty Year Index of the Mathematics Magazine

L.A. Steen and J.A. Seebach

A cumulative index of Volumes 1-50 of the *Mathematics Magazine*.

163 pp., 1979, ISBN 0-88385-432-5, Catalog Number MMI

Index of the American Mathematical Monthly: Volumes 1-80, (1894-1973)

Contains comprehensive author and subject indices.

269 pp., 1977, ISBN 0-88385-426-0, Catalog Number MOI

SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE

All Books On This Page \$10.00**LIST B****All Books On This Page \$10.00**

The Role of Mathematics in Science

M.M. Schiffer and Leon Bowden

This book includes the laws of levers and inclined planes, the laws of exponential versus limited population growth, ray optics, and relativity.

207 pp., 1984, ISBN 0-88385-630-1, Catalog Number NML-30

Mathematics: Queen and Servant of Science

E.T. Bell

An absorbing account of pure and applied mathematics from the geometry of Euclid to that of Riemann and its application in Einstein's theory of relativity.

454 pp., 1987, ISBN 0-88385-447-3, Catalog Number QAS

Mathematical Carnival

Martin Gardner

A collection of 19 tantalizing puzzles taken from Martin Gardner's column in *Scientific American*.

320 pp., 1988, ISBN 0-88385-448-1, Catalog Number MCR

**Selected Papers on Precalculus Mathematics**

Tom Apostol, Chair, Editorial Committee

This volume contains papers that are reprinted from the *American Mathematical Monthly* and *Mathematics Magazine*.

469 pp., 1977, ISBN 0-88385-202-0, Catalog Number BSP-01

Selected Papers on Algebra

Susan Montgomery and Elizabeth W. Ralston, Chairs, Editorial Committee

This volume contains papers that are reprinted from the *American Mathematical Monthly* and *Mathematics Magazine*.

537 pp., 1977, ISBN 0-88385-203-9, Catalog Number BSP-03

Selected Papers on Geometry

Anne Stehney and Tilla Milnor, Chairs, Editorial Committee

This volume contains papers that are reprinted from the *American Mathematical Monthly* and *Mathematics Magazine*.

347 pp., 1979, ISBN 0-88385-204-7, Catalog Number BSP-04

Mathematical Plums

Ross Honsberger, Editor

Six expositors Boas, Chakerian, Dorwart, Finkbeiner, Rebman, and Stein join Ross Honsberger in producing a volume of ten outstanding essays on ingenuity at the elementary level.

191 pp., 1979, ISBN 0-88389-304-3, Catalog Number DOL-04

Great Moments in Mathematics Before 1650 (Paperback)

Howard Eves

This volume contains 23 mathematical episodes from antiquity to about 1650.

270 pp., 1982, ISBN 0-88385-310-8, Catalog Number DEP-05

Studies in Applied Mathematics

A.H. Taub, Editor

Five papers covering problems in geophysics, gravitation theory, diffusive processes, and hydrodynamics, including wave motion.

217 pp., 1971, ISBN 0-88385-107-5, Catalog Number MAS-07

Studies in Model Theory

M.D. Morley, Editor

Six survey articles discuss the back and forth property, nonstandard analysis, saturated and special models, forcing, and the omitting types theorem, a framework for algebra, and large cardinals.

197 pp., 1974, ISBN 0-88385-108-3, Catalog Number MAS-08

Studies in Algebraic Logic

Aubert Daigneault, Editor

Presents a series of articles on algebraic logic, accessible to college students.

160 pp., 1974, ISBN 0-88385-109-1, Catalog Number MAS-09

SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE

List B All Books On This Page \$10.00 List B

**Studies in Optimization**

George B. Dantzig and B. Curtis Eaves, Editors

This volume surveys the fundamental problems in operations research.

174 pp., 1975, ISBN 0-88385-110-5, Catalog Number MAS-10

Studies in Harmonic Analysis

J.M. Ash, Editor

This book gives the reader an overview of the field of harmonic analysis.

319 pp., 1976, ISBN 0-88385-113-X, Catalog Number MAS-13

Studies in Ordinary Differential Equations

Jack Hale, Editor

Eight articles that concentrate on the qualitative theory and the functional analytic aspects of ordinary differential equations.

278 pp., 1977, ISBN 0-88385-114-8, Catalog Number MAS-14

Studies in Mathematical Biology:**Part I, Cellular Behavior and The Development of Pattern**

Simon Levin, Editor

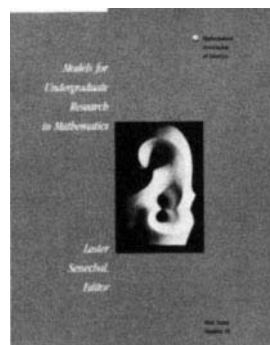
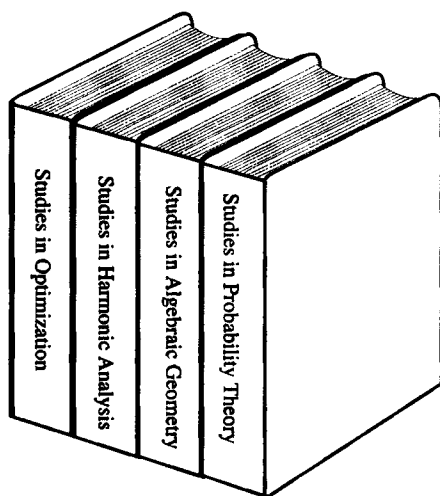
An introduction to mathematical biology. This volume emphasizes problems at the organismic or sub-organismic level—neurobiology and brain functions, developmental biology, and biological rhythms.

329 pp., 1978, ISBN 0-88385-115-6, Catalog Number MAS-15

Studies in Mathematical Biology:**Part II, Populations and Communities**

Simon Levin, Editor

An introduction to mathematical biology. This volume treats ecological or genetic problems, involving population or community level phenomena both in terms of deterministic and stochastic models.

**Models for Undergraduate Research in Mathematics**

Lester J. Senechal, Editor

This volume illustrates how to set up an undergraduate research program. Included are detailed descriptions by faculty of undergraduate research programs, as well as accounts by students of their experiences and a few samples of undergraduate research papers.

208 pp., 1990, ISBN 0-88385-070-2, Catalog Number NTE-18

Mathematicians Learning to Use Computers**The Institute for Numerical Analysis UCLA 1947-1954**

Magnus R. Hestenes and John Todd

The book gives a history of the program at INA concerned primarily with the development of mathematics pertinent to solving problems involving numerical computations. Typical projects carried out at INA are discussed.

180 pp., 1991, Catalog Number NISTI

Celestial Mechanics

Harry Pollard

Treats the central force problem, perturbation theory, the n -body problem, and introduces Hamilton-Jacobi theory.

134 pp., 1976, ISBN 0-88385-019-2, Catalog Number CAM-18

328 pp., 1978, ISBN 0-88385-116-4, Catalog Number MAS-16

Studies in Probability Theory

Murray Rosenblatt, Editor

The full range of probability theory is covered in this volume. The areas explored are: statistical inference, asymptotic distribution of maxima of independent sequences, asymptotic analysis of differential equations, dependence and asymptotic independence for random processes, and a survey of some recent results in ergodic theory.

268 pp., 1978, ISBN 0-88385-118-0, Catalog Number MAS-18

Studies in Algebraic Geometry

Abraham Seidenberg, Editor

A taste of the most interesting results in algebraic geometry; uses techniques from algebra, analytic topology, and combinatorics.

150 pp., 1980, ISBN 0-88385-120-2, Catalog Number MAS-20

SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE



List B \$10.00 Books List B



Studies in Functional Analysis

Robert G. Bartle, Editor

This volume presents five expository accounts of some recent developments in functional analysis.

227 pp., 1981, ISBN 0-88385-121-0, Catalog Number MAS-21

Studies in Computer Science

Seymour Pollack, Editor

The major concerns and issues in computer science are introduced in this volume with particular attention paid to those issues of interest to mathematicians.

408 pp., 1983, ISBN 0-88385-124-5, Catalog Number MAS-22

Studies in Partial Differential Equations

Walter Littman, Editor

The five articles in this collection are accessible to those with a general background in analysis and some acquaintance with partial differential equations.

280 pp., 1983, ISBN 0-88385-125-3, Catalog Number MAS-23

Studies in Numerical Analysis

Gene H. Golub, Editor

These papers describe the wide range of research in numerical analysis. A variety of problems and computational tools is treated.

422 pp., 1985, ISBN 0-88385-126-1, Catalog Number MAS-24

Studies in Mathematical Economics

Stanley Reiter, Editor

The material in this volume includes game theory, optimization, effective computation of equilibria, analysis of conditions under which economies will move to the greatest possible efficiency under various forces, and the flow of information needed to achieve efficient markets.

422 pp., 1987, ISBN 0-88385-127-X, Catalog Number MAS-25

Studies in the History of Mathematics

Esther R. Phillips, Editor

The material covers a wide range of current research topics: algebraic number theory, geometry, topology, logic, the relationship between mathematics and computing, partial differential equations, and algebraic geometry.

