FOCUS

The Selection of Marcia Sward as MAA Executive Director

Deborah Tepper Haimo
Chair, Executive Director Search Committee

After leading the MAA for nearly a quarter of a century as its Executive Director, Alfred B. Willcox is retiring. His successor, Marcia P. Sward, will take office on September 1, 1989.

From the time of its founding in 1915, the MAA has been fortunate in the farsightedness of its leaders and in their dedicated service. Throughout its early years, the organization prospered under the direction of its officers. By the end of its first half century, however, a turning point had been reached. Harry Gehman, Professor of Mathematics at the University of Buffalo, had served terms as secretary and treasurer, but now had to assume the double role of treasurer and executive director to cope with the increasing work load. It became clear that the Association needed someone who could give full and exclusive attention to its affairs.

Assessing the situation, the Board of Governors voted to create a separate, full-time staff position of Executive Director. Al Willcox, Professor of Mathematics at Amherst College, was selected for the post, and the entire MAA operation was to be transferred from Buffalo to Washington, DC.

When, in August, 1968, Dr. Willcox, accompanied by his newly selected office staff, arrived to assume his duties, he found that no one could enter the office. The entire reception area was covered with stacks upon stacks of mail containing dues payments from the Association's 17,500 members. In characteristic fashion, this inauspicious start was met with a calm assessment of the crisis and a plan for action. Office procedures had to be quickly devised and implemented, and Dr. Willcox acquired an immediate understanding of the magnitude of the operation under his direction.

The growth of the Association in the 22-year tenure of Al Willcox has been astounding, not only in numbers, with a current membership of 28,500, but in status as the major force in American college and university mathematics. Under his guidance, the Association has emerged as a leader in actively addressing the vital issues of the discipline.

To keep the membership abreast of new developments in the field, publication activities have expanded to include *(Continued Page 2)*

Contributed Papers in Louisville

Kenneth A. Ross, Secretary, MAA

This preliminary announcement of the Louisville meeting is made to encourage members' participation and to provide leadtime for organizing the sessions on contributed papers. The meeting will be held January 17–20 (Wednesday–Saturday), 1990. Past President Leonard Gillman will give his Retiring Presidential Address at this meeting. In addition, there will be invited addresses, Joint AMS-MAA addresses, minicourses, and various panel discussions.

Contributed papers are being accepted on several topics in collegiate mathematics. The topics, organizers, their affiliations, and the days they will meet are:

- PROGNOSTIC AND DIAGNOSTIC TESTING: Helping High School Students Get Ready for College-Level Mathematics, sponsored by the *Committee on Placement Examinations—Bert K. Waits, Ohio State University*, Wednesday and/or Thursday. Papers are invited that describe local, regional, or statewide projects that give college mathematics placement tests to high school students (like the Ohio Early College Mathematics Placement Testing Program—EMPT), or projects that give high school students diagnostic tests to help them prepare for college-level mathematics (like the California Mathematics Diagnostic Testing Project), or other programs or projects designed to improve the mathematics articulation from high school to college.

- RECENT DEVELOPMENTS IN PLACEMENT—*Elizabeth J. Teles, Montgomery College, Maryland* and *Ray E. Collings, Tri-County Technical College, South Carolina*, Friday and/or Saturday. Papers are sought describing placement procedures in colleges and universities for entry level mathematics courses beyond local efforts. The focus of the session will be on regional, state, and national initiatives.

- DISCRETE MATHEMATICS: Has the Bubble Burst?—*Martha J. Siegel, Towson State University, Maryland*, Wednesday and/or Thursday. Presentations on the teaching of discrete mathematics in the first two years are welcome. Special consideration will be given to papers which emphasize *(Continued Page 2)*

innovative and successful courses for freshman or sophomore mathematics and computer science majors. Curricula integrating the discrete component into the calculus sequence or courses emphasizing discrete models are of special interest. The organizers will aim for diversity in choosing the program.

■ CLASSIC CLASSROOM CALCULUS PROBLEMS—*Anthony Barcellos, American River College, California*, Friday and/or Saturday. Every calculus teacher has favorite examples that he or she manages to present in an interesting way. We invite you to share your examples and insights with us.

■ A CORE IN MATHEMATICS—*Kay B. Somers, Moravian College, Pennsylvania*, Friday and/or Saturday. This session will focus on approaches taken to provide a base in mathematics for college undergraduates. Information on particular courses and ways to present specific topics are encouraged. Topics to be discussed can include, but are not limited to, the following: quantitative problem solving, interdisciplinary courses incorporating mathematics, introductory mathematical modeling, historical perspectives in mathematics, graphical presentations across disciplines, and the role of data analysis in a mathematics core.

Presentations are normally limited to ten minutes, although selected contributors may be given up to twenty minutes. Individuals wishing to submit papers for any of these sessions should send the following information to the MAA Washington office (1529 Eighteenth Street, NW, Washington, DC 20036) **by September 28:** (1) title; (2) intended session; (3) a one-paragraph abstract (for distribution at the meeting); (4) a one-page outline of the presentation.

Rooms where sessions of contributed papers will be held are equipped with overhead projector and screen. Blackboards are not normally available. Persons having other equipment needs should contact the Secretary (Kenneth Ross, Department of Mathematics, University of Oregon, Eugene, OR 97403) as soon as possible, but in any case prior to **November 1**. Upon request, the following will be made available: one additional projector, 35mm slide projector, 16mm film projector, or VCR/VHS with one color monitor.

three journals and a newsletter, as well as five book series. Minicourses have been introduced at national and sectional meetings. Mathematics contests at various levels are now held regularly, and placement tests are available. A lecturer program provides speakers and a consultant program offers experts to evaluate collegiate programs. Basic library lists have been developed and are being updated, and various curricular innovations and modes of teaching are continually under study. A concerted effort has been made to attract members from the nonacademic sector, and to provide programs for those in groups not traditionally active in mathematics. There has been greater interaction with AMS, SIAM, and other professional organizations.

When Al Willcox announced plans for his impending retirement, President Leonard Gillman appointed Donald J. Albers, Gerald L. Alexanderson, Richard D. Anderson, Deborah T. Haimo (Chair), Donald L. Kreider, David P. Roselle, and David A. Sanchez to the Selection Committee. It was a formidable task to find a successor to Al Willcox, who not only had brought the MAA to its current position of eminence, but also had endeared himself by the force of his personality to all who knew him.

The Committee quickly decided to hold as open and wide a search as possible, and to invite applicants from all spheres of mathematical endeavor. Indeed, our nominees came from the private as well as the public sector, from academe, industry, and government,

from active MAA members as well as from nonmembers. We evaluated all credentials with great care and after extensive deliberation, chose five strong candidates as our finalists. Each had much to offer, and each had unique talents. All were questioned closely and in depth; we wanted to know strengths and weaknesses; we were interested in management style; we sought candidates' views on the roles of the various mathematical and scientific organizations and their relation to the MAA; we asked for their opinions on the relation of the MAA to the media, and their thoughts about the importance of the Washington presence; we were interested in their ideas of specific opportunities for funding; we wanted their reaction to the effects of developing technological changes on the teaching of mathematics; we wanted to know what they considered the major issues in collegiate mathematics education; and we sought their perception of the most serious problems facing the MAA in the coming years and their proposed preparation to deal effectively with these problems. We questioned and we listened and we evaluated and we deliberated.

When we were ready to vote, our overwhelming choice was Marcia Sward. We all felt that her background, education, and experience made her uniquely qualified to succeed Al Willcox.

Marcia Sward

Marcia Sward, a summa cum laude graduate of Vassar College, received her doctorate from the University of Illinois, writing her dissertation on partial differential equations. She began her teaching career at Catholic University of America, moved on to Trinity College, and was Department Chair, when, in 1980, she was named Associate Director of the MAA. In 1985, after five years of distinguished service, she was appointed to the Executive Directorship of the Mathematical Sciences Education Board (MSEB), newly established at the National Research Council in response to the publication of the "David Report."

Marcia Sward's achievements in her new position can only be characterized as phenomenal. In an incredibly short time, starting from nothing more than an idea, and with minimal seed funding, she has assembled a first-rate staff, and through her innovative fund-raising efforts, has built a major multimillion dollar organization.

Dr. Sward's unusually strong managerial skills combine an analytic, intellectual approach with great perceptiveness and sensitivity. She has been very effective in handling highly complex situations and in bringing together various constituencies with widely divergent views. As a result, MSEB has emerged as a leading national proponent for extending and upgrading mathematics education in the United States.

Marcia Sward's seemingly limitless energy, imaginative resourcefulness, and professionalism clearly identify her as an ideal successor to Al Willcox. Again, as it enters the last quarter of its first century, the Association has chosen a strong leader with the vision to continue to move it forward in the critical years ahead.

Joint MAA / ACM / IEEE Report on Teaching Computer Science within Mathematics Departments available. Of interest to those administering such programs. For a copy, send $2, (prepaid only) to the MAA in Washington.

Student Chapters to be Theme at Section Officers Meeting at Boulder

Howard Anton, Chair, Committee on Student Chapters

Student Chapter activities will be a main topic of discussion in the second half of the MAA Section Officers meeting this summer at Boulder. The purpose of the discussions is to exchange information on Student Chapter activities at the section level, generate suggestions for future activities, and identify any problems that might be developing. Sections may want to consider sending the Student Chapter coordinator to the meeting in place of or in conjunction with the usual section representative. Student Chapter advisors are also welcome. To help make best use of the time, a preplanned agenda will be developed. If you have any items that you would like to suggest for that agenda, please send them to Howard Anton, 304 Fries Lane, Cherry Hill, NJ 08003.

Yueh-Gin Gung and Dr Charles Y. Hu to endow new Award for Distinguished Service. See below.

The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics

Leonard Gillman, Past President, MAA

The Association is pleased to report that Dr. and Mrs. Charles Y. Hu of College Park, Maryland have announced their intention to endow an annual award for distinguished service to mathematics. The award is to consist of a cash prize of $4,000 plus a certificate and a silver cup. Neither Dr. Hu nor Mrs. Hu is a mathematician, but, as they have stated, "We have always considered mathematics as a very important field of study; and we have always had great respect and genuine admiration of the intellectual capacity and high-quality minds of mathematicians. We firmly believe that mathematics is the foundation of all sciences and a vital tool for all basic technological researches. We feel strongly that all citizens of our society should do their best to encourage the study, teaching, and research in mathematics."

