AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

PRESIDENT'S REPORT

Dear friends,

The AWM events at the Baltimore Joint Meetings in January were fantastic, as those of you who attended will surely agree.

First, many thanks to everyone who helped AWM with our activities at the recent meetings and during the past year! In particular AWM Meetings Director Dawn Wheeler expertly coordinated the entire meeting, making myriads of advance arrangements as well as trouble-shooting and handling public relations during the events. We are grateful to Bettye Anne Case, our volunteer Meetings Coordinator, for her overall dedication and her outstanding work on all our meetings. The workshop was a great success; the organizing committee — Carolyn Gordon, Gail Ratcliff and Catherine Roberts — deserve special commendation for their commitment of time, energy and enthusiasm. Also, for their wisdom and their willingness to share it, we thank the panelists at our two panels and the two speakers we co-sponsored at the AMS-MAA-MER Special Session on Mathematics and Education Reform. We appreciate the wonderful work of the American Mathematical Society and the Mathematical Association of America putting on the entire Meetings program, particularly their help in scheduling and supporting AWM events.

As of January 31, Chuu-Lian Terng (Northeastern University) no longer carries the label Past-President in capital letters, but of course she is still *a* past president who is helpful and dear to the organization and to me. Chuu-Lian has been an outstanding role model with her knowledge, effectiveness, sympathy and commitment to AWM and its goals. We thank her and the other outgoing Executive Committee members, Rosemary Chang (Silicon Graphics), Carolyn Gordon (Dartmouth College), and Naomi Fisher (University of Illinois at Chicago). We enthusiastically welcome Jean Taylor (Rutgers University) as President-Elect and Gail Ratcliff (University of Missouri at St. Louis), Paula Russo (Trinity College) and Tilla Weinstein (Rutgers University) as new Members-at-Large. They will ensure that we continue to maintain the standards of excellence and the commitment to our profession and to women that we have established since

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The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.
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our founding in 1971. Kay Smith, Treasurer, and Anne Leggett, Newsletter Editor, deserve special thanks for their exceptional commitment and service to AWM.

We also thank our contributors and financial supporters. It is heartwarming to have so many friends, big and small! Many members regularly add donations to their basic dues. A number of institutions, organizations and agencies have been important to us. For several years the Education Division of the Exxon Foundation has given us unrestricted funds, which helps with our many expenses not covered by project-related grants. The National Science Foundation funds our research travel grant program and together with the Office for Naval Research funds our workshop program. The National Security Agency funds our Sonia Kovalevsky Days; they have encouraged us to apply to them for additional grants, and we are working on that. The University of Nebraska has given me funds and release time for AWM-related travel and work, and Rutgers University will do the same for Jean Taylor. The University of Maryland provides our office space. We are grateful to all of you — we couldn't survive without you!

AWM Noether Lecture

The 19th Annual Emmy Noether Lecture, "Symplectic structures: A new approach to geometry," was presented by Dusa McDuff (SUNY at Stony Brook) on Thursday morning. Lisa Traynor of Bryn Mawr College gave a moving introduction of Dusa, who had been her Ph.D. advisor. McDuff's illuminating talk described the geometric features of a symplectic structure and explained some recent applications in dynamics and in the theory of four-manifolds. For her bio and abstract, see page 7.

The Noether dinner in honor of McDuff was held Wednesday evening. Over crabcakes and other fine food, we unwound from the day's events and talked together passionately about AWM.

Prizes and awards

On Thursday afternoon at the Joint Prize Session, AWM presented the Eighth Annual Louise Hay Award for Contributions to Mathematics Education and the Eighth Annual Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman. Deborah Hughes Hallett (Harvard University and the University of Arizona) received the Hay Award. Sharon Ann Lozano (University of Texas, Austin) and Jessica A. Shepherd (University of Utah) each received a Schafer Prize. This was the first time we had presented the Schafer Prize at the Joint Prize Session; the Hay Award has been presented there for five years. We appreciate the generosity of the AMS and MAA in including us in this event.