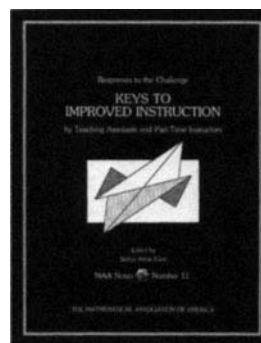
320 pp., 1987, ISBN 0-88385-128-8, Catalog Number MAS-26

Keys to Improved Instruction by Teaching Assistants and Part-Time Instructors

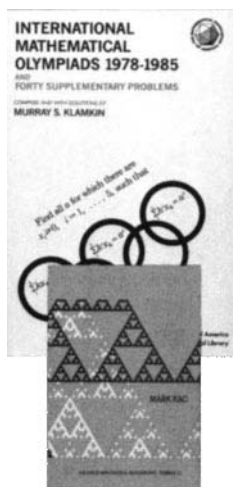
The Committee on Teaching Assistants and Part-Time Instructors, Bettye Anne Case, Chair

Gathers information on policies, practices, successes, failures, and goals connected with the use of teaching assistants and part-time instructors.

280 pp., 1988, ISBN 0-88385-061-3, Catalog Number NTE-11



Variety Bag List C Variety Bag



International Mathematical Olympiads; and Forty Supplementary Problems, 1978-1985

Compiled and with solutions by Murray S. Klamkin

This title is the sequel to *International Mathematical Olympiads, 1959-1977*.

150 pp., 1986, ISBN 0-88385-631-X, Catalog Number NML-31 \$8.00

Statistical Independence in Probability, Analysis, and Number Theory

Mark Kac

This book derives from Kac's 1955 Hedrick Lectures and his 1958 Philips Lectures at Haverford. This volume ranges from statistical independence to applications of the most diverse sort: coin-tossing, harmonic oscillations, prime numbers, and continued fractions.

112 pp., 1969, ISBN 0-88385-025-7, Catalog Number CAM-12 \$8.00

SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE

Variety Bag Books Variety Bag Books Variety Bag Books Variety Bag Books

**The Schwarz Function and Its Applications**

P. J. Davis

In this volume Philip J. Davis develops the geometric and analytic properties of Schwarz functions and shows the reader many applications, ranging from complex variables to fluid mechanics to a proof of the celebrated nine-point circle theorem in Euclidean geometry.

241 pp., 1974, ISBN 0-88385-017-6, Catalog Number CAM-17
\$8.00

Map Coloring, Polyhedra, and the Four-Color Problem

David Barnette

This book shows the reader the powerful and diverse mathematical ideas that were developed during the hundred-year assault on the four-color problem.

184 pp., 1984, ISBN 0-88385-309-4, Catalog Number DOL-08
\$15.00

Great Moments in Mathematics After 1650 (Hardback)

Howard Eves

This is a companion volume to DEP-05. Presents 20 lectures covering outstanding events in mathematics after 1650.

262 pp., 1982, ISBN 0-88385-307-8, Catalog Number DOL-07
\$15.00

From Error-Correcting Codes Through Sphere Packings to Simple Groups

Thomas M. Thompson

From error-correcting codes, to lattices, to sphere packings and their symmetries to the classification of simple groups.

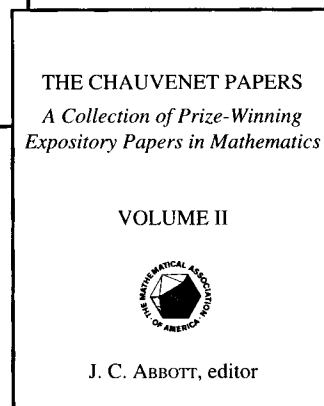
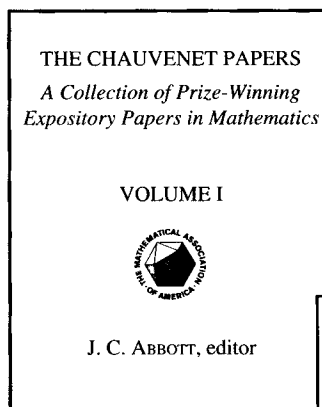
228 pp., 1984, ISBN 0-88385-023-0, Catalog Number DOL-07
\$18.00

Random Walks and Electric Networks

Peter G. Doyle and J. Laurie Snell

Examines the relationship between electric network theory and random walks at a level that can be appreciated by any able college student.

159 pp., 1984, ISBN 0-88385-024-9, Catalog Number CAM-22
\$18.00

**The Chauvenet Papers: A Collection of Prize Winning Expository Papers in Mathematics**

James Abbott, Editor

A two-volume collection of the twenty-four prize-winning Chauvenet papers offering the finest collection of expository articles in mathematics ever assembled. The collection includes papers by Bliss, Hildebrandt, Hardy, Jackson, Whyburn, Mac Lane, Kac, Halmos, Cameron, McShane, Bruck, Lanczos, Davis (Philip J.), Henkin, LaSalle, Weiss, Chern, Levinson, Treves, Olds, Lax, Davis (Martin), Hersh, and Zalcman.

Volume 1, 312 pp., 1978, ISBN 0-88385-425-2

Volume 2, 282 pp., 1978, ISBN 0-88385-427-9

\$20.00

Catalog Number CHV-012



SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE SALE

| Quantity | Title | Code | Sale Price | Order Total |
|----------|---|--------------------------------|------------|-------------|
| | LIST A—\$5.00 | | | |
| | Hungarian Problem Book I | NML-11 | \$5.00 | |
| | From Pythagoras to Einstein | NML-16 | \$5.00 | |
| | Geometric Transformations II | NML-21 | \$5.00 | |
| | Geometric Transformations III | NML-24 | \$5.00 | |
| | Undergraduate Mathematics Education in China | NTE-03 | \$5.00 | |
| | American Perspectives on the Fifth International Congress | NTE-05 | \$5.00 | |
| | Computers and Mathematics | NTE-09 | \$5.00 | |
| | Critical Variables in Mathematics Education | CVM | \$5.00 | |
| | Two-Year College Mathematics Readings | TCR | \$5.00 | |
| | Mathematical Time Exposures | TEP | \$5.00 | |
| | Discrete Mathematics in the First Two Years | NTE-15 | \$5.00 | |
| | A Source Book for College Mathematics Teaching | SRCE | \$5.00 | |
| | An Annotated Bibliography of Expository Writing in the Math Sci | BIB | \$5.00 | |
| | Fifty Year Index of the Mathematics Magazine | MMI | \$5.00 | |
| | Index of the American Mathematical Monthly: Volumes 1-80 | MOI | \$5.00 | |
| | | TOTAL—LIST A | | |
| | LIST B—\$10.00 | | | |
| | The Role of Mathematics in Science | NML-30 | \$10.00 | |
| | Mathematics: Queen and Servant of Science | QAS | \$10.00 | |
| | Mathematical Carnival | MCR | \$10.00 | |
| | Selected Papers on Precalculus | BSP-01 | \$10.00 | |
| | Selected Papers on Algebra | BSP-03 | \$10.00 | |
| | Selected Papers on Geometry | BSP-04 | \$10.00 | |
| | Mathematical Plums | DOL-04 | \$10.00 | |
| | Great Moments in Mathematics Before 1650 | DEP-05 | \$10.00 | |
| | Studies in Applied Mathematics | MAS-07 | \$10.00 | |
| | Studies in Model Theory | MAS-08 | \$10.00 | |
| | Studies in Algebraic Logic | MAS-09 | \$10.00 | |
| | Studies in Optimization | MAS-10 | \$10.00 | |
| | Studies in Harmonic Analysis | MAS-13 | \$10.00 | |
| | Studies in Ordinary Differential Equations | MAS-14 | \$10.00 | |
| | Studies in Mathematical Biology Part I | MAS-15 | \$10.00 | |
| | Studies in Mathematical Biology Part II | MAS-16 | \$10.00 | |
| | Models for Undergraduate Research in Mathematics | NTE-18 | \$10.00 | |
| | Mathematicians Learning to Use Computers | NISTI | \$10.00 | |
| | Celestial Mechanics | CAM-18 | \$10.00 | |
| | Studies in Probability Theory | MAS-18 | \$10.00 | |
| | Studies in Algebraic Geometry | MAS-20 | \$10.00 | |
| | Studies in Functional Analysis | MAS-21 | \$10.00 | |
| | Studies in Computer Science | MAS-22 | \$10.00 | |
| | Studies in Partial Differential Equations | MAS-23 | \$10.00 | |
| | Studies in Numerical Analysis | MAS-24 | \$10.00 | |
| | Studies in Mathematical Economics | MAS-25 | \$10.00 | |
| | Studies in the History of Mathematics | MAS-26 | \$10.00 | |
| | Keys to Improved Instruction | NTE-11 | \$10.00 | |
| | | TOTAL—LIST B | | |
| | LIST C—MIXED BAG | | | |
| | International Mathematical Olympiads 1978-1985 | NML-31 | \$8.00 | |
| | Statistical Independence in Probability | CAM-12 | \$8.00 | |
| | The Schwarz Function and Its Applications | CAM-17 | \$8.00 | |
| | Map Coloring, Polyhedra, and the Four-Color Problem | DOL-08 | \$15.00 | |
| | Great Moments in Mathematics After 1650 (Hardbound) | DOL-07 | \$15.00 | |
| | From Error-Correcting Codes | CAM-21 | \$18.00 | |
| | Random Walks and Electric Networks | CAM-22 | \$18.00 | |
| | The Chauvenet Papers Volumes I and II | CHV-012 | \$20.00 | |
| | | TOTAL—LIST C | | |
| | | (See Order Summary on page 26) | | |

ORDER SUMMARY

Your total order must be \$25.00 or more to qualify for these special prices.

| | |
|-------------------------------------|-------------------|
| Price of books ordered from list A | A \$ _____ |
| Price of books ordered from list B | B \$ _____ |
| Price of books ordered from list C | C \$ _____ |
| TOTAL PRICE OF BOOKS ORDERED | T \$ _____ |

Order from:

The Mathematical Association of America
 1529 Eighteenth Street, NW
 Washington, DC 20036
 (202) 387-5200 FAX: (202) 265-2384

Please send the books indicated on the attached form to:

Membership Code
 (6 alpha characters—from any recent MAA journal mailed to you.)