The MAA Committee on Awards recommended that the Hu Endowment be used to modify and enhance our existing Award for Distinguished Service to Mathematics; and the Board of Governors, as well as Dr. and Mrs. Hu, have approved this recommendation. (The fund for the existing award will be used for another purpose, to be announced later.) The principal clause in the regulations governing the award now states:

"The award is to be made for outstanding service to mathematics. The period of service may be long or short, and the award may be made on the basis of one or several activities. The contribution should be such as to influence significantly the field of mathematics or mathematical education on a national scale. The recipient should be a member of the Association who is a resident of the United States or Canada."

Dr. Hu received a PhD in Agricultural Geography in 1942 from the University of Chicago. His specialty has been agricultural land use. He taught at the University of Maryland for 33 years, retiring in 1977. He has been a member of Sigma XI for 40 years. Mrs. Hu has a degree in Education from the University of California at Berkeley.

The Hu Award, like its predecessor, will be presented at each January meeting; the first presentation will take place at the Louisville meeting in January, 1990. The nominating committee consists of Deborah Tepper Haimo, Victor L. Klee, Ivan Niven, G. Baley Price, and Gail S. Young (chair); several of these people have themselves received the earlier Award for Distinguished Service.

In Memoriam

Elliot T. Adams, retired, died 3 January 1989 at the age of 89. He was an MAA member for 12 years.

Dr. Isaac Batlin, retired, died 31 October 1988. He was an MAA member for 46 years.

Dorothy Carpenter, Professor, Ashland College, died 11 November 1988 at the age of 73. She was an MAA member for 38 years.

Kenneth A. Chase, scientist, Naval Ocean Systems Center, died 22 February 1989 at the age of 37. He was an MAA member for 3 years.

Hidehisa Edamatsu, retired, died 8 December 1988 at the age of 71. He was an MAA member for 2 years.

Andrew Flanagan, Surveyor, Cons-Tech Engineering, died 4 March 1989. He was an MAA member for 1 year.

John V. Finch, Professor Emeritus, Beloit College, died 11 November 1989 at the age of 71. He was an MAA member for 47 years.

Emil Grosswald, retired, died 11 April 1989 at the age of 76. He was an MAA member for 39 years.

Manfred Kochen, Professor, University of Michigan, died 7 January 1989 at the age of 60. He was an MAA member for 36 years.

Leslie H. Miller, Professor Emeritus, Ohio State University, died 18 February 1989 at the age of 74. She was an MAA member for 41 years.

Lawrence V. Morey, teacher, Fontenelle Junior High School, died 24 March 1989 at the age of 59. He was an MAA member for one year.

Benjamin Sapolsky, retired, died 31 December 1989 at the age 74. He was an MAA member for 31 years.

Emory P. Starke, Professor Emeritus, Rutgers University, died 9 March 1989 at the age of 93. He was an MAA member for 56 years.

Marshall K. Stone, retired, died 9 January 1989 at the age of 85. He was an MAA member for 56 years.

Ralph Wilson Veatch, Professor Emeritus, University of Tulsa, died 23 September 1988 at the age of 88. He was an MAA member for 61 years.

Gordon L. Walker, former Executive Director, American Mathematical Society, died 18 December 1988 at the age of 76. He was an MAA member for 47 years.

Word has also been received on the deaths of the following MAA members:

Christa Blackwell, teaching assistant, University of Oklahoma; **Robert McCready**, retired; **Gordon Fuller**, retired; **Lois Karr**, retired; **F. C. Ogg, Jr.**, Associate Professor, University of Toledo; **Edward Saibel**, retired; **Dolores Schaffer**, instructor, University of South Dakota; **Abraham Seidenberg**, Professor, University of California at Berkeley; **Orric Taulbee**, Chairman, Department of Computer Science, University of Pittsburgh; **Cynthia Yang**, Coordinator, Miami University.

What Can I Do?

Patricia Clark Kenschaft
Chair, Committee on the Participation of Women

"What can I do to increase the number of women in mathematics?" is a question often asked of our committee. Many possible answers contribute equally well to increasing the number of men. This is fine, because we want to increase participation of both sexes. However, women are still battling biases and coping with extra domestic and/or committee responsibilities, so the following suggestions are more important for them.

OUR STUDENTS

❏ *Listening* to people, and taking what we hear seriously, may be the most important way to help them. Our students and our colleagues need us to hear their questions and their problems, both mathematical and personal.

❏ *Call on* women students in class equally with men. This takes determination, since they tend to raise their hands less, but study after study indicates that female students are called on less often in the classroom than their male peers. (Yes, I am guilty too. Watch yourself!) Women are socialized to be less aggressive and more self-deprecating. It is important to look beyond culturally ingrained behavior to the interesting mathematical questions.

❏ *Career information* can be the key to transforming a diligent elementary mathematics student into a mathematics major. There are many options for a math major, but the popular culture does not publicize them and misconceptions are widespread. Those of us in the field must make specific information available. The national MAA office can help.

❏ *Ask promising students* about their career plans. Mention possibilities. Know about career and graduate school possibilities and tell interested students. Watch for signs of misinformation or misunderstandings, and try tactfully to erase them. Five minutes of faculty interest can change a life. Take the time.

❏ *Applications to other fields* are interesting to most students, but are especially crucial in enticing those of broad interests or those who perceive themselves as wanting to serve the entire human community, not just the narrow pursuit of "truth." Showing the connections of each topic to other mathematical topics enriches the mathematics itself and demonstrates the unity of mathematics. Connecting math to other fields and to career paths need not take more than a minute or two in class, and may attract many more students to our field.

❏ *Acknowledge change*, even major change, in some students' motivation, readiness, and knowledge. People change and grow. Do not stereotype students. Several years later, even months later, a student's motivation and perspective may have developed so much that she or he has achieved a new level of intellectual ability.

❏ *Reexamine your opinions* about what constitutes excellence in mathematics. What student questions indicate ability? Only the ones asked? Different types of questions posed by women and minority students have opened up new avenues of inquiry for their professors. Accept innovative approaches to mathematics. There are many types of success in mathematics, not just the traditional ones.

OUR MAA SECTIONS

❏ *Ask women to speak.* About a quarter of the MAA membership is female, and many of these members are fine speakers. If significantly less than a quarter of your section speakers recently have

been women, ask why. We tend to notice those in "our" group. Do we treat women as if they were outside "our" group at section meetings?

☐ *Recognize* women who raise their hands at MAA meetings. Listen to them! If one raises her hand and is not recognized, others will be less likely to try. At your next section meeting count the proportion of women compared to the number who participate in open discussion. If the disparity is great, the situation should be addressed. It often happens without anyone's plan or intention, so one need not be accusatory. Perhaps the group needs to discuss what can be done. One may need to be super-aggressive to overcome the prevailing patterns, but if she puts her ego on the line this way, it is essential that her contribution be respected or others will not follow her lead as much as they otherwise would.

☐ *Elect women officers.* If the proportion of women officers is not comparable to the proportion of women attending meetings, the next nominating committee should consider remedies to the situation. Women MAA members have overcome more social obstacles than men to become mathematicians, and therefore may be even more motivated to lead the group. Greater prominence for women in the organization, besides inspiring less experienced women, will broaden organizational viewpoints.

☐ *Make eye contact* with isolated people and newcomers during coffee hours. If they respond, ask about their institutions and their special interests. Help them feel that someone cares that they attend section meetings.

OUR PROFESSION

☐ *The proliferation of adjuncts* may be the most damaging obstacle to the inclusion of women in the math community. As mathematics departments use even more part-time faculty, promising women mathematicians are increasingly relegated to third class status. Pressure to maintain an appropriate number of full-time faculty on your campus may be one of the most essential steps to recruiting more women into our field.

☐ *Spouse pairs* in departments need our support. Many women mathematicians are married to mathematicians. Anti-nepotism rules used to deny one spouse a job. If we deny people jobs with their spouses' employers or treat them with suspicion after they are hired, we are creating a special hardship for women mathematicians.

☐ *Learn* about women in mathematics and their concerns. Consider joining or supporting one of the organizations listed below.

☐ *Voice* concern for the participation of women in mathematics at appropriate times when decisions affecting the profession are being made.

☐ *Tell* people at social events outside the mathematical community about our profession. Try to counter the widespread impression that mathematics is simply arithmetic. Mention women mathematicians whenever appropriate. Subtly spread the word that mathematicians are not uniformly hostile toward women, and that women do not have to be courageous pioneers to enter our profession.

OUR HIRING

☐ *Seriously examine* applications from women. Be careful that you don't unconsciously discount them.

☐ *Questions* asked of a candidate should be only those that could be asked of either sex.

☐ *Discuss similar qualities* when weighing applications from both sexes. When you observe discriminatory comments from others involved in the hiring process, mention it gently, remembering that

often such behavior is unconscious and others also may want to avoid it.

☐ *Women role models* as faculty are important in recruiting women as students. Departments should commit themselves to hiring as many women as possible for students to emulate.

OUR JUNIOR COLLEAGUES

☐ *Listen to them.* Respond seriously to what they say and ask. Serve as mentors for them. Care about their careers. Answer their questions carefully. Offer suggestions about where to publish, and how to apply for grants, promotions, and other professional goodies. Point out opportunities for professional development. If appropriate, suggest coauthoring.

☐ *Inquire* about their research and other professional activities. Show interest.

☐ *Maternity leave policy* of the institution should be well known to every department and should be explained, without solicitation, to every younger member of the department. If a woman gives birth, strenuous efforts should be made by the department chair to find a temporary paid replacement. Women should not be expected to take on the administration alone at this stage. Too often, students, colleagues, and the new mother's family are shortchanged because she is subjected to unreasonable expectations. Young mothers need and deserve our planning and support.

OUR FEMALE PEERS

☐ *Include* them equally with men in mathematical conversations and informal mathematical gatherings.

☐ *Include* them in casual conversations and informal social events such as lunches.

☐ *Respond to unfair criticism* by speaking up in your colleague's defense. Otherwise, your agreement will be assumed.

☐ *Elect* female colleagues to their fair share of prestigious positions. On the other hand, don't expect them to represent their sex on every committee at the institution; this is time-consuming and sometimes professionally damaging.

TO WOMEN

☐ *Be reasonably ambitious.* Just because women never or rarely have succeeded in some activity is no reason to conclude that you won't be among the first. Paths are opening up to women where they were closed before. Take them!

☐ *Don't think perfection* is a prerequisite for success. Women who have entered the math community often have done so by overachieving relative to their male peers; this may not be necessary any more. Consider submitting that paper before it is the very best you could possibly make it. Then you can use the first reviewers' comments to make it better for the next submission. Maybe they will suggest that you resubmit it to the same journal after incorporating their suggestions. (See "How to Break into Print", page one, March-April 1989 issue of FOCUS.)

☐ *Shrug off micro-inequities* as unemotionally as possible, but seek advice from both peers and more experienced professionals in coping with the more egregious discrimination that affects most women from time to time.