We also recognized all the Schafer honorees immediately after our panel on Wednesday. In addition to the two winners, we had a runner-up Jie Li (University of Michigan) and two honorable mention winners, Patience Moreno (Carnegie-Mellon University) and Vera Peschansky (Polytechnic Institute of Brooklyn). We were pleased that Lozano, Shepherd, and Moreno were able to attend.

We were delighted that in addition to the AWM awards, two other awards were given to AWM past-presidents by the MAA: to Rhonda J. Hughes for excellence in teaching and to Alice T. Schafer for her distinguished service to mathematics. Alice spoke about her involvement with AWM from the beginning. Constance Reid received the JPBM Communications Award for her work on the history of mathematics; Reid was the featured speaker at the 1996 AWM Celebration in honor of Julia Robinson (Reid's sister).

AWM Workshop

Thursday evening there was a get-acquainted dinner for workshop participants and mentors. This was an elegantly catered event held in the Maryland Science Center. After the dinner, there were three discussion groups: combining career with family, getting started on research after a Ph.D., and grant preparation. In the discussion about research after a Ph.D., strong emphasis was placed on making contacts, finding potential collaborators and supporters, and coping with the demands of a new job.

The AWM Workshop for Graduate Students and Post-doctoral Mathematicians, supported by grants from the Office of Naval Research and the National Science Foundation, was held Saturday, January 10. Selected participants presented and discussed their research and met with other mathematicians; the participants and their titles are given on page 13. About ten undergraduate women were special guests at the Workshop. They attended some talks and the panel and had discussions with mathematicians. At the end of the day they thanked us and said it had been a great experience.

In the afternoon there was a panel discussion on "Launching a Career in Mathematics." The panel included Catherine Roberts (moderator), Northern Arizona University; Patty Anthony Ashford, NSA; Jill Dietz, St. Olaf College; Ruth Gornet, Texas Tech University; and Rachel Kuske, University of Minnesota (Dawn Lott-Crumpler was unable to attend). All the panelists were past workshop participants! The audience was especially interested in how to go about finding a good job.

AWM Panel: "Mathematicians and Families"

Many possible directions were suggested by this title: mathematical families, how mathematicians fit their families into their lives, surviving as a

mathematical couple, mathematical groups which are like families. As a result of questions from the audience and of the main concerns of several panelists, the discussion focused on the how-to-manage aspect, with an undercurrent of how to make our profession and world more family-friendly for present and future generations.

The panelists, all mathematicians, began by giving short introductions:

- Leslie Gruis, National Security Agency, is a single mother with one small child.

- Craig L. Huneke, Purdue, the son of a mathematician, is married to a Purdue professor of Russian; they have two children, both in elementary school.

- Rhonda J. Hughes, Bryn Mawr, has two children from a previous marriage and now handles a commuting marriage which added three stepchildren.

- Stephen F. Kennedy, Carleton, has two small children and shares one position with his wife, also a mathematician.

- Suzanne M. Lenhart, Tennessee, has one child, and presently her spouse is a house-husband.

Stephen F. Kennedy (Carleton College), Catherine Roberts (Northern Arizona University), Leslie Gruis (National Security Agency), Sylvia Wiegand (moderator; AWM President), Craig L. Huneke (Purdue University), Suzanne M. Lenhart (University of Tennessee), and Rhonda J. Hughes (Bryn Mawr College)

- Catherine A. Roberts is at Northern Arizona University. She and her husband have tenure-track appointments in different departments; they have one small child and another on the way.

I was the moderator. Unfortunately two of our originally scheduled panelists, Deborah Tepper Haimo (University of California, San Diego) and Dawn Lott-Crumpler (New Jersey Institute of Technology), were unable to attend the meetings. We thank Leslie and Catherine for agreeing to substitute on very short notice.