Name _____

Address _____

City _____ State _____ Zip _____

I enclose my check for the amount shown on line T
 (Payment must be in U.S. funds)

Charge to my:

VISA MASTERCARD

Card Number _____

Expiration Date _____

Interbank No. _____

Signature _____

This sale ends on June 30, 1993.

Faculty Development Workshops

FOR MATHEMATICIANS WHO TEACH STATISTICS

If you teach undergraduate statistics courses, but are not yourself a statistician, you are invited to participate in one of a series of regional week-long workshops sponsored by MAA, with anticipated support from the National Science Foundation's Undergraduate Faculty Enhancement Program. These workshops are designed to help teachers at two- and four-year colleges implement the recommendations of the MAA's Focus Group on Statistics, as reported in *UME Trends* (October, 1991), and more fully in *Heeding the Call for Change* (MAA Notes No. 22, Lynn Steen, ed.).

Both the practice of statistics and its intellectual framework have been changing rapidly over the last two decades, largely in response to the computer revolution. To address these changes, the workshops will feature four days of presentations by leading applied statisticians, whose lectures will be linked to chapters in *Perspectives in Contemporary Statistics* (MAA Notes No. 21, David Hoaglin and David Moore, eds.). For example, two days of a workshop might be devoted to the practice of exploratory data analysis and to the corresponding conceptual shift which places greater emphasis on the "model-data dialog" at the expense of classical hypothesis testing. Another two days might be spent on the comparatively new area of regression diagnostics, which is reshaping the way statisticians choose and evaluate models based on fitting lines and curves to data. Yet another area of rapid change is statistical process control, which has grown well beyond its origins in industry to offer, what some regard as, a new theoretical frame for all of applied statistics.

Parallel with changes in the field of statistics, recent research on how students learn has documented the importance of increasing the opportunities for active, hands-on learning by students of statistics. In this spirit, the workshops will emphasize topics and activities that lend themselves to direct use with students. Faculty who come to the workshops will be given opportunities (indeed expected!) to participate actively in their own learning. In particular, faculty will have the chance to try out modules developed by Richard Scheaffer's NSF-funded Activity-Based Statistics (ABS) Project.

Each workshop will bring together 24 faculty who, though they have neither recent professional training nor a graduate degree in statistics, have been called on by their departments to teach statistics courses. They would also like to learn more about the subject and the resources available to those who teach it. Prior to each workshop, the 24 participants, the workshop coordinator, and the statistician presenters will be linked by e-mail so they can introduce themselves and confer with each other about their backgrounds, the courses they teach, and their goals for the workshop. This is to ensure a good match between the needs and interests of the participants, the presentations, and the activities at the workshop. Participants need not have prior experience with e-mail; means of access and help getting started will be provided as needed.

Four days of the week-long workshop will be divided between presentations by statisticians and related computer lab activities. The rest of the time teams of four participants, with guidance and assistance from the workshop coordinator, will each design and carry out projects involving collection and analysis of statistical data or activities suitable for a statistics lab. After the workshop ends, team members will remain networked with one another, with the statistician presenters, and with the workshop coordinator, first during the rest of the summer as they develop and adapt their projects for use in their own teaching, and then throughout the fall as they try out their projects in the classroom. Each regional workshop will hold a one-day reunion after the tryout period, in connection with a regional or national meeting of the MAA.

Participants or their home institutions are expected to cover the cost

of travel to the workshop site. Each workshop will provide room and board for 24 participants. In addition, participants will receive course materials which will include a copy of *Perspectives in Contemporary Statistics*, a copy of the statistical analysis package used at the workshop, and \$100 towards the cost of travel, room, and board for the one-day reunion.

The workshops originate from the Committee on Undergraduate Statistics appointed jointly by the MAA and The American Statistical Association (ASA). The project steering committee includes Donald Bushaw and Ann Watkins from the MAA, and David Moore and Richard Scheaffer from the ASA.

Project Directors George Cobb of Mount Holyoke College and Mary Parker of Austin Community College are sending more detailed information on the program and application procedures to department chairs. The application deadline for the 1993 workshops is 2 April 1993. For further information, please contact April White, STATS Project Registrar, The Mathematical Association of America, 1529 Eighteenth Street NW, Washington DC 20036-1385 (Phone: 202-387-5200, FAX: 202-265-2384).

1993 STATISTICAL THINKING AND TEACHING STATISTICS (STATS) WORKSHOPS

6-13 June 1993 University of Iowa, Iowa City, IA

Jonathon D. Cryer, Coordinator

13-20 June 1993 Bowdoin College, Brunswick, ME

Rosemary A. Roberts, Coordinator

Conference on Integration of Precalculus with Calculus

Moravian College, 18-19 June 1993

Moravian College in Bethlehem, Pennsylvania will host a conference on 18-19 June 1993 focusing on several issues that surround the development of a calculus course for under-prepared students. This will cap a two-year FIPSE-funded project in which faculty at Moravian College and Northampton Community College developed and class-tested materials especially designed for this course, to be used along with a standard calculus text.

Contributed papers are invited on the following topics:

Courses that integrate precalculus with calculus; Research in learning precalculus-calculus; Teaching calculus to the under-prepared student or to the non-traditional student; Assessment of attitudes and mathematical understanding; The role of technology in a precalculus-calculus course. Abstracts must be submitted for review by 1 April 1993. The registration deadline for the conference is 15 May 1993.

For further information on the conference, including registration materials, or to submit an abstract, write to: Doris Schattschneider, Department of Mathematics, 1200 Main Street, Moravian College, Bethlehem, PA 18018-6650. E-mail: Schattdo@moravian.edu.

Interactive Mathematics Text Project

ANNOUNCES SELECTION OF DEVELOPERS AND 1993 WORKSHOP SCHEDULE

The MAA's Interactive Mathematics Text Project (IMPT) has as its goal the improvement of mathematics learning through the use of computer based interactive texts. To achieve this goal, the IMTP holds summer workshops on the use and authoring of interactive texts and supports selected individuals as text developers.

During the summer of 1992, the Interactive Mathematics Text Project sponsored nine workshops. Eight developers have been chosen from among the 1992 workshop participants. Each of these individuals will receive the loan of an IBM PS/2 computer and laser printer to continue development of interactive texts. They will also attend a developers' conference, supported by the National Science Foundation, to be held at the Institute for Academic Technology in August 1993. The individuals chosen and the topics of their texts are as follows:

PRECOLLEGE, Sally J. Illman, Roosevelt High School, Seattle, WA

MATHEMATICS FOR CAREERS, Mafori Moore, DeKalb College, Atlanta, GA

PRECALCULUS, Daniel J. Bach, Diablo Valley College, Pleasant Hill, CA; Sylvia Sorkin, Essex Community College, Baltimore, MD

CALCULUS, Richard B. Lane, University of Montana, Missoula, MT; Richard M. Schori, Oregon State University, Corvallis, OR

MULTIVARIATE CALCULUS, Randall B. Maddox, Pepperdine University, Malibu, CA

LINEAR ALGEBRA, Robert T. Moore, University of Washington, Seattle, WA

Additional developers will be selected from the 1993 workshop participants.

During the summer of 1993, twelve workshops will be held. Workshops will begin on Monday morning and end on Saturday. They will provide an introduction to the use of interactive texts in enhancing undergraduate learning; instruction in the use of Windows and the selected authoring system; an opportunity to create a short interactive

| Dates | Site | Software | Instructor |
|----------------|-----------------------------------|-------------|-------------------|
| 14-19 June | Morehouse College | Maple | Carol Scheftic |
| 21-26 June | Seattle Central Community College | Mathematica | Horacio Porta |
| 28 June-3 July | Univ. of Houston-Downtown | Mathcad | Ben Levy |
| 12-17 July | Seattle Central Community College | MathWindows | Jim Swift |
| 12-17 July | Los Angeles Pierce College | Maple | Dan Schwalbe |
| 19-24 July | Morehouse College | MathWindows | Ladnor Geissinger |
| 19-24 July | Univ. of Houston-Downtown | Mathematica | Bill Davis |
| 26-31 July | Univ. of Michigan-Dearborn | Mathcad | David Smith |
| 26-31 July | Towson State Univ. | Mathematica | Juan Manfredi |
| 2-7 August | Univ. of Michigan-Dearborn | Maple | Robert Lopez |
| 2-7 August | Towson State Univ. | Mathcad | Charles Alexander |
| 9-14 August | Los Angeles Pierce College | MathWindows | Marcelle Bessman |

text; and a congenial atmosphere in which to work collaboratively with others.

Each workshop will be limited to fifteen projects, where either one or two participants can work on a project. Individuals who intend to work together on a project should apply as a team.

One authoring system will be used at each workshop. The authoring systems include Mathematica for Windows, Maple for Windows, Mathcad and MathWindows. Three workshops will be held on each of these systems.

MathWindows is a collection of dedicated application programs (e.g., graphing programs, differential equation solvers, symbolic calculators) being developed under the direction of James White at the Institute for Academic Technology. The author of an interactive text can call these programs from Windows applications such as ToolBook and Visual Basis.