☐ *Seek out* informal opportunities to chat with men as well as women. Cultivate your network.

☐ *Make as many friends* in the math community as you can.

☐ *Encourage young parents* to provide blocks, puzzles, and construction toys for their daughters as well as their sons.

▢ *Don't interrupt women* when they are speaking. All surveys of conversational patterns indicate that women are interrupted far more often than men.

▢ *Credit women with ideas* when repeating them. "As Jane just said...."

▢ *Use nonsexist language.* Avoid the "generic" he. (It matters when you change the sex. Consider "man on the street....") This can be done without spoiling the language. Especially when talking about mathematics, let nothing you say suggest that it is somehow abnormal or unnatural for a mathematician to be female.

▢ *Do not laugh* at sexist "humor" that disparages women. Gently express your disapproval of such deprecation. A quiet comment by a man can be a potent statement that belittling women is no longer appropriate.

▢ *At home* (both your own and others) try to promote equitable distribution of work. Mathematics is hard. If a woman is expected to do a full-time job at home on top of a demanding career, she is especially disadvantaged.

▢ *Remain sensitive* to discriminatory patterns in your own behavior. We all have them because we have all been subject to persuasive sexist influences and traditions. We can alter our views and our behavior if we try. We need to monitor our thoughts and habits continually so that we, our society, and our profession may eliminate the bias we wish were already absent. We should not, however, allow ourselves to be paralyzed by guilt over occasional unintended slips. In this realm, as in others, perfection is beyond reach. Acknowledge occasional lapses good-humoredly, and resolve to try not to repeat them.

CONSIDER JOINING:

Association for Women in Mathematics, Box 178, Wellesley College, Wellesley, MA 02181

Women in Mathematics Education, c/o Judith Jacobs, George Mason University, Fairfax, VA 22030

Women and Mathematics (sends women speakers to pre-college schools), c/o Alice Kelly, 1091 Lancer Drive, San Jose, CA 95129

International Study Group on Ethnomathematics, c/o Gloria Gilmer, 2001 West Vliet Street, Milwaukee, WI 53205

International Organization for Women in Mathematics Education, c/o Heleen Verhage, OW OC, State University of Utrecht, Tiberdreef 4, 3561 GG Utrecht, The Netherlands

Parent Involvement Essential for Success in Mathematics

Statement endorsed by the MAA and the NCTM

Parental support and encouragement are vital to children's mathematical development and success in school. Social, economic, or educational status of parents does not have as important an effect on their children's learning as what parents *do* with their children.

Parents are their children's first and most influential teachers. Many schools are devising programs to help parents provide additional support in mathematics to their children. These programs are not dependent on the parents' background in mathematics, but do involve parents in the process of developing within their children the understanding of the need for mathematics in order that future career opportunities not be foreclosed.

All children must have an education that will enable them to function effectively in a world where mathematics is necessary for an ever increasing number of career options. Job opportunities and the responsibilities of citizenship will require the ability to solve problems, to develop mathematical models, and to apply specific skills to real situations. Therefore, parents must make clear to their children the relevance and importance of mathematics to personal life and participation in society.

Parents must take an active role in their children's education by:

■ discussing regularly with the children their classroom activities and listening carefully to their explanations of what has been learned;

■ providing time and a place for doing homework assignments;

■ encouraging their children to persist when the work becomes difficult, but not to expect parents or tutors to do the work for them;

■ participating in parent-teacher conferences;

■ taking advantage of opportunities to visit mathematics classes;

■ engaging with their children in appropriate family games, puzzles, and other activities that use a variety of mathematics skills.

Parents can complement the efforts of the school by becoming aware of:

■ the breadth of mathematics topics that are in the programs from Kindergarten to Grade 12—mathematics is more than computation;

■ the importance in all grades of manipulatives as aids in illustrating and developing mathematical concepts and enabling students to gain insight into problems;

■ the use of technology, from calculators to computers, as tools for extending the student's mathematical power;

■ the emphasis on the process of working toward a solution rather than just getting the right answer, since the process is a lifetime skill;

■ the ways in which problem-solving is learned in school and at home;

■ the purpose of assigned homework;

■ the school's expectations of students;

■ the evaluation methods used by the school and the interpretation of the student's test results;

■ the fact that the use of the textbook is only one of the instructional strategies of teaching mathematics.

Active efforts to promote the interaction of families and schools are essential to realize the full potential of every child. The MATHEMATICAL ASSOCIATION OF AMERICA and the NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS endorse a cooperative effort among parent/teacher organizations, community groups, and school districts to help parents assure their children's enjoyment of, and success in, mathematics.

This statement was endorsed by the NCTM and by the MAA, January, 1989.

President's Message

Leonard Gillman

The dominant news about mathematical organizations in 1988 centered on the centennial of the American Mathematical Society. The Association supported the AMS festivities via our joint national meetings; for instance, more MAA members (2358) than AMS members (2183) attended the January meeting in Atlanta. The jointly-sponsored banquet, kicking off the centennial ceremonies, was attended by close to 2000 persons—undoubtedly the social event of the mathematical century. Its climax was the distribution of the new HP-28S calculators (introduced to the world at that moment) at the special price of $60 (vs. the list price of $280), an arrangement invented and engineered by Kenneth Hoffman, then Head of the Office of Governmental and Public Affairs of the Joint Policy Board for Mathematics. The friendly spirit between AMS and MAA was further expressed by the selection of Al Willcox, MAA Executive Director, as master of ceremonies; by the full-throated rendition, 2000 strong, of *Happy Birthday Dear American Mathematical Society*, led by yours truly; and by the announcement of a gift from MAA to be presented to AMS at the August meeting in Providence. The gift was a sculpture, *Torus with vector field and crosscap*, created by mathematician Helaman Ferguson of Brigham Young University from a block of Italian carrara marble; it is now on permanent display at the Society's headquarters in Providence. The MAA program in Providence was curtailed in order to make room for the Society's special centennial events. The spirit of cooperation was further symbolized by the joint concert by the two presidents at the January 1989 meeting in Phoenix—like Janus himself, looking back to the centennial year and forward to the year ahead.

Both the Secretary of the Society (Everett Pitcher) and the Executive Director (Bill LeVeque) retired in 1988. As though to demonstrate further solidarity, their MAA counterparts, Ken Ross and Al Willcox, will shortly follow suit.

Another significant administrative move—or, in this case, lack of move—concerns the MAA headquarters in Washington, which has been in need of substantial renovation. After much agonizing over whether to start afresh in the suburbs, we have decided to do the renovating and stay where we are.

The publications program, led by the team of Don Albers (Chairman of the Committee on Publications) and Peter Renz (Editor), was off and running all year. The membership of the Association continues to increase at a healthy rate. The program of student chapters, inaugurated in the fall, appears to have taken hold nicely. (Further details on these topics appear elsewhere in this section of FOCUS.) The Board of Governors, at its meeting in Phoenix, approved an important amendment to the bylaws of the Association: that the chair of the Committee on Sections be a member of the Executive Committee. (This will be voted on at the Business Meeting at Boulder this August.)

There were two significant items about prizes. The committee on the Edyth May Sliffe Awards presented its recommendations for dealing with these awards, which are annual prizes for high school teachers whose students do well on the American High School Mathematics Examination; the first set of prizes will be awarded in 1989. Dr. and Mrs. Charles Hu—he is a retired professor of geography at the University of Maryland—informed MAA of their intention to endow an annual prize for outstanding contributions to mathematics; see the announcement that appears elsewhere in this issue.

The Task Force on Minorities in Mathematics, chaired by Louise Raphael, presented its report. The first of its long list of recommendations was that there be a standing Committee on Minority Participation in Mathematics; and the Board, at its meeting in Phoenix, authorized the creation of this committee. Once formed, the committee will address the other recommendations of the Task Force. The columnist William Raspberry has pointed out that with the coming demographic changes in the country, an educated minority citizenry will be not just a social desideratum but an economic necessity; by educated, he means skilled in problem solving and communicating and able to learn on one's own. This presents the Association with a challenging opportunity—which we must not muff by replacing careful thought by slogans and fundamental solutions by glitz. Read ESCALANTE, by Jay Mathews, Holt, 1988 for dramatic evidence of what can be accomplished with a group of disadvantaged Hispanic students by a hard-working Hispanic teacher who sets implausibly high goals and is uncompromising in standards, but who at the same time constantly bolsters the students self-esteem and whose incessant theme is that they can get there if they do their homework and work hard. (The movie STAND AND DELIVER is based on the same achievements.)
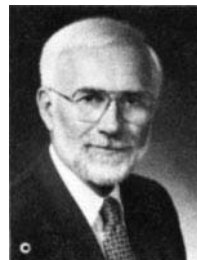
An Unexpectedly Strong Year

Alfred B. Willcox
Executive Director

I will remember 1988 as the Association's Good News/Bad News year. Fortunately, the bad news came early and the good news prevailed. It was a year in which the MAA turned a corner to chart a new course for a new decade, even for a new century. I will not belabor the Good News/Bad News and course change themes in my report, but the motif should be clear in the following highlights.

(Executive Director's Report Continued from Page 7)
☐ The year began with a struggle to decide where the MAA head-quarters should be located as we enter the '90's. We had learned from a 1987 architectural survey that the Association's handsome town-house headquarters in an historic district of Washington was badly in need of renovation. The cost of the needed repair was half-again larger than the 1978 purchase price for the facility. On the other hand, our investment in the headquarters complex, mea-sured by the appraised market value, had increased five-fold in the decade. This news stimulated a thorough examination of the options available for the headquarters of this growing and active organization. We concluded that only two were feasible; take our capital gains and move to a modern building in the suburbs, or renovate and tighten our belts to maintain our choice Washington location. The choice was not clear-cut, and the stakes were high.

The headquarters staff and Executive and Finance Committees (E & F) invested many months of research to clarify the options and explore their implications. The Board of Governors wrestled with the issues at its meeting in January. E & F continued the debate through the spring, with a constant barrage of information from staff.

At a fateful meeting in May, the E & F Committees decided to recommend to the Board that we renovate and stay in downtown Washington. A compromise was to renovate in stages over a ten-year period, paying the costs gradually through a combination of belt-tightening and fund-raising. The Board approved this decision at its August meeting in Providence.

☐ The decision to renovate and stay in Washington was not an easy one, and while the vote of the Board was unanimous there were probably as many reasons as there were voters. However, two themes permeated the arguments in favor of the decision. First, while conditions in downtown Washington are different in many ways from those in the suburbs, it cannot be documented that either environment is more favorable for an association's business oper-ations. Second, as the MAA becomes an increasingly significant presence and voice for mathematics and education in Washington, our choice Dupont Circle location will remain an asset which cannot be duplicated in the suburbs.