In the introductions there were several references to the "two-body problem." Kennedy's solution — to share a position — was partly in order to have more time with the children, and partly because getting two jobs together seemed unlikely and living apart was "not an option." In response to "How can you afford a house?" Kennedy and Lenhart agreed that it wasn't easy with just one salary. Kennedy temporarily has a full-time job; both couples have some other resources. Roberts and Huneke initially had difficulty getting satisfactory positions with their spouses but eventually succeeded. Huneke regrets now that he and his wife delayed having children until settled with two jobs; he will be sixty when they are through school. On the positive side they could afford childcare and help.

What is it like to be a mathematician with a family? "When our first son was born it was the most exciting thing in my life!" according to Huneke, who added that the baby euphoria even spurred his research, despite the new time demands. Family life with its forced downtime may help you keep your sanity, ensuring that you stay fresh and relax occasionally. Lenhart was grateful that her family arrangement and flexibility at work permitted her to be a "soccer mom." We mathematicians (perhaps because we are somewhat childlike) especially delight in children's natural curiosity: Kennedy's son Sam, aged 4.5, "recently announced, with
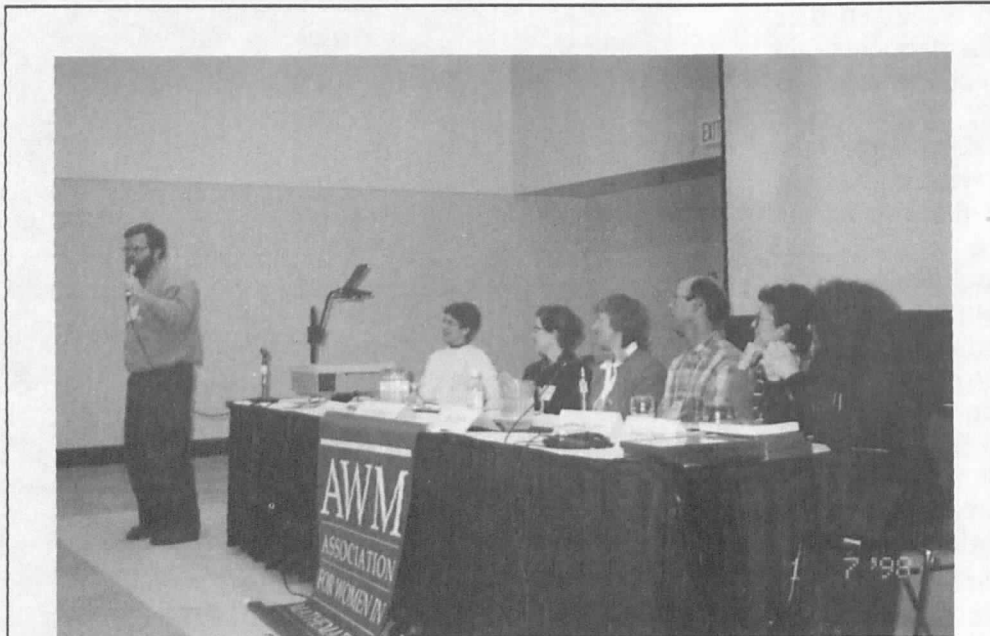
something close to awe in his voice, that three fours is the same as four threes."

What policies are there for parents of infants? Women who are in temporary positions while pregnant may not be eligible for leaves. Full-time workers may find it easier. Formerly at academic institutions the best arrangement available was to take as long as desired but without pay. Now it seems to range from some pay for one week up to a full semester with pay. In academia the tenure clock might be stopped temporarily for pregnancy. Some women don't take time off and may have a hard time; one woman mentioned that, in hindsight, she had been under too much stress and should have taken more time off. Hughes, who hates the message "You can have it all," hoped that we might change the system to make it better; to manage everything one has to be incredibly efficient. In industry it may be easier to take off time. Gruis talked about a generous family policy at the NSA, where she could use a combination of sick leave, annual leave, and leave without pay when her three-year-old son was born. She is concerned that if women take too much time off they will be forgotten and will be unable to get back into their work; she feels it is important to stay at least somewhat involved with the job. Ann Cox (NSA, audience) has six children aged 9-21; she returned to school after having the children and retrained.