The MAA has submitted a proposal to the National Science Foundation to provide support for workshop participants' room and board. Participants will be responsible for their own travel costs. For further information about the workshops and an application form, write to G.J. Porter, Department of Mathematics, University of Pennsylvania, 209 S. 33rd St., Philadelphia, PA 19104-6395.

The IMTP is supported by a major grant from IBM with additional support from the National Science Foundation, MathSoft, Waterloo Maple and Wolfram Research.

MAA Computer Minicourse 24-25 April 1993

USING DERIVE AND GYROGRAPHICS IN CALCULUS AND LINEAR ALGEBRA

JERRY JOHNSON AND BENNY EVANS

UNIVERSITY OF HOUSTON - DOWNTOWN CAMPUS

This minicourse provides hands-on use of the popular computer algebra system DERIVE and the animated 3D graphing program GyroGraphics (both for IBM and compatible microcomputers). The source for examples will be the presenters' book *Discovering Calculus with DERIVE*, and the forthcoming *Exploring Linear Algebra with DERIVE* both published by John Wiley and Sons. We will introduce novices to each program, but we will stress concrete ways to use them as demonstration and laboratory tools for problem solving and teaching mathematics.

This minicourse is supported by a grant from the MAA's Interactive Mathematics Text Project. There is no charge for attendance, but individuals are responsible for their own room, board, and travel.

For more information, contact the Local Coordinator: Bela Bajnok at 713-221-8076, office, 713-529-5518, home, or bajnok@dt3.dt.uh.edu.

Summer Geometry Institute

Pending funding, a Summer Geometry Institute sponsored by the National Science Foundation will be held in Park City, Utah, from Sunday, 20 June through Saturday, 17 July 1993. The Institute incorporates learning, teaching, research activities, and interactions in geometry for high school geometry teachers, undergraduate math majors, graduate students, and university teachers and researchers. High school teachers, in partnership with university mathematicians and students, will explore the evolution of classical geometry to modern geometry on curved spaces, and will discuss issues of geometry education at all levels. Undergraduates and graduate students will be offered an intense, yet accessible introduction to areas of geometry research and related fields. The Research and Graduate Summer School topic for the 1993 Summer Institute is "Higher Dimensional Complex Geometry." A full range of computer activities and problems in classical geometry and elementary algebraic geometry will be explored.

Also pending funding, a highlight of the 1993 Summer Institute will be a special joint program with the Mathematical Sciences Research Institute (MRSI) in Berkeley, California, for undergraduate and graduate student women. ***The program is specifically designed to invite talented young women to consider a career in pure mathematics in general and in the area of algebraic geometry in particular.*** Women students admitted to the Summer Geometry Institute in Park City also will be invited to attend a special two-week program at MRSI in May 1993. There they will be offered an introduction to algebraic geometry and participation in small working groups with individual mentoring organized especially for them by participants of the Special Year in Algebraic Geometry at MRSI. Mentors from this program will then accompany the group to the Summer Institute in Park City in June and July to continue their support activities.

For more information about the women's joint program with MRSI, please write to either Professor Uhlenbeck (Dept. of Mathematics, University of Texas, Austin, TX 78721, or uhlen@math.utexas.edu) or Professor Robert Bryant (Dept. of Mathematics, Duke University, Durham, NC 27760, or bryant@math.duke.edu). Please include your e-mail address, mailing address, and daytime phone number.

For general information about the Summer Geometry Institute and application forms, please contact the Regional Geometry Institute, 18C de Trobriand Street, Fort Douglas, Salt Lake City, Utah 84113. Phone: (801) 585-4388. Fax: (801) 585-5793. E-mail: rgi@math.utah.edu.

The Summer Geometry Institute specifically invites applications from women and members of minority groups.

Conference on Graduate Programs in the Applied Mathematical Sciences II

Current challenges for graduate education in classical applied mathematics, discrete mathematics, operations research, and statistics will be discussed at this conference hosted by the Department of Mathematical Sciences at Clemson University, 16-17 April 1993. Sessions on current and future curricula, innovations, computation, and employment opportunities will be featured. This conference is supported by a grant from the National Security Agency. NSF support has been requested. For further information, contact R.E. Fennell, Department of Mathematical Sciences, Martin Hall, Clemson, SC 29634-1907, (803) 656-3257, e-mail conf@math.clemson.edu.

MSEB Invites Sabbatical Visitors

The Mathematical Sciences Education Board (MSEB) invites inquiries from mathematicians and mathematics educators planning sabbatical leaves who may find it appropriate to work on an MSEB project whether at the MSEB offices in Washington, DC or from their home base. The MSEB staff works on a variety of projects in K-12 and undergraduate mathematics as authorized by the 36-member Board. Many Board - authorized requests would make suitable and interesting projects for sabbatical leaves. Limited financial support may be available for some projects. More formal "rotator" positions are also available from time to time. We are especially interested in inquiries from women, minorities, and others from groups that have been traditionally under-represented in mathematics-based disciplines.

Inquiries should be addressed to Lynn Arthur Steen, Executive Director, Mathematical Sciences Education Board, 2101 Constitution Ave., NW, HA476, Washington, DC 20418; e-mail: lsteen@nas.edu.

NSF Funding for Undergraduate Education

NSF's Division of Undergraduate Education (DUE) has just released a new integrated "Program Announcement" (NSF 92-135). This document describes grant opportunities in undergraduate science, engineering, mathematics, and technology for all types of institutions, including universities and two- and four-year colleges. DUE serves as the NSF focal point for undergraduate education of future school teachers of mathematics and science "NSF Collaboratives for Excellence in Teacher Preparation." The collaboratives' deadlines for preliminary proposals is 1 March. Also described are the coming year's (FY1993) other programs:

Instrumentation and Laboratory Improvement Program (ILI)

Closing Date: 15 November 1993

Leadership in Laboratory Development (LLD)

Closing Date: 15 November 1993

Course and Curriculum Development (CCD)

Closing Date: 7 June 1993

Undergraduate Faculty Enhancement (UFE)

Closing Date: 3 May 1993

Leadership Opportunities in Science and Humanities Education (LOSH)

Closing Date: 15 March 1993

Calculus and the Bridge to Calculus

Closing Date: 4 October 1993

The DUE program announcement may be obtained from NSF's electronic mechanism, STIS, via Bitnet (pubs@nfs) or Internet (pubs@NSF.gov), ordered by FAX 703-644-4278, or by phone at 202-357-7861. Request NSF 92-135.

In Memoriam

Fouhad Mohamed, Associate Professor, Texas Tech University, died on 2 August 1992 at the age of 41. He was a MAA member for 12 years.

Earl A. Coddington, Professor Emeritus, University of California - Los Angeles, died on 11 November 1992, at the age of 72. He was a MAA member for 22 years.

Stanley B. Jackson, Professor Emeritus, University of Maryland - College Park, died at the age of 79. He was a MAA member for 44 years.

Joseph F. McAvoy, a Cartographic Technician with the U.S. Department of the Interior in Anchorage, Alaska, died 22 June 1992, at the age of 44. He had just recently joined the MAA.

Benjamin T. Sims, Professor, Eastern Washington University, died on 12 September 1992, at the age of 57. He was a MAA member for 33 years.

Weatha G. McNeil, Associate Professor, Miles College, died at the age of 49. She was a MAA member for 8 years.

B.P. Reinsch, Lakeland, Florida, a MAA member for 67 years, has died.

Katherine E. Hazard, Professor Emeritus, Douglas College, died at the age of 77. She was a MAA member for 46 years.

Daniel C. Lewis, Professor Emeritus, Johns Hopkins University, died at the age of 87. He was a MAA member for 51 years.

Gordon W. Hoagland, Professor, Ricks College, died at the age of 55. He was a member of the MAA for 2 years.

Hector D. Pacheco, Instructor, University of Puerto Rico, died 3 October 1992, at the age of 38. He was a MAA member for 5 years.

Clinton B. Ford, Physicist, died at the age of 79. He was a MAA member for 19 years.

Bruce R. Caine, Assistant Professor, DeKalb College, died 27 October 1992, at the age of 50. He was a MAA member for 23 years.

Mildred Brunschwig, Retired Professor, Brown University, died 17 October 1992. She was a MAA member for 69 years.

MAA Placement Test Program CUSTOM-DESIGNED TESTS

A new Service for MAA PTP Subscribers

PTP subscribers now have access to a computer-based test generating system. This system is:

- An innovative solution to your college's mathematics placement problems.
- Flexible — choose a version of one of the current PTP tests OR create a test by selecting items from 242 test patterns.

For more information please contact:

Lisa Johnson
PTP Coordinator
Mathematical Association of America
1529 Eighteenth Street, NW
Washington, DC 20036
202/387-5200

Kemeny from page 1

believer that the teaching of college-level mathematics should always be done by mathematicians, he felt that the future health of mathematics was dependent on constantly searching for new applications. Speaking to Lynn Steen in 1982 (*Mathematical People: Profiles and Interviews*, edited by D.J. Albers and G.L. Alexanderson, Birkhauser, Boston, 1985, pp. 153-165) he said:

"... mathematicians should learn all the pure mathematics they want. But also they must learn applications. Get to be an expert in either the social sciences or in computer science. That's the secret of survival for mathematics departments."