☐ The decision led to a flurry of activity during the fall. A Building Committee was appointed to work with staff to accomplish the first stage of renovation. We interviewed half a dozen construction firms and a like number of architects, choosing a team that has proved itself well suited to our project. We explored a number of avenues for financing of the renovation and eventually secured a loan under very favorable conditions. The members of the Building Commit-tee, John Kenelly, Donald Kreider, and Gerald Porter served the Association well in this endeavor.

☐ At the same time, national searches for two key executive staff members for the next decade (and beyond, we may hope) were begun. One search has ended successfully in the appointment of Marcia Sward as the next Executive Director of the Association. I will comment further on this below. The second search, for an Associate Director for Administration to assist Dr. Sward, has not yet been concluded, but we hope and expect that the ADA will be on board when Dr. Sward takes command in September.

☐ Another piece of bad news as we entered 1988 was a persistent operating deficit from the preceding decade. I discussed this prob-lem at some length in my 1987 report. When the building problem, with the attendant temporary loss of rental income, was superim-posed on the chronic deficit, we braced ourselves for a financial buffeting in 1988.

☐ The good news is that our fears were unfounded. From a finan-cial viewpoint, 1988 was the strongest year of the 1980's, and in program activity it was certainly a winner. I will give a few reasons for this fortunate turn of events in several brief highlights below. Then, I will conclude with a comment about the future.

☐ As I stated in my 1987 annual report, the Association instituted some strong budget control procedures that year. These controls grew teeth in 1988, resulting in strong budget performance during the year. Dues income was essentially on target, and, for the first time in many years, income from the sale of books exceeded the budget. As a first step in belt-tightening we reduced the number of positions in the headquarters staff by two. Overall, income was 6% over budget, and expense was 7% under budget. The MAA was lean and muscular in 1988.

☐ The MAA grew substantially in 1988, after a nearly flat year in 1987. On January 1, 1989 there were 27,500 members in good standing, an increase of about a thousand during 1988. A more detailed report on membership appears on page 9 of this Annual Report.

☐ Book income increased to $450,000 in 1988, the second 20% increase in two years. This is a tribute to the new vigor brought to our publications program by Associate Director Peter Renz and the Committee on Publications. Our list of titles is growing, we are promoting them more effectively, and the books now in the works and slated to appear in 1989 will continue to strengthen MAA publications.

☐ A program to redesign our journals inside and out is proceeding on schedule. I do not need to tell members where these changes have been made. They are dramatically evident.

☐ The Association received a bequest of $251,000 from the es-tate of Edyth May Sliffe, a former high school teacher in Oakland, California, to endow the new Edyth Sliffe Awards for excellence in the teaching of high school mathematics. The first Sliffe awards will be given in 1989 to teachers of students who excel in the American Mathematics Competitions.

☐ Starting in September 1988 the MAA began accepting applica-tions for MAA Student Chapters in colleges and universities. 45 applications were received in 1988, and at this writing there are a total of 96 MAA Student Chapters. These chapters will be closely integrated into the activities of sections, stimulating student interest in mathematics and adding a new dimension to section programs.

☐ Several MAA special projects made significant contributions to mathematics during 1988. Our American Mathematics Project (AMP) conducted a successful workshop in October as a first step in a program to help twenty new local Mathematics Teacher Projects begin successful operation by 1990 (See the January-February 1989 issue of FOCUS). Our project on Teaching Assis-tants and Part-Time Instructors completed its report, RESPONSES TO THE CHALLENGE: KEYS TO IMPROVED ISTRUCTION, MAA Notes 11, which will provide universities with a wealth of ideas to help these instructors be better teachers. Our Applications in Mathematics (AIM) project completed its sixth learning module for high schools. In the two years of the AIM project the MAA has received and filled over 8,000 orders for these video and print materials. Our Commit-tee on Computers in Mathematics Education published its report, COMPUTERS AND MATHEMATICS, and the Committee on the Mathemat-ical Education of Teachers issued its recommendations, GUIDELINES FOR THE CONTINUING MATHEMATICAL EDUCATION OF TEACHERS, both also published as MAA Notes. Our Task Force on Minorities in Mathematics completed its landmark report which will give direction to the Association's efforts in this area for many years to come. The

MAA honored the winners of the 1988 USA Mathematical Olympiad and trained and sent a team of six students to the International Olympiad held in Sydney, Australia. Our team finished sixth in competition with teams from 40 countries. Our Women and Mathematics Program had one of its most successful years. The Committee on Placement Examinations completed a motivational video for high schools on the use of calculators, continued its program to establish a network of prognostic testing programs to help high school students gauge their preparation for college mathematics, and began working on software for computer generation of placement tests. These projects were supported, in part, by gifts to the Greater MAA Fund and grants from a dozen federal agencies and private foundations and corporations.

☐ I will be retiring as your Executive Director next September to begin a period of interim service to mathematics in Washington and to assist in the transition to a new Administration. This fact provokes some thoughts about the future and nudges me beyond the period of this report. At this writing the first-stage renovation of the headquarters complex is about half completed. I write amidst the rubble of fallen plaster and half-completed duct work. By August the Dolciani Mathematical Center will be a much more comfortable place to work and the rains and winter cold will not penetrate our roof and walls. We have further trimmed our staff and are on the verge of filling the new positions to aid Marcia Sward. This will be a tight year, financially, but our operational base is strong, our programs thrive, and our confidence in the future strength of the Association is supreme. I am delighted that Marcia has agreed to serve as your Executive Director for the next period of MAA growth. Her experience of service to the MAA and MSEB make it obvious that she is the right person for this responsibility.

I have enjoyed and been rewarded and stimulated by twenty-one years as your Executive Director. As everyone over 60 knows, one pays a toll for so many years of sustained stimulation. I look forward to a change of focus for a few months to that of assisting both the MAA and the JPBM Office of Government and Public Affairs through their separate transitions. Most of all, as a Life Member of the Association, I look forward to quite a few years of pleasure and pride as I watch the MAA prosper and grow in service to collegiate mathematics.

Student Chapters

The MAA Student Chapter program was launched in 1988, following plans developed by a committee chaired by Howard Anton. By December almost 100 chapters had been set up, averaging close to ten members per chapter. Plans were developed to involve the student chapters in both national and sectional meetings thanks in part to the efforts of Ronald F. Barnes of the University of Houston and Eileen Poiani, President of Pi Mu Epsilon.

The organizational questions for these chapters were resolved in 1988. New materials to support the student chapters are being developed for delivery in 1989 and coordination with section officers and with those planning meetings has been achieved. Student chapters allow the MAA to directly stimulate the interest of undergraduates and allow students easy access to MAA books and journals as well as to our meetings and to job placement programs such as MAA-SPEER.

MAA Membership at Year-End: 1983–1988
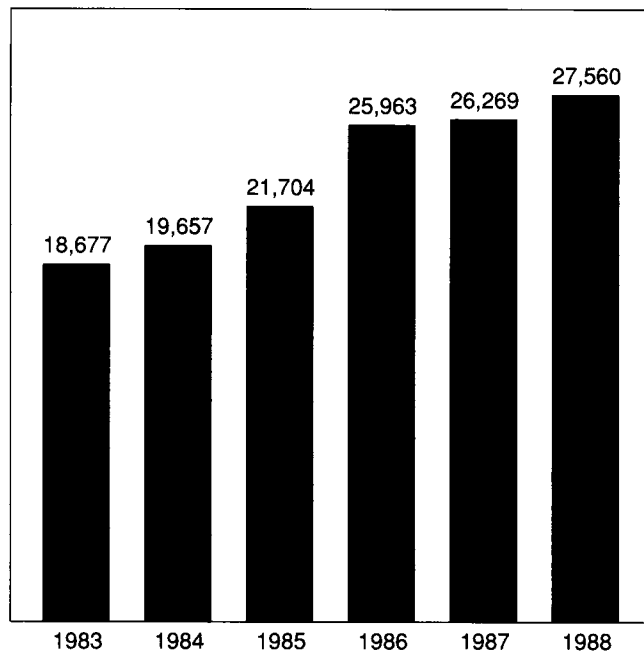
Membership Continues to Climb

In 1988 MAA membership grew by 5%, reaching a high of 27,560 for the year end figures. The MAA has grown by nearly 50% since 1983. Much of this growth is attributable to direct mail campaigns guided by the MAA's Executive Director, Alfred B. Willcox, and its Membership Manager, Kay Lamont, and carried out by Marketing General, a direct-mail marketing consultant firm.

The demographic breakdown of individual memberships as of the end of 1988 was:

1987	1988	
3,761	4,326	Students
2,790	2,635	High School Teachers
12,768	13,259	College and University Faculty
3,435	3,552	Industry and Government
1,960	2,087	Retired or Unemployed
1,555	1,701	Other
26,269	27,560	**Total Membership**

This includes 442 Life Members. In addition, there were 566 Institutional Members, an increase of 36. These included high schools, junior and community colleges, four-year colleges and universities, and 15 special Corporate Members.

There were reciprocal agreements with the Canadian Mathematical Society (CMS) that now encourage joint activities and membership. CMS members not residing in the US are eligible for a 15% discount on MAA dues. An MAA member who is not a resident of Canada is eligible to be a member of CMS with a 15% discount on the dues rate.

In addition, the MAA now offers a free one-year membership to each new holder of a doctoral degree in mathematics or mathematics education from a US or Canadian institution.

Minorities in Mathematics

The MAA Task Force on Minorities in Mathematics gave the MAA Board of Governors an assessment of the present situation, 42 specific recommendations for the MAA to strengthen minority participation in mathematics, and background material upon which the Task Force's report was based. The call to action was compelling; the MAA Board of Governors heeded it and voted to establish a standing Committee on Minority Participation in Mathematics with the charge of:

- Preparing a major policy statement on the need to increase minority participation in mathematics from kindergarten to graduate school

- Putting in priority order and setting a timetable for carrying out the recommendations of the Task Force

- Preparing for approval by the MAA Board a national program for improving mathematics education for minorities

- Beginning the search for external funding for an MAA Office of Minority Participation in Mathematics and defining the responsibilities of such an Office

- Investigating the possibilities for collaborative efforts with other private and public agencies to improve mathematics education for minorities.

The Task Force's findings and an outline of their suggestions are found in the January-February 1989 issue of FOCUS. The Task Force's work was supported by a grant of $15,000 from the Ford Foundation and carried out by a dedicated committee led by Louise Raphael and backed by the efforts of some 42 contributors. This effort has been well launched and further reports on the work of the standing committee will be found here in FOCUS as the Task Force's recommendations are carried out.