When children are sick, what then? Gruis sometimes takes her son to a relative, sometimes uses sick leave. Academic couples often arrange to have non-overlapping teaching schedules. Lynn Small (in the audience) and another mother paid a sitter a monthly fee to be "on call" in case of illness.

The panelists and several audience members mentioned possibly delaying tenure for family or personal reasons. Not everyone necessarily wants or can have children, but other situations besides pregnancy may require some understanding and slowing of the tenure clock, such as care of elderly parents or other sick relatives, or difficulty keeping up a relationship with a significant other who is far away.

Despite some of the frustrations new parents face, such as arranging childcare, Roberts says, "Overwhelmingly we are all thrilled to be parents and to have jobs that permit us some flexibility to find a balance in our lives between families and work."

As moderator-scribe (and an older parent), I can't resist adding my perspective here: Children can benefit from their involvement in their parents'

mathematical life and the mathematical atmosphere in the home. For older children there are opportunities to travel, to meet interesting mathematicians and their children, and to visit universities. Not to say that it's easy, but there have been advances in childcare and in understanding by institutions. Sometimes, for example when the children are sick, the balancing act totally breaks down and we become desperate; but generally if we can find the strength to get through those times, handling career and family is feasible. The hardest parts of childcare and the constant exhaustion last only a few years. The joys and rewards last much longer!

More AWM in Baltimore

At the AWM Business Meeting, new officers were introduced and we reported briefly on upcoming events. When we opened the discussion to the floor, Helen Moore observed that the number of women in graduate school is going down faster than the number of men. Longtime member and staunch supporter Lee Lorch reminded us to persevere in advancing the status of women in our profession, especially in view of the drop in affirmative action. We briefly discussed AWM participation in the Math 2001 Olympiad celebration. (The AWM has been uncertain whether to join, in view of the lack of women participants and possible lack of encouragement for them.)

We all did some unwinding at the well-attended AWM party, an open reception with refreshments, music and a cash bar. Some party-goers mentioned that our party is always the friendliest event of the meeting, and they thanked AWM for hosting it.

Ginger Warfield's Education Column on pages 21–22 reports on the two speakers co-sponsored by AWM at the AMS-MAA-MER special session mentioned above.

Other events in Baltimore

The mathchats on Tuesday night were lots of fun; I enjoyed meeting graduate students from all over. It's a great opportunity for the students to make contacts and to get comfortable being at the meeting. Graduate students: Don't forget to sign up next year when you advance register for the joint meetings. Faculty members: Encourage graduate students to sign up.

There was a mentoring reunion dinner for young mathematicians who had participated in a special

program, the IAS/Park City Mathematics Institute (PCMI) offered by Karen Uhlenbeck and Chuu-Lian Terng. The emphasis of the program is on mathematics learning and research, mentoring and peer relations within the mathematics community, and information on career opportunities in research mathematics. The previous participants were extremely enthusiastic about their experiences and enjoyed renewing acquaintances at the dinner. For more information about the program, see pages 25 and 32 of the January–February 1998 *Newsletter*.

The AMS banquet on Saturday night was a festive way to end the meeting. John Ewing gave a trivia quiz about specific mathematicians and meetings from the last 75 years. Arthur Jaffe, President of the AMS, spoke on efforts to increase national support for science and mathematics. He and the presidents of the chemistry and physics societies began last year to lobby the government in a rather successful campaign, now joined by over 100 societies, including, of course, the AWM. As a result NSF has had a budget increase of five percent for research, and there is a bill proposed for the U.S. Senate to "double the support for science in a decade." President Clinton also intends to offer an initiative for science. But U.S. legislators are apparently not all supporters of science: Jaffe showed a video of Trent Lott, Senate Majority Leader, telling a large audience of high school students that physics was a useless subject. Our assignment: to change Lott's mind!