On hearing of Kemeny's death, current Dartmouth President James O. Freedman said of his predecessor:

"John Kemeny pushed the fields of mathematics and computing to new heights, just as he raised the stature of Dartmouth during a decade of change in the 1970s. [He] was a brilliant mathematician, an outstanding educator, a devoted public servant, and a man of principle. His commitment to academic excellence, co-education, and equal opportunity made his tenure as president a luminous chapter in Dartmouth's modern history."

FOCUS Employment Advertisements

The Mathematical Association of America's more than 32,000 members all receive FOCUS and its Employment Advertisements as a standard membership benefit. FOCUS readers describe themselves as mathematicians teaching in secondary schools, colleges and universities, or working in business, industry, and government.

Rates for both classified and display FOCUS Employment Advertisements:
Fifty (50) words or less: \$50.00
More than fifty (50) words:
\$55.00 per column inch.

Each advertising column measures 14 picas or 2.33 inches wide.

FOCUS offers a 15% discount for the same advertisement in three or more consecutive issues. The MAA will invoice advertisers after the first occurrence specified in insertion orders. All invoices include a tear sheet.

Advertising Copy Deadlines

The Association publishes FOCUS six times per year: February, April, June, September, October, and December. Advertising copy deadlines include:

April Issue 16 February 1993

June Issue 12 April 1993

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.

Anyone wishing to place an employment advertisement in FOCUS should contact: FOCUS Employment Advertisements The Mathematical Association of America 1529 Eighteenth Street, NW Washington, DC 20036-1385 (202) 387-5200 e-mail: focus@maa.org fax: (202) 265-2384.

DARTMOUTH COLLEGE

JOHN WESLEY YOUNG RESEARCH INSTRUCTORSHIP IN MATHEMATICS

The John Wesley Young Research Instructorship is a two year post-doctoral appointment for promising new or recent PhD's whose research interests overlap a department member's. Current departmental interests include areas in algebra, analysis, algebraic geometry, combinatorics, computer science, differential geometry, logic and set theory, number theory, probability and topology. Teaching duties of four ten-week courses spread over two or three quarters typically include at least one course in the instructor's speciality and include elementary, advanced and (at instructor's option) graduate courses. Nine-month salary of \$34,000 supplemented by summer (resident) research stipend of \$7,556 (two-ninths). Send letter of application, resumé, graduate transcript, thesis abstract, description of other research activities and interests if appropriate, and 3 or preferably 4 letters of recommendation (at least one should discuss teaching) to Phyllis A. Bellmore, Mathematics and Computer Science, 6188 Bradley Hall, Hanover, NH 03755-3551. Applications received by 15 January 1993 receive first consideration: applications will be accepted until position is filled. Dartmouth College is committed to affirmative action and strongly encourages applications from minorities and women.

MATHEMATICAL STATISTICIAN

RESPONSE ANALYSIS CORPORATION, an employee-owned survey research company located in Princeton, NJ, is seeking a **Mathematical Statistician** for the planning and direction of technical aspects of large federal government statistical surveys. Specific responsibilities will include estimation, imputation, modeling, analysis, analytic writing, and research design.

Successful applicant must have a Ph.D. in Statistics or Mathematics, 2 or more years experience, which could include teaching statistics, and an interest in working on the design and execution of large statistical surveys. Excellent writing and SAS programming skills are preferred.

In addition to professional development and advancement opportunities, we provide a collegial environment and excellent benefits including medical, 401(k) and an employee stock ownership plan. For confidential consideration, please submit your resume and salary requirements to:

RESPONSE ANALYSIS

P.O. Box 158, Room F126
Princeton, NJ 08542

An Equal Opportunity Employer M/F/D/V

PRUDENTIAL REINSURANCE COMPANY ACTUARIAL DEPARTMENT NEWARK, NEW JERSEY

Seeking individuals to become technical analysts and work on our casualty reinsurance problems. Casualty reinsurance companies insure insurance companies that provide auto, liability, malpractice, or property coverage. Our analysts are multi-faceted with good skills in problem solving, creativity, communications, PCs, mathematics, statistics, business and actuarial sciences. They are self-motivated, self-learners, and self-starters, can juggle priorities, are team players, can relate to people and can get things done. Our daily work includes: estimating losses on contracts with long reporting delays, using aggregate loss distributions, pricing high limits based on only a small sample of losses, evaluating the time value of money, studying new techniques, programming PC systems to do our work, educating non-math people on key concepts, presenting results in an effective manner to decision makers. There are several challenging development projects underway but our primary focus is on day to day analysis and work. We are a cohesive group of 25 (16 BS/6 MA/3 PhD), (7 FCAS's Fellows of the Casualty Actuarial Society/18 studying to be FCAS's). Outstanding opportunity for those who want exciting practical problems, who want to broadly develop themselves and integrate several disciplines, and who value growth as well as management opportunities. Interested individuals should send a resume, transcript, and a statement focusing on their multi-dimensionality, skills (and evidence of such), and commitment to actuarial work to: Dr. Ed Weissner, VP., Actuarial Prudential Reinsurance Company, Actuarial Department, 4th Floor, 3 Gateway Center, Newark, New Jersey 07102-4077.

U.S. citizenship or current authorization for full-time work in the U.S. required (Prudential does not sponsor H-1 visas). Applications from NY/NJ area individuals encouraged. Prudential Re is an equal opportunity employer.

METHODIST COLLEGE

MATHEMATICS/COMPUTER SCIENCE. Methodist College, an affirmative action employer, anticipates an opening for an Assistant Professor of Mathematics beginning fall, 1993. Teaching responsibilities include mathematics, and if appropriate, computer science courses. Doctorate preferred, A.B.D. acceptable. Minority and women candidates are especially encouraged to apply. Applications will be accepted until the position is filled. Send resume, graduate transcripts, and names of three references to Mrs. Patricia Jones, Head, Department of Mathematics and Computer Science, Methodist College, 5400 Ramsey Street, Fayetteville, North Carolina 28311-1499 [(919) 630-7125].



DEPARTMENT OF MATHEMATICAL SCIENCES

Elizabethtown College invites applications for a tenure-track position in mathematics, appointment beginning August 1993. Applicants must be strongly committed to quality teaching in a liberal arts environment and to the continuation of scholarly activity. A PhD in mathematics at the time of the appointment is required. Responsibilities include teaching twelve hours per semester at various levels including courses which may involve writing and/or computing. Although all areas will be considered, preference will be given to persons with ability or interest in numerical analysis or mathematics education. Salary and fringe benefits are competitive and commensurate with credentials and experience. Applications will be considered until the position is filled.

Applicants should send letter of application, resume, transcripts, and three current letters of reference to Martha A. Farver-Appar, Director of Personnel, Elizabethtown College, One Alpha Drive, Elizabethtown, PA 17022-2298. AA/EO.

THE UNIVERSITY OF GUAM

The University of Guam solicits applications to establish a list of eligibles for the following non-tenure track or tenure-track, full-time positions (one-, two-, or three-year appointment-subject to availability of funds):

Assistant Professor to Associate Professor
STATISTICS: 1 VACANCY

APPLIED MATHEMATICS: 1 VACANCY

PURE MATHEMATICS: 2 VACANCIES

General Description: The Division of Mathematical Sciences offers a baccalaureate degree in mathematics. The Division also has a large developmental program. Faculty are expected to participate in the developmental program. The normal faculty load is twelve (12) credit hours per semester, of which at least three (3) credit hours would be normally devoted to the developmental program.

Educational and Professional Background: A PhD in the appropriate mathematical science is required. An ability to teach a variety of undergraduate courses is required. At least two years of teaching experience is preferred.

ASSISTANT PROFESSOR \$34,307 - \$50,765
Per Academic Year

ASSOCIATE PROFESSOR \$39,300- \$59,307
Per Academic Year

Salary will be commensurate with qualifications and experience relevant to the position applied for by the applicant.

Application Process: Submit current vitae, an official transcript sent directly from the institution awarding the highest degree and unofficial transcripts of other degrees earned, three current letters of reference sent directly from persons knowledgeable about the applicant's academic and professional performances and request for

official application to: Prof. Martin De Beer, Chairperson, Mathematical Sciences Division, c/o Personnel Services Division, UOG Station, Mangilao, Guam 96923. Deadline: March 1, 1993. For more information, call UOG Personnel Services Division at (671)734-9535, 734-9109 or call Dr. John Rider, our representative on the U.S. Mainland West Coast, Toll Free at 1-800-821-9233. EEO/AE.

CALIFORNIA STATE UNIVERSITY

SAN MARCOS

The newest campus in the CSU, seeks a PhD mathematician in algebraic geometry, analytical geometry, computational geometry, differential geometry, finite geometry, geometric analysis, or a related field of geometry. This entry-level, tenure-track Assistant Professor position will begin in August 1993. This position is subject to final administrative authorization. CSUSM seeks an individual with strong academic preparation who has an interest in teaching undergraduates. An application consists of a statement of interest, a complete resume, and at least three letters of reference which should comment on the applicant's credentials in teaching, research, and service. Applications should be sent to: Mathematics Search Committee, California State University-San Marcos, San Marcos, California 92096-0001. Review of applications will begin 25 January and will continue until the position is filled. CSU San Marcos is an Affirmative Action/ Equal Opportunity Employer. The University has a strong commitment to the principle of diversity and, in that spirit, seeks a broad spectrum of candidates, including women and members of minority groups and people with disabilities.

TRINITY COLLEGE

The Department of Mathematics at Trinity College anticipates the authorization to search for an assistant professor to fill a one year position, academic year '93-'94. The teaching load is five courses per year (3/2). Requirements: PhD in mathematics or ABD; strong evidence of teaching excellence at the undergraduate level.