Women and Mathematics

Women and Mathematics (WAM) encourages greater participation by women in the mathematical sciences. WAM serves women who are pursuing careers that require mathematics to speak about their work and the role that mathematics plays in it. WAM completed its thirteenth year of operation in 1988.

WAM covers 16 areas of the country: Baltimore/Washington; Boston; Chicago Area; Greater Philadelphia; Greater Texas; Hawaii; Kansas City; Michigan; Montana; New York/New Jersey; North Texas; Northern California; Oregon; Puget Sound Area; Southern California; and Utah

In 1988 over 350 visits were made. Approximately 19,600 students and over 2,100 teachers, counselors, parents, and other adults were reached.

During 1987–1988 WAM received grants totaling $28,000. One-third of this funding came from in-kind contributions from WAM participants, speakers, coordinators, or from contributions of time or other support from their employers. Other grants were received from the George I. Alden Trust, John Hancock, Hewlett-Packard, and International Business Machines, Inc.

WAM also helped organize and now participates in the Expanding Your Horizon program for women. This program is now able to draw upon speakers who were first encouraged to enter the field of mathematics by a WAM speaker.

MAA Prizes and Awards
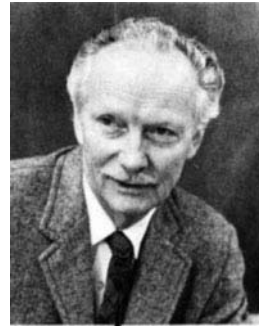
Ivan Niven

Several mathematicians received special recognition at the Phoenix meeting in January 1989. Ivan Niven, Professor Emeritus of Mathematics at the University of Oregon, Eugene, was presented with the Award for Distinguished Service to Mathematics in recognition of his "many significant and lasting contributions to mathematics." MAA members will know Ivan Niven as a Past President and as author of several elegant and delightful MAA books, as well as for many other services to the Association. Jacob Korevaar, Professor of Mathematics at the University of Amsterdam, was awarded the Chauvenet Prize for his paper, "Ludwig Bieberbach's conjecture and its proof by Louis de Branges," THE AMERICAN MATHEMATICAL MONTHLY, 93 (1986). The Committee on the Chauvenet Prize said of Korevaar's paper, "... we are reminded that the beauty and power of a few simple ideas can sometimes lead to very deep results that can even be understood by students just starting to seriously study mathematics. Elegant arguments like those included in this paper are one of the best ways of attracting students to mathematics."

Seven authors were recognized for excellence in expository writing. The Carl B. Allendoefer Awards for articles in MATHEMATICS MAGAZINE: Bart Braden, Northern Kentucky University, Highland Heights, for his paper, "Pólya's Geometric Picture of Complex Integrals," and Steven Galovich, Carleton College, Northfield, Minnesota, for his paper, "Products of Sines and Cosines." The Lester R. Ford Awards for articles in THE AMERICAN MATHEMATICAL MONTHLY: James Epperson, University of Alabama, Huntsville, for his paper "On the Runge Example," and Stan Wagon, Smith College, Northampton, Massachusetts, for his paper, "Fourteen Proofs of a Result about Tiling a Rectangle." The George Pólya Awards for articles in THE COLLEGE MATHEMATICS JOURNAL: Dennis M. Luciano, Western New England College, Springfield, Massachusetts, and Gordon D. Prichett, Babson College, Babson Park, Massachusetts, for their paper, "Cryptology: from Caesar Ciphers to Public-Key Cryptosystems," and V. Frederick Rickey, Bowling Green State University, Bowling Green, Ohio, for his paper, "Isaac Newton: Man, Myth, Mathematics." (For additional information on these 1988 publications awards, see the November-December 1988 FOCUS, pp. 8–9.)

At the Providence meeting in August 1988, six members received the MAA's Award for Meritorious Service. The recipients included: Northern California Section—Harold M. Bacon, Stanford University, Stanford, California; Wisconsin Section—Paul J. Campbell, Beloit College, Beloit, Wisconsin; Seaway Section—Erik Hemmingsen, Syracuse University, Syracuse, New York; Missouri Section—Troy L. Hicks, University of Missouri, Rolla; Kentucky Section—Aughtum S. Howard, Eastern Kentucky University, Richmond; and Illinois Section—John A. Schumaker, Rockford College, Rockford, Illinois. (For additional information on the 1988 recipients of the Award for Meritorious Service, see the November-December 1988 FOCUS, pp. 6–7.) Walter E. Mientka, Professor of Mathematics at the University of Nebraska, Lincoln, and Executive Director of the American Mathematics Competitions since 1976, received the Certificate of Merit. (See the January-February 1989 FOCUS, p. 10, for additional information on this 1988 award.)

MAA Committees on Teaching and the Curriculum

Lynn A. Steen, Chair, CUPM

For over 35 years the Committee on the Undergraduate Program in Mathematics (CUPM) has provided national leadership in shaping the undergraduate mathematics curriculum. Although still formally a committee of the MAA, CUPM now has formal membership ties with both the AMS and SIAM. Its central objective is to serve as a stimulus and communication hub for the multitude of curriculum initiatives that relate to undergraduate mathematics.

Issues facing CUPM fall into three broad categories: articulation with the school, elementary and service courses (including calculus), and redefinition of the undergraduate major. In each area, the mathematical community faces significant challenges.

■ Forthcoming changes in school mathematics will have major implication for the type of mathematical preparation that students will have when they enter college and for the type of mathematical education required to educate future teachers.

■ Current debate about calculus joins last year's debate about discrete mathematics in destroying the facade of unity that used to characterize freshman-level mathematics. No longer do students, parents, or high schools know just what to expect of college mathematics, nor what to prepare students for.

■ The continuing decline in first-rate American students seeking postgraduate degrees in the mathematical sciences poses serious challenges to the undergraduate mathematics major. Many departments face significant problems mounting a major that simultaneously serves the needs of the majority of students who enter business or school teaching directly from a bachelor's degree, and at the same time provides the incentive and advanced course background required for successful PhD study in mathematics.

1988 Activities

Most of the work of CUPM takes place in standing subcommittees. In 1988, four Subcommittees were especially active:

Subcommittee on Service Courses. CHAIR: Donald Bushaw, Washington State University. CHARGE: To promote dialogue with client disciplines for the purpose of making recommendations about the content of mathematics courses designed especially for students majoring in other subjects (e.g., engineering, biology, chemistry). This Subcommittee is presently engaged in discussions with the Accreditation Board for Engineering and Technology (ABET) concerning a new recommendation to include theoretical and applied statistics as part of accreditation requirements for engineering programs.

Subcommittee on Calculus Reform and the First Two Years (CRAFTY). CHAIR: Thomas Tucker, Colgate University. CHARGE: To examine emerging practice concerning the several courses that serve to introduce college mathematics (especially calculus, discrete mathematics, statistics, linear algebra, and differential equations) and make recommendations concerning the content, sequencing, and relationships among these beginning courses. In 1988 the Subcommittee prepared a set of calculator specifications appropriate to freshman and sophomore mathematics courses, visited selected campuses to assess issues *in situ*, and made plans to produce a timely report on current calculus projects.

Subcommittee on the Major in the Mathematical Sciences. CHAIR: Bettye Anne Case, Florida State University. CHARGE: To examine present practice regarding the undergraduate mathematics major in light of the 1981 CUPM *Recommendations for a General Mathematical Sciences Program* and make recommendations which will lead to a revision of that document. This Subcommittee is currently working with the Committee on the Mathematical Education of Teachers (COMET) to coordinate a new set of recommendations concerning the undergraduate major for those who will teach secondary school mathematics.

Subcommittee on Symbolic Computer Systems. CHAIR: Zaven Karian, Denison University. CHARGE: To promote widespread experimentation with symbolic computer systems in order to stimulate development of curricular materials and teaching practices appropriate to a world in which common mathematical practice will routinely employ the power of such systems. This Subcommittee has received a grant from the Sloan Foundation to fund their work.

In addition to these standing subcommittees, two other committees—one old, one new—link CUPM to the work of other groups. The joint CUPM-CTUM-AMATYC Subcommittee on the Curriculum in Two Year Colleges (Chair: Ronald Davis, DeKalb College) is completing a major report, which should appear in 1989. A new joint MAA-AAC Task Force on Study in Depth, chaired by Lynn Steen, serves as the link between the mathematical community and a major study of the "depth" component of liberal education being conducted by the Association of American Colleges (AAC) as a sequel to their report *Integrity in the College Curriculum*.

In August 1988 CUPM and COMET named representatives to a special joint NCTM-MSEB-MAA committee to coordinate curricular implications of new professional standards for preparation of mathematics teachers. John Dossey—a member of the Board of Governors—represents CUPM in this enterprise. This joint committee has a tight timetable required in order to coordinate their work with the new National Board for Professional Teaching Standards.

Finally, in the interests of innovation and equitable representation, all members of standing subcommittees of CUPM have been assigned terms to assure rotation of membership in an orderly fashion.

Plans for 1989

■ CUPM will have a regular column in TRENDS, the new AMS-MAA-SIAM newsletter on undergraduate mathematics education.

■ CUPM will publish RESHAPING COLLEGE MATHEMATICS, an MAA Notes volume containing reprints of all CUPM reports for the last 10-12 years, each with a new preface by the original committee chair. The major component of this compendium will be a reprint of the 1981 CUPM report, RECOMMENDATIONS FOR A GENERAL MATHEMATICAL SCIENCES PROGRAM, which is now out of print.

■ CUPM expects to begin work on a new edition of the BASIC LIBRARY LIST, including both two- and four-year colleges.

■ CUPM will establish a Subcommittee on Undergraduate Research to support the effort on many campuses (and at NSF) to give promising mathematics majors significant research experiences to excite interest in mathematical careers.

■ CUPM will continue to gather information about the status and effectiveness of quantitative literacy requirements—what colleges require in mathematics of all graduates.

■ Discussions will continue on what should be done about assessment of collegiate mathematics—including entrance exams, rising junior exams, graduation exams, and assessment of undergraduate majors.

Applications in Mathematics

Applications in Mathematics (AIM) is an MAA project which is conducted primarily by Oklahoma State University. AIM is funded by a $742,000 grant from the National Science Foundation and produced by Professors Jeanne Agnew and John Jobe.

AIM provides curricular materials in applied mathematics to high school students in the United States. There are seven modules in the AIM package. Each module contains a video cassette, student and teacher resource books, and computer software.

Each module features a problem from industry that can be solved using high school mathematics. The industrial mathematician who actually worked with the problem makes the presentation in an on-site video interview, and later gives a solution. The problem is given in written form in the Student Resource Book. The Teacher Resource Book describes many ways in which an AIM learning module can be used, along with a detailed solution to the problem. Enhancing the video and written parts of the module is a computer diskette that provides a solution and a chance to explore the problem further through "What if ..." questions.

The modules available now are: A Backwater Curve for the Windsor Locks Canal; Pricing Auto Insurance; Testing Surface Antennas; Routing Telephone Service; Capturing a Satellite; Volcano Eruption Fallout; and Budgeting Time and Money. AIM has received and filled over 8,000 orders for its modules during its two years of operation.

Write to the MAA AIM Dissemination Clerk at MAA headquarters in Washington, DC for more information and an order form.

Minicourses

Approximately 500 mathematicians registered for the 13 continuing education minicourses held in Atlanta in January of 1988. In addition, over 150 mathematicians registed for the 7 minicourses offered during the 67th Summer Meeting in Providence, Rhode Island in August of 1988. The courses increase in popularity each year and provide a variety of topics to the mathematical community.

Minicourses offered during 1988 included: Using computer graphing to enhance the teaching and learning of calculus and precalculus mathematics, Franklin D. Demana and Bert K. Waits, Ohio State University; Computer software for differential equations, Howard Lewis Penn and James Buchanan, U. S. Naval Academy; Teaching mathematical modeling, Frank R. Giordano, U. S. Military Academy, and Maurice D. Weir, Naval Postgraduate School; Teaching calculus with an *HP-28C* symbol manipulating calculator, John W. Kenelly, Clemson University, (at both the winter and summer meetings); LOGO and problem solving, Charles A. Jones, Grinnell College; Coloring and path following algorithms for approximating roots and fixed points, William F. Lucas, Claremont Graduate School, (at both the winter and summer meetings); Computer based discrete mathematics, Nancy Baxter, Dickinson College, and Ed Dubinsky, Purdue University; Laboratory projects for first year calculus, L. Carl Leinbach, Gettysburg College; Constructing placement examinations, John G. Harvey, University of Wisconsin; Computer graphics in elementary statistics, Florence S. Gordon, New York Institute of Technology, and Sheldon P. Gordon, Suffolk County Community College; The use of computing in teaching linear algebra, Eugene Herman and Charles Jepsen, Grinnell College; Using computer algebra systems in undergraduate mathematics, Paul Zorn,

St. Olaf College; Learning mathematics through discrete dynamical systems, James T. Sandefur, Georgetown University; EXP, EXP Test, and the creation of testbanks, Peter Frisk, Rock Valley College; Contributions of algebraic coding theory to finite geometry, E. F. Assmus, Jr., Lehigh University, and J. D. Key, University of Birmingham; A survey of educational software, David P. Kraines, Duke University, and Vivian Kraines, Meredith College; An introduction to MATLAB, David R. Hill, Temple University; Groups, graphs, and computing, Eugene M. Luks, University of Oregon.

American Mathematics Competitions and Mathematical Olympiads: 1988

The American Mathematics Competitions experienced another very successful year—401,889 high school students and 242,900 middle school students participated in these special examinations. 7,184 students qualified for the American Invitational Mathematics Examination.

Seven US students and one Canadian student won Olympiad medals in the Seventeenth USA Mathematical Olympiad (USAMO) in which 146 students competed in a rigorous examination designed to test ingenuity as well as knowledge of mathematics. The USAMO competitors were the top performers in two earlier competitions—the American High School Mathematics Examination (AHSME) and the American Invitational Mathematics Examination (AIME)—which were held in high schools throughout the United States and Canada in March 1988.

The eight USAMO winners were: Hubert L. Bray of Houston, Texas; Jordan Ellenberg of Potomac, Maryland; Joshua B. Fischman of Bethesda, Maryland; Tal N. Kubo of Brookline, Massachusetts; Nhat Nguyen of Columbus, Ohio; David M. Patrick of Batavia, New York; and Ravi D. Vakil of Toronto, Ontario, Canada.

Seven of these winners and seventeen other high-scoring students subsequently participated in an intensive four-week training program at the US Naval Academy. The purpose of the training session was to train a US team of six students for the 1988 International Mathematical Olympiad (IMO), held in Canberra, Australia and to prepare promising students for future IMO's.

Students named to the US team were: Hugh Bray, Houston, Texas; Jordan Ellenberg, Potomac, Maryland; Tal Kubo, Brookline, Massachusetts; Sandy Kutin, Old Westbury, New York; Eric Wepsic, Boston, Massachusetts; and John Woo, Pepper Pike, Ohio. Five US team members received second prizes: Jordan Ellenberg and John Woo, each one point short of the gold with scores of 31 out of a possible 42; Sandy Kutin (26); Tal Kubo (24); and Eric Wepsic (23). Hubert Bray received a bronze medal with a score of 18. The Americans had a team score of 153 out of a possible 252. Ahead of them were teams from Soviet Union (217), China and Romania (tied for second with scores of 201), West Germany (174), and Vietnam (166). In all, 49 nations and 268 students participated in the Olympiad.

The Mathematical Olympiad activities are sponsored by eight national associations in the mathematical sciences with administration conducted by the MAA. Financial support is provided by both public and private agencies including IBM, the Army Research Office, the Office of Naval Research, and Hewlett-Packard.

Publications 1988: MAA Books Reach More Readers Than Ever Before

Driven by interest in new and recent titles, the MAA's book sales topped $450,000 for the year in 1988, up by 40% from 1986 sales of $317,000. New titles include USA MATHEMATICAL OLYMPIADS 1972-1986: Problems and Solutions, edited by Murray S. Klamkin in the New Mathematical Library and COMPUTERS AND MATHEMATICS: The Use of Computers in Undergraduate Instruction, edited by David A. Smith, Gerald J. Porter, L. C. Leinbach, and R. H. Wenger, and GUIDELINES FOR THE CONTINUING MATHEMATICAL EDUCATION OF TEACHERS, a COMET report, both in the MAA Notes and Reports series. This series has recently brought out a number of timely volumes on curricular and pedagogical reform—often with some sort of external support. Among those supported were: CALCULUS FOR A NEW CENTURY (supported by the Alfred P. Sloan Foundation), COMPUTERS AND MATHEMATICS (supported by IBM) and the new volume from the MAA Committee on Teaching Assistants and Part-Time Instructors, edited by Committee Chair Bettye Anne Case and titled RESPONSES TO THE CHALLENGE: Keys to Improved Instruction by Teaching Assistants and Part-Time Instructors, supported by The Fund for the Improvement of Post Secondary Education.

The calculus and computer volumes were available most of 1988 and each reached more than 3,500 readers during that year and each continues to be popular. Thus in 1988 the MAA Notes and Reports Series has proved itself a very effective means for rapid dissemination of new teaching ideas.

Other new developments included bringing popular books with sound mathematical content to our members via special purchases from other publishers—ARCHIMEDES' REVENGE, MATHEMATICAL TOURIST, and KALEIDOCYCLES. Reciprocally, 1988 saw the first appearance of a mass market edition of an MAA title—our MATHEMATICS: QUEEN AND SERVANT OF SCIENCE, by E. T. Bell, was released in a Tempus Books edition.

New books are in progress for all the MAA series with six to ten titles slated to appear in 1989, so the publication program can be expected to maintain its momentum and continue its gains.

Committee on Sections

The twenty-nine MAA Sections continue to provide a vital link in the professional lives of MAA members. In 1988 over 4500 attended a Section meeting and heard over 800 papers. More than 100 invited addresses, 550 contributed papers, and 175 student papers were given. Attendees enrolled in 24 short courses and minicourses.

Several Sections have influenced public and political opinion and have encouraged their legislatures and policy boards to improve mathematics education. Many Sections have increased public comprehension and appreciation of our discipline. Undergraduate student participation has continued to flourish (175 of the 800 Section presentations were by undergraduates).

Twice as many MAA members attend a Section Meeting than attend the two National Meetings combined. Many agree that the Association derives its uniqueness and strength from this dedicated grass roots participation of Sections. For many members the Sections are the lifeblood and substance of the MAA.

David W. Ballew, Professor and Chairman, Department of Computer Science, Western Illinois University, served as chairman of the MAA Committee on Sections during 1988.

COPE and Placement Testing

The Committee on Placement Examinations (COPE) continued its Placement Testing (PT) program, which was serving nearly 400 schools at the end of 1988. The breakdown of these schools is roughly: 20% two-year schools; 40% bachelor's degree institutions; and 40% schools offering master's or higher degrees. The current PT packet consists of six placement tests ranging from ARITHMETIC AND BASIC SKILLS to CALCULUS READINESS together with two prognostic tests that can be used by subscribing institutions in conjunction with high schools to let juniors and seniors know where they would place in college and where they need to strengthen their skills.

CALCULATOR RELATED PROJECTS   COPE has a forward-looking interest in the impact of calculators on education and testing. This is evidenced by CALCULATORS IN THE STANDARDIZED TESTING OF MATHEMATICS, edited by John Kenelly and to appear early in 1989 as a joint publication of the MAA and The College Board. Work on this volume was completed in 1988. In addition, 1988 saw publication of the COPE project, MATH: YOU CAN COUNT ON IT. This is a videotape that lets kids in grades 6–8 see how they can use mathematics now and how important it can be to them in the future, both on and off the job. The calculator here is an equalizer because kids armed with calculators can figure as fast as adults. This project was funded by Texas Instruments and is being distributed by the NCTM, the MAA, as well as other organizations.

COPE's work on calculator-based placement tests has proceeded with the first of these covering arithmetic and basic skills to appear in 1989. John Kenelly presented a paper on behalf of COPE outlining this COPE project to the Sixth International Congress on Mathematical Education in Budapest in July 1988.

OUTREACH   At the October, 1988 Annual Convention of the American Mathematical Association of Two-Year Colleges, held in Calgary, Alberta, Canada, COPE's minincourse on placement testing was completely filled. COPE speakers and minicourses reach many MAA members and others through such national, regional, and sectional meetings.

PROGNOSTIC TESTING NETWORK (PTN)   Supported by an NSF grant and directed by COPE Chair, John Harvey, this project sponsored a conference of 30 people involved with early placement or prognostic testing in mathematics in Washington, DC in November. This "MAA National Conference on Prognostic and Diagnostic Mathematics" was the working conference founding the PTN project, a new COPE activity. The proceedings of this conference will be available in 1989 and will help draw more schools into this effort to improve high school training in mathematics and to place students in the right classes in high school and college.