Applicants should send only a c.v., a statement of teaching interests, three letters of reference (at least one of which addresses teaching), and one self-addressed, stamped envelope to:

Search Committee Chair
Department of Mathematics
Trinity College
Hartford, CT 06106

We will review applications as they are received, and anticipate filling the position by late March. Trinity College in an equal opportunity / affirmative action employer. Women and members of minority groups are especially encouraged to apply.

EASTERN WASHINGTON UNIVERSITY

DEPARTMENT OF MATHEMATICS

Applications from persons with a PhD in statistics or mathematics with a background in time series and categorical data analysis are sought for a probationary, tenure track assistant professor position to begin September 1, 1993 if funded. Responsibilities include teaching two courses per

quarter at the undergraduate or graduate level, aid in developing statistics curriculum and degree options at both levels, and research. This department seeks to strengthen its ties to local industry, so an interest in industrial applications is desirable. Review of applications will begin 1 January 1993 and will continue until the position is filled. Applications should include statements of personal objectives and philosophy in teaching and research, a curriculum vita, graduate transcripts, and names of three references. Apply to: Dr. Ronald H. Dalla, Chairman, Mathematics Department, MS 32, Eastern Washington University, Cheney, WA 99004. Eastern Washington University is committed to increasing the diversity of its faculty, staff, students, and academic program offerings and to strengthening sensitivity to diversity throughout the institution. We are an affirmative action/equal opportunity employer, and applications from members of historically underrepresented groups are especially encouraged to apply.

WORCESTER POLYTECHNIC INSTITUTE

DEPARTMENT OF MATHEMATICAL SCIENCES

The Mathematical Sciences Department of Worcester Polytechnic Institute, Worcester, MA invited applications for one or more tenure-track positions in applied mathematics to begin August 1993. These positions require a strong research record or potential and evidence of quality teaching. Areas of interest are numerical analysis and scientific computing; optimal control and composite materials; mathematical biology; and stochastic control.

WPI is a highly selective private college of engineering and science. The Department of Mathematical Sciences grants bachelor's degrees, master's degrees in applied mathematics and applied statistics, and PhD degrees in the Mathematical Sciences.

Interested applicants should send a curriculum vitae along with the names of at least three references to: Samuel M. Rankin, III, Head, Department of Mathematical Sciences, 100 Institute Rd., Worcester, MA 01609. Applications will be accepted until the positions are filled. This advertisement has been placed on E-math and will have appeared there before appearing in print. WPI is an equal opportunity/affirmative action employer and especially encourages women and minorities to apply.

WILKES UNIVERSITY

MATHEMATICS

Tenure-track position available beginning Fall 1993. PhD in mathematics or related field with strong computer background is required, as well as commitment to undergraduate teaching and to continued professional development. Rank and salary open, depending on qualifications. Wilkes is a comprehensive university located in the Pocono resort area. Ample opportunities are available for professional growth, and the School encourages ties with industry and government. Send resume, graduate transcripts, and 3 letters of recommendation to Dr. Bing Wong, Assoc. Dean, School of Science and Engineering, Wilkes

University, Wilkes-Barre, PA 18766.
WOMEN AND MINORITIES ARE ENCOURAGED TO APPLY. AA/EEO.

**MOORHEAD STATE UNIVERSITY
MATHEMATICS DEPARTMENT
MOORHEAD, MINNESOTA 56563**

Tenure-track position at rank of assistant professor to begin September 1993. A PhD or EdD in mathematics education, eligibility for licensure at some level K-12 and good communication skills are required. Preference will be given to candidates with successful teaching experience at the K-12 or college level. Interest in teaching elementary education methods course and evidence of ability to work effectively as a member of a teaching team are desirable. Duties include teaching a secondary mathematics education methods course, elementary education content courses, and undergraduate mathematics courses. Other responsibilities include advising secondary mathematics education majors, supervising student teachers, developing in-service workshops, working on assigned committees and maintaining an appropriate level of professional activity. Apply to Milton Legg, Chair, Mathematics Department. Moorhead State University is an equal opportunity/affirmative action employer and educator.

**CHAIRPERSON, DEPARTMENT OF
MATHEMATICS**

**ILLINOIS STATE UNIVERSITY, NORMAL,
IL 61761**

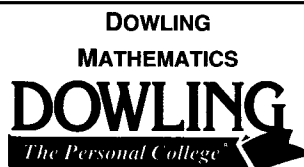
The Department of Mathematics at Illinois State University invites applications for Chairperson. Applicants must have a doctorate in Mathematics or Mathematics Education, a strong record of achievement in research and teaching, and demonstrated leadership and administrative skills. Experience with undergraduate programs is necessary and graduate programs desirable. Rank and salary are commensurate with qualifications. Duties begin on or about August 1, 1993. The ISU Department of Mathematics has 44 full-time faculty positions and offers undergraduate and master's programs in Mathematics and Mathematics Education. Send a letter of application, a complete vita, and names and addresses of at least three references to: Charles B. Harris, Secretary, Mathematics Chair Search Committee, 4240 Department of English, Illinois State University, Normal, IL 61761 by February 15, 1993. ISU is an EO/AA Employer.

TRINITY CHRISTIAN COLLEGE

Tenure-track position in mathematics beginning fall, 1993. Variety of undergrad courses, including majors. Doctorate preferred. Desire to teach undergraduates and commitment to Reformed, Christian approach of the college required. Salary and rank commensurate with experience. Apply: Burton Rozema, VP Academic, 6601 West College, Palos Heights, IL 60463. 708-597-3000.

**MONTCLAIR STATE COLLEGE
TENURE TRACK ASSISTANT PROFESSOR
MATHEMATICS EDUCATION V-13**

Candidates will be expected to teach undergraduate mathematics and graduate mathematics education courses, have expertise in junior and senior high school mathematics curriculum and the use of current technology. A commitment to teaching, participation in curriculum development and grant activities as well as scholarly and professional activities are expected. Teaching load is 12 credits per semester. Doctorate in Mathematics or Mathematics Education. Expertise in junior and senior high school mathematics curriculum including the use of current technology. Resume with names, addresses, phone numbers of three references to Dr. Ken Wolff, Box C316, V-13, Montclair State College, Upper Montclair, NJ 07043. Screening begins February 1, 1993 and continues until position is filled. Start September 1, 1993. Position subject to available funding. Montclair State College is an Equal Opportunity/Affirmative Action employer.



The Mathematics and Computer Science Division invites applications for an anticipated tenure-track position in the fall of 1993. PhD (or completion of PhD by September 1993) is required. Preference will be given to candidates with an interest in Operations Research, Computer Science, or Number Theory. The primary expectation of a faculty member at Dowling is excellence in teaching. Other areas of responsibility encompass advisement of students, research and scholarship, curriculum development and departmental and college committees. Dowling College is a fully accredited independent, coeducational, liberal arts college with outstanding graduate programs in business administration and education. The College is located on the south shore of Long Island, fifty miles from Manhattan. The College offers excellent benefits along with competitive salary. Please send a letter of interest and curriculum vita to: Director of Human Resources, Dowling College, Oakdale, New York, 11769-1999. Dowling College is an Equal Opportunity/Affirmative Action Institution.

ST. CLOUD STATE UNIVERSITY

Applications are invited for two tenure-track, assistant professor positions in mathematics, beginning Fall 1993, subject to funding. A PhD in Mathematics (by 9/93) is required. Candidates should be dedicated to quality undergraduate teaching and provide evidence of teaching effectiveness and research potential. Experience in modeling, optimization or dynamical systems is desirable. Experience using technology in the classroom and/or familiarity with current reform efforts in collegiate mathematics education is a plus.

Send a letter of application, resume, three letters of recommendation, summaries of student evaluations, and copies of educational transcripts to Dr. James W. Johnson, Department of Mathematics and Statistics, St. Cloud State University, 7200 4th Avenue South, St. Cloud, MN 56301-4498. Telephone: 612-255-2221. Deadline: March 26, 1993. Women and minorities are encouraged to apply.

**MOUNT HOLYOKE COLLEGE
DIRECTOR OF SUMMERMATH FOR
TEACHERS PROGRAM**

Mount Holyoke College seeks an innovative leader in mathematics education to assume the position of Director of the SummerMath for Teachers Program. Since 1983, SummerMath for Teachers has been in the forefront of the mathematics education reform movement, introducing primary and secondary school teachers to new pedagogy and helping them transform their instructional techniques. The Program conducts a series of summer institutes designed to provide opportunities for about 100 teachers each year to explore selected mathematical concepts and reflect on their own learning processes. It also offers academic-year mathematics courses for local teachers. This full-time administrative position carries lecturer status in either psychology-education or mathematics. Responsibilities include teaching in and directing the summer institutes and related programs, budget and program management, and preparation of grant proposals for programmatic and research support. The Director supervises the work of the Assistant Director and ten summer institute staff and works collaboratively with the directors of SummerMath, a six-week summer program in mathematics for women in secondary school. A deep understanding of mathematics is essential for the position. Candidates should have a PhD or EdD in mathematics or mathematics education or the equivalent. Experience as a school teacher and administrative experience are highly desirable. Mount Holyoke College is committed to fostering multicultural diversity among its faculty, staff, and students and especially encourages women and minorities to apply. The College is an AA/EEO employer. Please send letter of interest, cv, and three letters of recommendation to Prof. Donal O'Shea, SummerMath Search Committee, Department of Mathematics, Mount Holyoke College, South Hadley, MA 01075 by February 22, 1993.