COMPUTER-BASED PLACEMENT TESTS   The Department of Education's Fund for the Improvement of Post-Secondary Education (FIPSE) funded this three-year COPE project starting in September 1988. Directed by COPE members Linda Boyd and Mary McCammon, this project will develop and test software for computer-generating equivalent items and equivalent tests. This project promises to clear up research issues in testing relating to generation and to make great practical contributions to testing technology as well.

MAA Committee Plans for 75th Anniversary Celebration in 1990

The 75th Anniversary Committee under the Chairmanship of Gerald L. Alexanderson completed much of the planning for the 1990 MAA anniversary celebration to take place during the summer meetings at Ohio State, the location where the Association was founded in 1915. Ten organizations will join the MAA, bringing greetings celebrating its 75th year. One day of the meeting will be set aside exclusively for MAA activities and a stellar group of speakers has been lined up including Wade Ellis, Jr., Judith V. Grabiner, Paul R. Halmos, Peter Hilton, Cathleen S. Morawetz, and G. Bailey Price.

A plaque will be placed to commensurate the founding of the MAA; there will be a festive banquet, and serious mathematical concerns will mix gracefully with lighter matters. For example, Joe Buhler, Ron Graham, and others will show attendees how skill and dexterity link up with mathematical analysis in the art of juggling. This report is merely a teaser. Look for further details as the Committee continues its work in 1989 and come to the Ohio State Meeting in 1990.

Committee on Teaching Assistants and Part-Time Instructors

In 1988 this joint MAA-AMS committee completed work on its survey of the use of nonregular faculty and published its report RESPONSES TO THE CHALLENGE: Keys to Improved Instruction by Teaching Assistants and Part-Time Instructors, which is available as MAA Notes Number 11. This project was supported by the Fund for the Improvement of Postsecondary Education (FIPSE). The project has extended over several years and included a survey of current practices, developing recommendations for improvements, and drawing together and publishing a final report that would include the best support materials used in exemplary programs across the country. The capping of these efforts came at a workshop on TA's and P-TI's at the AMS-MAA Annual Meeting in January in Phoenix and attended by over fifty people. The effort was headed by committee Chair Bettye Anne Case backed by committee members Thomas F. Banchoff, John Philip Huneke, and David Kraines.

New Committees and Committees with New Missions

Much of the work of the Association is carried out through committees. New challenges and changing conditions gave the MAA several new committees or committees with new missions noted here. Please see Lynn Steen's report on page 11 for the various subcommittees of CUPM such as CRAFTY and the subcommittee on symbolic computer systems. Separate Committees on Visiting Lecturers (Chair, James G. Ware) and Consultants (Chair, Richard S. Millman) replace the previously existing single committee. An ad hoc Committee on Awards (Chair, Deborah T. Haimo) was constituted to examine the whole structure of MAA awards and has raised the idea of MAA fellows, an honor to recognize excellence in teaching and strong contributions to collegiate education. A new Committee on Faculty Development (John A. Dossey and Warren Page as initial Co-Chairs) was created to sponsor faculty workshops and other efforts directed toward continuing professional education. These are some of the 1988 initiatives in the MAA's committee activities.

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In 1988 there were 1,199 donors to The Greater MAA Fund, giving a total of $41,548. There were 25 donors giving to the R. H. Bing Memorial Fund and their contributions totaled $3,085 for the year. Over the years, The Greater MAA Fund has provided partial support for the start up of FOCUS, renovation of portions of the headquarters complex, and outreach efforts such as Mathematics Awareness Week and the Office of Government and Public Affairs.

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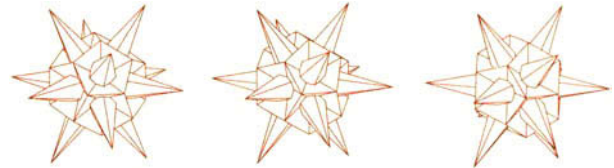
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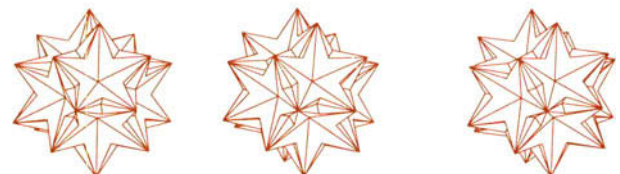
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Stellations of the icosahedron on pages 15 and 16.
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1988 Financial Reports

Donald L. Kreider
Treasurer

In 1988 the MAA experienced a surplus of approximately $383,000 in its budget of just over 3.4 million dollars. This included a sizeable bequest to the MAA of a quarter million dollars, but the surplus beyond this represents a healthy turnaround from the previous several years in which deficits occurred in the MAA's general operating fund.

As I reported to the Board of Governors in January, the main reasons for the deficits in the recent past are not hard to identify—increased programmatic activity in response to national concern about mathematics education, increased participation of the Association in Washington affairs in cooperation with our sister mathematical organizations, introduction of the FOCUS newsletter which has been underfunded during its initial years, greater direct MAA assistance to several of our programs, and normal increases in the cost of materials and services during this period. Steps taken during the past few years to tighten expenditures, increase revenues, and to adequately fund all of our programs are now bearing fruit. Special thanks should go to the Executive Director and his staff for keeping expenses down in 1988. And recognition should be made of the improved financial state of the MAA's Publication Program under Peter Renz's guidance.

During the past year a special committee, chaired by John Kenelly, worked with the Executive Director to plan for and initiate needed renovations to the MAA's headquarter buildings at 1529 and 1527 Eighteenth Street in Washington. The buildings are historic and elegant town houses, conveniently situated in Washington, DC, not far from the National Science Foundation and other government agencies, and well placed for meetings of MAA committees, mathematical conferences, and of other mathematical organizations. Full renovation was estimated as high as $1,500,000; however the Building Committee divided the job into two stages and decided to proceed with stage one at a cost of just over $600,000. This will restore the main shell of the building—roof, brickwork, and windows—to first-class condition. It will also upgrade the air conditioning systems of the buildings, eliminating the many window air conditioners, and will provide interior improvements in the building at 1527 to the level required for top-quality rental space in the Washington area. The headquarters staff is tripping over the workers on the renovation project at this very time, and the renovations are expected to be complete in June. The buildings have proven to be an excellent investment for the MAA since they were acquired some ten years ago. The most recent appraisal valued them at $4,200,000.

I would like to publicly acknowledge the hard work that was done by the Finance Committee, and its Audit and Budget subcommittee, over the past several years. First Lida Barrett, and recently Jerry Porter, as chairs of the Audit and Budget subcommittee have poured an enormous amount of their time and energy into understanding the current financial state of the MAA, in analyzing the funding required for all of the MAA's programs (many of them of recent vintage), and in making the often difficult decisions that have brought our revenues and expenditures into balance. The Board of Governors was supportive of these efforts, and we are confident that the MAA is in a strong financial position now as we enter the era of our new Executive Director.

Consolidated MAA Balance Sheet

December 31, 1989   All Figures in Dollars

ASSETS

Current Assets

Cash	157,619
Liquid Assets	369,848
Accounts Receivable	639,965
Publications Inventory	188,831
Prepaid Expense	162,528
Total Current Assets	1,518,791

Non-Current Assets

Investments (at cost)	868,162
Furniture and Equipment	405,412
Building (at cost)	816,456
Building Improvements (at cost)	135,473
Accumulated Depreciation	(467,825)
Deferred Development Costs	49,286
Total Non-Current Assets	1,806,964

TOTAL ASSETS	3,325,755

LIABILITIES AND FUND BALANCES

Current Liabilities

Accounts Payable	190,170
Notes Payable	
Accrued Royalties	31,409
Other Accrued Liabilities	106,129
Prepaid Dues and Subscriptions	1,427,634
Total Current Liabilities	1,755,342

Long-Term Liabilities

Mortgage Payable	289,085
Unexpended Grant Receipts	102,258
Total Long-Term Liabilities	391,343

Total Liabilities	2,166,553

Fund Balances

Unrestricted Fund Balances	461,157
Restricted Fund Balances	318,686
Endowment	399,227
Total Fund Balances	1,179,070

TOTAL LIABILITIES & FUND BALANCES	3,325,755

1988 Revenue and Expenditures in $1000's

Revenue		Expenditures	
1346	Dues	1034	Journals & FOCUS
890	Restricted Income	538	Books
478	Book Sales	458	Grant Supported Programs
334	Subscriptions	295	Misc. Programs
306	Advertising & Misc.	537	Mathematics Competitions
126	Contributions	214	Sections, Meetings, &
251	Bequest		Joint Programs
57	Space Rental	294	Membership Department
3788	**Total Revenue**	**3370**	**Total Expenditures**

FOCUS EMPLOYMENT ADVERTISEMENTS

FOCUS advertisements reach the MAA's 28,000 members, most of whom are college and university mathematicians. FOCUS now offers a new line of advertisement formats; for these new formats we have adjusted our rates per inch accordingly. FOCUS ads now costs approximately 60 cents per word for solid text; such text will yield roughly sixty-six words for each eight lines and slightly more than eight lines per inch.

Rates for FOCUS Employment Ads are:

- 50 words or less: $37.50

- More than 50 words: $40.00 per column inch

There is a 15% discount for the same ad in more than two consecutive issues (with contract in advance). An insertion order on institutional letterhead will be considered a contract. Charges will be billed after the **first** occurrence specified in the contract.

Anyone wishing to place an employment advertisement in FOCUS should write to: Siobhán B. Chamberlin, FOCUS Employment Advertisements, The Mathematical Association of America, 1529 Eighteenth Street, N.W., Washington, D.C. 20036. For more information, call the MAA Washington office at (202) 387-5200.

The deadline for submission in the September 1989 issue is July 1, 1989.

BELOIT COLLEGE
Mathematics and Computer Science

Two one-year visiting positions, rank open, starting August 1989. PhD or ABD in mathematical sciences and strong interest in undergraduate teaching are required. Send resumé and three letters or recommendation to Philip Straffin, Chair, Math & CS, Beloit College, Beloit, WI 53511 by June 10, 1989. Beloit College is an EO/AA Employer.

BAYLOR UNIVERSITY
Endowed Chair of Mathematics

The Mathematics Department is accepting applications for the Ralph and Jean Storm Chair for research in mathematics. We are seeking a mathematician with an established record of excellence in research and a strong interest in teaching. The teaching load is three hours per semester. The starting date is negotiable.

The Department offers the BA, BS, and MS degrees. The department has an enrollment of 2,500 students and the University has 11,000 students. Baylor is located in Waco, Texas, which is 100 miles from Dallas and 100 miles from Austin. Baylor University is an Affirmative Action/Equal Opportunity Employer and is under the patronage and general direction of the Baptist General Convention of Texas.

Send vita to Howard L. Rolf, B.U. Box 7328, Baylor University, Waco, TX 76798-7328.