**COMMUNITY COLLEGE OF
PHILADELPHIA**

The Mathematics Department anticipates two tenure-track positions for the Fall 1993. Qualifications: Master's degree in mathematics, a commitment to quality teaching, both remedial and college level, and a serious interest in curriculum development. Send resume and 3 letters of recommendation by March 15, 1993 to: Mathematics Dept. Hiring Committee, Community College of Philadelphia, 1700 Spring Garden Street, Philadelphia, PA 19130. CCP is an AA/EOE.

THE UNIVERSITY OF AKRON
DEPARTMENT OF MATHEMATICAL
SCIENCES

MATHEMATICS FACULTY POSITION

A tenure-track position in mathematics at the Assistant Professor level will be available August 30, 1993. A PhD in Mathematics required. Applicants should have abilities and interest in teaching a broad range of courses at the undergraduate and graduate levels, and conducting and directing research. Applicants with specialties in analysis/probability, functional analysis, and differential geometry will be given preference. The university offers competitive salaries and excellent fringe benefits.

The University of Akron is the third largest state university in Ohio. The department offers a BS in Math, Applied Math, Statistics, and Computer Science, and an MS in Math, Applied Math, and Statistics. The master's level program prepares students for teaching, doctoral study and for industry.

All materials (application letter, curriculum vitae, unofficial copy of graduate transcripts, and three letters of reference) should be sent to:

Dr. Donald Story
 Department of Mathematical Sciences
 Attn: Math Search
 The University of Akron
 Akron, OH 44325-4002
 e-mail: DPStory@uakron.edu

Review of completed applications will begin February 28, 1993, and continue until the position is filled.

Women and minorities are encouraged to apply. The University of Akron is an equal education and employment institution.

MATHEMATICS EDUCATION

One tenure-track position available in Fall 1993. Doctoral degree in Mathematics or Mathematics Education, Master's level background in Mathematics is preferred. Responsibilities include teaching college mathematics, writing grant proposals, developing and managing math assessment and tutoring labs, supervising evening and weekend adjuncts. Good communication and coordination skills expected. Salary ranges from \$28,6730 - \$46,176 for assistant professor, and \$37,308 - \$55,179 for associate professor, based on qualification and experience. The application deadline is March 12, or until position is filled. Candidates should send a letter of application, curriculum vitae, and the name, address and phone number of three references to Professor Joseph Malkevitch, Chairman, Search Committee, Department of Mathematics and Computer Studies, York College, CUNY, Jamaica, NY 11451. York is an A.A.E.O.E.

WINONA STATE UNIVERSITY
DEPARTMENT CHAIR

Duties include teaching one course per quarter, administering the affairs of the department, and providing leadership in mathematics, mathematics education, and statistics. The department has 22 faculty members and offers undergraduate degrees in mathematics, mathematics education,

statistics, and production operations management. The department also maintains a center in applied statistics and process improvement. A doctorate in mathematics, mathematics education, or statistics and at least 7 years teaching experience after the doctorate are required. 2 or more years of administrative experience is preferred.

Winona State, one of seven universities in the Minnesota State University System, is a comprehensive regional institution offering a broad range of undergraduate programs and graduate programs. Enrollment is about 7,600 students. The University is situated in the beautiful Mississippi River town of Winona (population 30,000). The WSU Rochester Center is located in the thriving city of Rochester MN, home of the Mayo Clinic and IBM. The communities offer abundant cultural and outdoor recreational opportunities as well as exciting school systems and an affordable housing market. To apply, send a resume, transcripts, and a list of at least 3 references, with addresses and telephone numbers to: Mathematics and Statistics Search, Office of Human Resources, Winona State University, Winona, MN 55987. Screening begins March 15, but the position is open until filled. An AA/EEO employer.

ASSISTANT / ASSOCIATE PROFESSOR
MATHEMATICS EDUCATION

Assistant or Associate Professor (Tenure-Track / FIR) Mathematics Education, Plymouth State College to teach 12 contact hours of undergraduate and graduate courses in mathematics education and mathematics; advise graduate and undergraduate students; work with students majoring in middle or secondary school mathematics, as well as other mathematics majors. **MINIMUM QUALIFICATIONS:** Doctorate in mathematics education with strong background in mathematics. Knowledge of current national curriculum reform in mathematics required. Experience teaching at elementary, middle, or secondary school level desired. Salary: \$28,000 - \$35,000 depending on experience. Hiring contingent upon eligibility to work in U.S. Send letter of application, resume, transcripts, and three current letters of recommendation to Mathematics Education Search Committee, Box N, Department of Mathematics, Hyde Hall, Plymouth State College, Plymouth, NH 03264. **DEADLINE:** March 22, 1993 or until filled, to begin August 30, 1993. PSC actively seeks minorities and women, and is an AA/EEO employer.

UNIVERSITY OF ARKANSAS AT LITTLE
ROCK

ASSISTANT PROFESSOR

The University of Arkansas at Little Rock invites applications for a tenure-track Assistant Professor position starting Fall 1993. Applicants must hold a PhD in mathematics and have a strong commitment to teaching. Preference will be given to those candidates with active research programs in one or more of the following fields: Differential Equations, Analysis, Computational Mathematics, Mathematical Biology. Outstanding applicants in other fields will be given serious consideration as well. Salary commensurate with qualifications.

Send resume, transcripts and three letters of reference to: Dr. Alan M. Johnson, Chair of the Search Committee, Department of Mathematics & Statistics, University of Arkansas at Little Rock, 2801 South University, Little Rock, AR 72204-1099.

Applications received before March 1, 1993 will receive full consideration.

The University of Arkansas at Little Rock is an equal opportunity affirmative action employer and actively seeks the candidacy of minorities, women and persons with disabilities. Under Arkansas law, all applications are subject to disclosure.

PITTSBURG STATE UNIVERSITY

Fall 1993 temporary full-time lecturer to teach service and undergraduate mathematics courses for 1993-94 academic year. Master's in Mathematics required; doctorate in Math or Math Ed. preferred. Special attention will be given to those with experience in secondary education. Salary from a base of \$22,500. Send letter of application and resume with names, addresses, and telephones of 3-5 references to: Elwyn Davis, Department of Mathematics, Pittsburg State University, Pittsburg, KS 66762. For first consideration applications must be received by March 26, 1993. PSU is an Equal Opportunity Affirmative Action Employer.

UNIVERSITY OF MARYLAND, EASTERN
SHORE

PRINCESS ANNE, MD 21853

Chair, Department of Mathematics, Computer Science and Engineering

Twelve month position, beginning July, 1993. Candidates must have an earned Ph.D. in Mathematics or Computer Science with at least seven (7) years teaching experience at the university level; notable achievements in research relevant to the department; a track record of acquiring outside funding and an understanding of academic administration at the departmental level. Responsibilities of the successful candidate include teaching nine (9) credit hours per semester and administering the department. Salary is commensurate with experience.

The University of Maryland Eastern Shore, an 1890 Land-Grant Institution in the University of Maryland System, is located in the historical town of Princess Anne, 16 minutes from the city of Salisbury and forty minutes from the resort of Ocean City, Maryland. The campus is centrally located 2-3 hours from Baltimore, Washington, DC, Virginia Beach and Philadelphia.

Application review will begin March 1, 1993, and continue until the position is filled. Interested candidates should send letters of application, current resume, and three letters of recommendation (sent by referees) to:

Department of Human Resources
 University of Maryland Eastern Shore
 Princess Anne, Maryland 21853

The successful candidate must be able to show acceptable documentation establishing the right to accept employment in the United States of America. UMES is an EEO/AA employer, a drug-free workplace, and enforces a no-smoking policy applicable to all campus buildings.

MACON COLLEGE

Mathematics: Anticipates lower division teaching position. Begin September 1, 1993. Minimum graduate semester hours in Math and M.S. Macon College is an Equal Opportunity Affirmative Action Employer. Macon College is a two-year institution of the University System of Georgia. Application deadline March 20, 1993. Apply to: A.G. Diboll, Chairman, Natural Science & Mathematics, 100 College Station Drive, Macon, GA 31297. (912) 471-2752.

**AUGUSTANA COLLEGE
ROCK ISLAND, IL 61201**

Assistant Professor of mathematics, tenure track, beginning September, 1993. Ph.D. in mathematics and a strong commitment to teaching undergraduates expected, ability to teach computer science desirable. Send letter of application, curriculum vitae, and the names, addresses, and phone numbers of three references by Feb. 22 to Dr. Arne Selbyg, Dean of the College, Search Committee: Mathematics, Augustana College, Rock Island, IL 61201 (309)794-7368. Equal Opportunity Employer. Women and Minorities are encouraged to apply.

**MATH / COMPUTER SCIENCE
FACULTY RHODE ISLAND
COLLEGE**

One tenure-line faculty appointment at the rank of Assistant Professor may be available pending approval of funding. To teach a variety of graduate and undergraduate courses. Requirements include a doctorate (which must be completed by September 1, 1993) and expertise in at least one of the following areas: geometry, mathematics education, applied statistics. Preference will be given to applicants with college teaching experience, with experience in the use of technology in the college classroom, and with scholarly research and academic accomplishment. Salary competitive; excellent benefits. APPLICATIONS MUST BE RECEIVED BY MARCH 12, 1993. Send letter of application, resume, transcripts, and three letters of reference to Office of Personnel Services, Rhode Island College, Providence, RI 02908 — Attention: Math/CS Search. AN AFFIRMATIVE ACTION / EQUAL OPPORTUNITY EMPLOYER.