THE UNIVERSITY OF PUERTO RICO AT MAYAGUEZ

The Department of Mathematics has a tenure-track opening for an Assistant Professor in the area of Computational Mathematics with a salary of $23,820 per year. A PhD in Mathematics or Computer Science and fluency in spoken and written Spanish and English are required. the appointee will be expected to teach graduate and undergraduate courses and do research. Send resumé and three letters of recommendation to: Dr. Rafael Martinez Plannell, Chairperson, Department of Mathematics, U.P.R., P.O. Box 5000, Mayaguez, P.R. 00709-5000. EOE/AA.

Elizabethtown
COLLEGE

Department of Mathematical Sciences

Elizabethtown College invites applications for a tenure-track position in mathematics, appointment beginning August 1989. Applicants must have a PhD in mathematics by September 1 and a strong commitment to quality teaching and continuing scholarly activity. Responsibilities include teaching twelve credit hours per semester at various levels. Ability or interest in Actuarial Mathematics is desirable. Salary and fringe benefits are competitive, commensurate with credentials and experience. Applications will be considered until the position is filled.

Applicants should send of applications, resumé, transcripts, and three current letters of reference to Mrs. Martha A. Farver-Apgar, Director of Personnel, Elizabeth College, One Alpha Drive, Elizabethtown, PA 17022-2298.

NORTHERN ARIZONA UNIVERSITY
Department of Mathematics
Flagstaff, Arizona

The Department of Mathematics anticipates openings for Fall 1989 or Spring 1990, contingent on funding, as follows:

MATHEMATICS EDUCATION: Rank to be established. Duties include teaching, research and active participation in teacher preparation programs. Candidates must have a doctorate in mathematics education or mathematics with substantial experience in teacher education and must demonstrate evidence of quality teaching and potential for productive research.

LECTURER OR INSTRUCTOR: Depending on authorization, position(s) may be continuing or fixed term. Candidates must have at least a master's degree in mathematics or statistics, substantial evidence of quality teaching and a record of or potential for contribution to our lower division mathematics instructional program.

NAU has an enrollment of approximately 15,000. The department offers bachelor's and master's degree programs with emphases including mathematics, mathematics education, statistics, and actuarial science. Flagstaff is located in the forested mountain country of Northern Arizona near spectacular canyons, ancient Indian ruins, high desert, volcanic craters, and mountain lakes.

Send letter of application and resumé with names of three references to: Screening committee, Department of Mathematics, PO Box 5717, Flagstaff, AZ 86011. Depending on funding, screening will begin June 15 for Fall 1898 positions and August 15 for Spring 1990 positions, but applications will be accepted until authorized positions are filled.

THE DEPARTMENT IS ESPECIALLY EAGER TO ATTRACT QUALIFIED WOMEN AND MINORITY CANDIDATES TO ADDRESS A RECOGNIZED IMBALANCE. NAU is an Equal Opportunity/Affirmative Action Institution.

NORTHEASTERN ILLINOIS UNIVERSITY

Tenure-track, Assist. Prof. position starting 9/1/89. PhD in a mathematical science with strength in a computer related area such a numerical analysis. Teaching effectiveness, communication skills, scholarly achievement, commitment to curriculum development important. Teaching load is three courses per trimester. Applications considered until position is filled. Send vita, names, addresses, phone numbers of 3 references to Dr. Richard Reichhardt, Dept. of Mathematics, Northeastern Illinois University, 5500 N. St. Louis Ave., Chicago, IL 60625. An AA/EOE.

HIRAM COLLEGE
Mathematical Sciences Department

The Mathematical Sciences Department of Hiram college invites applications for a faculty position beginning September 1989. A tenure-track appointment requires a PhD, or evidence that it will be completed within three years of the initial appointment date. Otherwise, a one year appointment with the possibility of renewal will be made. Demonstrated evidence of excellence in teaching and an active interest in remaining current in the mathematics field is required. Rank and salary are open.

Duties include teaching seven courses per year in mathematics at all undergraduate levels and working closely with students. The ability to teach courses in statistics or computer science is desirable but not required.

Hiram College is a small, selective Liberal Arts college located on a rural campus in northeast Ohio, about 35 miles from Cleveland.

Send a resumé, transcripts, and three letters of reference from persons familiar with your teaching to Dr. O. Slotterbeck, Chair, Mathematical Sciences Department, Hiram College, Hiram, OH 44234. Hiram College is an Equal Opportunity/Affirmative Action Employer.

Available While the Supply Lasts

PROCEEDINGS OF THE SIXTH INTERNATIONAL CONGRESS ON MATHEMATICS
Ann and Keith Hirst, Editors

More than 2,400 participants from over 70 countries met in Budapest, Hungary in August 1988 to discuss mathematics and the teaching of mathematics. Much has been written lately about our inability to interest our young people in mathematics. What can we learn from our colleagues in other countries? Get this book and find out. Of special interest is the article by A. Ershov on the "Computerization of Schools and Mathematical Education," the article by L. Lovász on algorithmic mathematics and the article by J.P. Kahane on George Pólya. The MAA has bought a limited number of this important book. Order your copy today.

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Calendar

National MAA Meetings

August 7–10, 1989 65th Summer Meeting, Boulder, Colorado (Board of Governors, August 6, 1989)
January 17–20, 1990 73rd Annual Meeting, Louisville, Kentucky (Board of Governors, January 16, 1990)
August 8–11, 1990 66th Summer Meeting, Columbus, Ohio (Board of Governors, August 7, 1990)

Sectional MAA Meetings

Allegheny Mountain Pennsylvania State University at Dubois, Dubois, Pennsylvania, April 6–7, 1990
Eastern Pennsylvania and Delaware Millersville University, Millersville, Pennsylvania, November 4, 1989
Florida Valencia Community College (West Campus), Orlando, Florida, March 2–3, 1990
Illinois Millikin University, Decatur, Illinois, April 27–28, 1990
Intermountain Southern Utah State College, Cedar City, Utah, April 6–7, 1990
Iowa Iowa State University, Ames, Iowa, Spring, 1990
Kansas Kansas State University, Manhattan, Kansas, March 30–31, 1990
Louisiana and Mississippi McNeese State University, Lake Charles, Louisiana, February 23–24, 1990
Maryland-DC-Virginia Howard University, Washington, DC, November 10–11, 1989
Michigan University of Michigan, Flint Campus, Flint, Michigan, May 11–12, 1990
Missouri School of the Ozarks, Point Lookout, Missouri, April 6–7, 1990
Nebraska University of Nebraska-Omaha, Omaha, Nebraska, April 1990
North Central North Dakota State University, Bottineau, North Dakota, October 27–28, 1989
Northeastern College of the Holy Cross, Worcester, New Hampshire, November 17–18, 1989; Roger Williams College, Bristol, Rhode Island, June 8–9, 1990; Framingham State College, Framingham, Massachusetts, November 16–17, 1990
Northern California Naval Postgraduate School, Monterey, California, February 24, 1990
Ohio Denison University, Granville, Ohio, October 20–21, 1989; University of Cincinnati, Cincinnati, Ohio, April 27–28, 1990
Oklahoma-Arkansas John Brown University, Siloam Springs, Arkansas, March 30–31, 1990
Pacific Northwest Portland State University, Portland, Oregon, June 21–23, 1990
Rocky Mountain University of Wyoming, Laramie, Wyoming, 1990
Seaway Utica College, Utica, New York, November 10–11, 1989; Colgate University, Hamilton, New York, April 6–7, 1990
Southeastern Davidson College, Davidson, North Carolina, April 6–7, 1990
Southern California UCLA, Los Angeles, California, November 18, 1989

Southwestern Arizona State University, Tempe, Arizona, Spring 1990
Wisconsin University of Wisconsin-Richland, Richland Center, Wisconsin, April 20–21, 1990

Other Meetings

July 17–21 SIAM 1989 Annual Meeting, San Diego, California. For information, contact: SIAM Conference Coordinator, 117 South Seventeenth Street, 14th Floor, Philadelphia, Pennsylvania 19103-5052; (215) 564-2929; FAX: 215564-4174; E-Mail: siam@wharton.upenn.edu.
July 17–August 4 NSF Rocky Mountain Mathematics Consortium Summer Conference at the University of Wyoming: Matrix Theory for Applications. Faculty stipends and a limited number of scholarships available. For information and application forms, contact: A. Duane Porter, Mathematics Department, Box 3036, University of Wyoming, Laramie, Wyoming 82071.
July 26–28 Ohio Section Summer Short Course. Topics in Additive Number Theory, Findlay College. For information, contact: Anne Albert, Division of Mathematics and Computer Science, Findlay College, Findlay, Ohio 45840; (419) 424-4543.
August 28–September 1 NSF-CBMS Regional Research Conference in the Mathematical Sciences: Singular Integral Operators, University of Montana. F. Michael Christ, principle speaker, will deliver two one-hour lectures each day. For information, contact: W. R. Derrick, Mathematics Department, University of Montana, Missoula, Montana 59802; (406) 243-4171; ma_wrd@umt.
September 18–21, 1989 SIAM Conference on Mathematics of Geophysical Sciences, Stouffers Greenway Plaza Hotel, Houston, Texas. Organizers: Mary Wheeler, Rice University, and William Fitzgibbon, University of Houston. For information, contact: SIAM Conference Coordinator, 1400 Architects Building, 117 South Seventeenth Street, Philadelphia, Pennsylvania 19103-5052; (215) 564-2929.
October 6–7 Conference on Issues in the Teaching of Calculus, Miami University. Principal speakers: Lida K. Barrett, Thomas W. Tucker, and J. Jerry Uhl, Jr. To request informtion or submit abstracts, contact: Fred Gass or Tom Farmer, Department of Mathematics and Statistics, Miami University, Oxford, Ohio 45056. Conference programs with information concerning preregistration and housing will be available after July 17, 1989.
October 9–13 The Mathematical Sciences Institute (MSI) at Cornell University will sponsor a workshop on Geometric Phases in Mechanics. Topics include holonomy via reconstruction of dynamics, adiabatic processes, averaging, rotating and couples structures, and nonlinear stability and control. For information on the scientific program, contact: Richard Montgomery, Mathematical Sciences Research Institute, 1000 Centennial Drive, Berkeley, California 94720; (415) 642-0143. To attend the workshop, contact: MSI, 201 Caldwell Hall, Cornell University, Ithaca, New York 14853-2602; (607) 255-7740.
October 13–14 DERIVE Workshop, Mississippi State University, Mississippi State, Mississippi 39672. Instructor: Wade Ellis, Jr. For information, contact: Jimmy Soloman at PO Drawer MA at MSU.