STEPHEN F. AUSTIN STATE UNIVERSITY DEPARTMENT OF MATHEMATICS AND STATISTICS

The Department anticipates filling a tenure-track Assistant Professorship beginning with the 1993-94 academic year. Applicants must hold a Ph.D. in mathematics or statistics, have a strong interest in teaching, and demonstrate a commitment to continuing research. The normal teaching load is twelve semester hours of mathematics and/or statistics courses. Salary is competitive. Applicants should send transcripts and a resume complete with the names, addresses, and telephone numbers of three references to: Dr. Jasper E. Adams, Chairman, Department of Mathematics and Statistics, Box 13040, SFA Station, Nacogdoches, TX 75962-3040. SFASU is an

Equal Opportunity, Affirmative Action Employer. Screening begins February 15, 1993 and continues until position is filled.

UNIVERSITY OF OKLAHOMA DEPARTMENT OF MATHEMATICS

Pending budgetary approval, the department will have available a tenure-track or tenured faculty position in mathematics education starting in fall 1993. Rank and salary will be commensurate with qualifications and experience. Candidates are required to have a Ph.D. in Mathematics Education and demonstrated commitment to research in mathematics education. A strong background in mathematics beyond the master's level is also required. Preference will be given to those with research interests in collegiate mathematics education, or in secondary school teacher training. Candidates with some post-doctoral experience are especially sought. The faculty member is expected to carry a teaching load of two courses per semester. Responsibilities include involvement with undergraduate mathematics courses, with both undergraduate and graduate courses in mathematics education, and with preparation of pre-service teachers. Candidates should be capable of directing doctoral students and contributing leadership to the department's active graduate program in mathematics education. Send a vita and a statement of research and teaching goals, and arrange to have three letters of recommendation sent to: Andy Miller, Math Education Search Committee, Department of Mathematics, University of Oklahoma, 601 Elm Avenue, Room 423, Norman, OK 73019-0315. Initial screening will begin on January 31, 1993, or when authorized thereafter, and continue until any available position is filled. The University of Oklahoma is an Equal Opportunity/Affirmative Action Employer.

**EDGEWOOD COLLEGE, MADISON
WISCONSIN DEPARTMENT OF MATH
AND COMPUTER SCIENCE**

One year replacement position starting fall 1993. Salary range \$26,000 - \$28,000. Must be able to teach introductory real and complex analysis and differential equations. Ph.D. preferred, MA considered. Letter, transcripts, list of references to: Steven Post, Edgewood College, 855 Woodrow St., Madison, WI 53711. Applications will be reviewed until the position is filled.

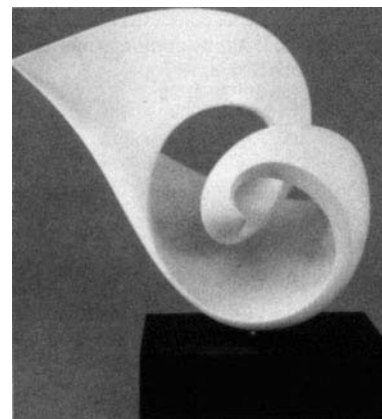
**UNIVERSITY OF NORTH FLORIDA
DEPT. OF MATHEMATICS
AND STATISTICS****INSTRUCTOR IN MATHEMATICS**

The Department of Mathematics and Statistics invites applications for a non-tenure track renewable position at the Instructor rank beginning August, 1993. Candidates must have a Masters degree in Mathematics or the Mathematical Sciences and a history of excellent teaching at the undergraduate level. Additional consideration may be given to experience with student mathematics organizations. The Department offers

the BA and BS degrees in Mathematics and Statistics and the MA degree with concentrations in Mathematics and Statistics. The University of North Florida is a growing state university with approximately 9,000 students. Degree programs are offered in the traditional areas. Send applications with vita and three letters of recommendation by March 5, 1993 to: Dr. Jingchung Tong, Search Committee Chairperson, Department of Mathematics and Statistics, University of North Florida, 4567 St. Johns Bluff Road, South, Jacksonville, Florida 32224-2645. THE UNIVERSITY OF NORTH FLORIDA IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER. MINORITY AND WOMEN CANDIDATES ARE ENCOURAGED TO APPLY.

**Art and Mathematics
Conference (AM93)
State University of
New York, Albany
7-11 June 1993**

AM93 is an international interdisciplinary conference relating art and mathematics. The emphasis is on visualization with examples from architecture, geometry, graphics, quilts, painting, sculpture, and topology. Speakers will include Tom Banchoff, John Conway, Pam Davis, Stewart Dickson, Michele Emmer, Helaman Ferguson, Zvi Hecker, Clement Meadmore, Tony Milkowski, Charles Perry, Rhonda Roland Shearer, Scott Kim and David Chamberlain. There will be panel discussions, a slide and video registry, and space available for displays. Registration Information: Nat Friedman, Department of Mathematics, SUNY-Albany, Albany, NY 12222, FAX (518)442-4731, e-mail: artmath@math.albany.edu, Phone (518)442-4621.



The sculpture of David Chamberlain will be on display at the AM93 conference.

Calendar

National MAA Meetings

15-19 August 1993 Sixty-eighth Summer Meeting, Vancouver, British Columbia (Board of Governors, 14 August 1993)

12-15 January 1994 Seventy-seventh Annual Meeting, Cincinnati, Ohio (Board of Governors, 11 January 1994)

Sectional MAA Meetings

Allegheny Mountain Penn State-Behrend Campus, Erie, PA, 16-17 April 1993

Eastern PA & Delaware Villanova University, Villanova, PA, 3 April 1993; Cedar Crest College, Allentown, PA 13 November 1993.

Florida University of Central Florida, Orlando, FL, 5-6 March 1993

Illinois St. Mary's College, Notre Dame, IN, 23-24 April 1993 (Joint meeting with Indiana & Michigan Sections)

Indiana St. Mary's College, Notre Dame, IN, 23-24 April 1993 (Joint meeting with Illinois & Michigan Sections)

Intermountain University of Utah, Salt Lake City, Utah, 9-10 April 1993

Iowa Luther College, Decorah, IA, 16 - 17 April 1993

Kansas Emporia State University, Emporia, KS, 19-20 March 1993

Kentucky Centre College, Danville, KY, 16-17 April 1993

Louisiana-Mississippi University of Southern Mississippi, Biloxi, MS, 5-6 March 1993

Maryland-District of Columbia-Virginia Christopher Newport College, Newport News, VA, 16-17 April 1993

Metropolitan New York York College, Jamaica, NY, 1 May 1993

Michigan St. Mary's College, Notre Dame, IN, 23-24 April 1993 (Joint meeting with Indiana & Illinois Sections)

Missouri Westminster College, Fulton, MO, 2-3 April 1993

Nebraska University of South Dakota, Vermillion, SD, 16-17 April 1993

New Jersey Middlesex County College, Edison, NJ, 20 March 1993 (Joint meeting with MATYC NJ)

North Central Riverwood Conference Center, Monticello, MN, 30 April-1 May 1993

Northeastern University of Massachusetts/Dartmouth, No., Dartmouth, MA, 11-12 June 1993; Westfield State College,

Westfield, MA, 5-6 November 1993.

Northern California University of California, Berkeley, CA, 20 February 1993

Ohio Kent State University, OH, 16-17 April 1993

Oklahoma-Arkansas Oral Roberts University, Tulsa, OK, 26-27 March 1993

Pacific Northwest University of Puget Sound, Tacoma, WA, 6 March 1993

Rocky Mountain Colorado School of Mines, Golden, CO, 2-3 April 1993

Seaway SUNY at Binghamton, Binghamton, NY, 23-24 April 1993.

Southeastern University of South Carolina-Conway, Conway, SC, 2-3 April 1993

Southwestern New Mexico Institute of Mining & Technology, Socorro, NM, 16-17 April 1993

Southern California University of Southern California, Los Angeles, CA, 7 November 1992, California State University, San Marcos, CA, 6 March 1993

Texas Abilene Christian University, Abilene, TX, 1-3 April 1993

Wisconsin University of Wisconsin - Fox Valley, Menasha, WI, 16-17 April 1993

Other Meetings

23-25 April 1993 The 1993 Annual Meeting of New York State Mathematics Association of Two-Year Colleges (NYSMATYC) will be held at the Radison Hotel, Utica Centre, Utica, NY. For additional information contact: Judy Cain, NYSMATYC President-Elect, Tompkins Cortland Community College, 170 North Road, Dryden, NY 13053.

2-4 July 1993 The Global Awareness Society International Annual Meeting, "Global Interdependence" at the Marriott Marquis in New York City. Abstract deadline is December 1 1992. For additional information please contact Jim Pomfret, Department of Mathematics and Computer Science, Bloomsburg University, Bloomsburg, PA 17915.

22 - 24 April 1993 Twenty-ninth Biennial Kappa Mu Epsilon (KME) National Convention, Niagara University, New York. For additional information contact Harold Thomas, Pittsburg State University, Pittsburg, Kansas 66762, (316) 231-7000.

FOCUS

The Mathematical Association of America
1529 Eighteenth Street, NW
Washington, DC 20036-1385

FEBRUARY 1993

Second class postage paid
at Washington, DC and
additional mailing offices