ICM '98, Berlin

The ICM in Berlin in August, 1998 will include events featuring women in mathematics, organized jointly by the AWM and the EWM (European Women in Mathematics) and supported by other groups of women mathematicians. There will be a special Emmy Noether lecture by Cathleen Morawetz on Saturday, August 22. A panel discussion, "Events and policies: Effects on women in mathematics," will be held 7:30 P.M., Friday evening, August 21. (Examples of such events/policies are German unification or policies regarding affirmative action.) This will be followed by an EWM film: "Women and Mathematics across Cultures" (directed by Marjatta Naatanen with Bodil Branner, Kari Hag, and Caroline Series). These events are being planned by the ICM committee consisting of Bhama Srinivasan (chair), Christine Bessenrodt, and Bettye Anne Case.

Early registration for the ICM is due by **May 1, 1998**; the late registration fee is higher and some options may be no longer available after that time. The Second Announcement is available at http://elib.zib.de/ICM98; after you have read it carefully, you can register online. If you do not have web access, the general email address is icm98@zib.de, and the mail address for general correspondence is ICM'98, c/o Prof. Dr. J. Winkler, TU Berlin, MA 8-2, Str. des 17. Juni 135, D-10623 Berlin, Germany.

We encourage you to attend!

CALL FOR NOMINATIONS: ALICE T. S CHAFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schafer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career. She must either be a U.S. citizen or have a school address in the U.S.

The Schafer Prize was established in 1990 by the Executive Committee of the AWM and is named for AWM former president and founding member, Alice T. Schafer, who has contributed a great deal to women in mathematics throughout her career. The ninth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in San Antonio, TX, January 1999.

The letter of nomination should include, but not be limited to, an evaluation of the nominee on the following criteria: quality of performance in mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any. Supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, transcripts) should be enclosed with the nomination. *Five* complete copies of nomination materials for this award should be sent to The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461 and should be received by **September 15, 1998**. Early submissions are encouraged.

For more information, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted.

Short notes

"Knots, Braids and Mapping Class Groups" is a conference in low-dimensional topology in honor of Joan Birman's 70th birthday. To be held March 14–15 at Columbia University/Barnard College, the invited speakers include Colin Adams, Robert Ghrist, Vaughan Jones, Xiao-Song Lin, William Menasco, Jozef Przytycki, Caroline Series, Abigail Thompson, and Vladimir Turaev.

Happy Birthday, Joan!!

At the Toronto Mathfest July 15-17, the AWM/ MAA Joint Lecture will be given by Margaret Wright of Bell Labs; President-Elect Jean Taylor will be giving the Hedrick Lectures. Our participation in the Mathfest will follow our joint workshop with SIAM in Toronto earlier in the week. The Mathfest will be held at Ryerson Polytechnic University (not a campus of the University of Toronto, as I mistakenly reported last issue; my apologies to the folks at Ryerson).

The MAA received funding from the Department of Education to produce a document (in print or other media) on teacher preparation. This will be done in cooperation with the Conference Board of the Mathematical Sciences; it was the main agenda item at the December CBMS Education Partnership meeting. An advisory board and a writing committee are to be named, and there is a mechanism for input from all of the CBMS organizations, of which AWM is one. Rough drafts will be circulated in 1999, and the final draft will appear in 2000, which is also when the NCTM Standards revision will appear. The PI is Mary Lindquist.

The AWM webpage is at http://www.math.unl.edu/ ~awm. It is maintained by our webmaster, Judy Walker of Nebraska, email jwalker@math.unl.edu.

Best wishes,

Sylvia

Sylvia Wiegand
January 30, 1998
on sabbatical at Purdue
West Lafayette, Indiana

AWM IN BALTIMORE

Noether Lecture

DUSA McDUFF was born in 1945 in London and grew up in Edinburgh. Her father was Professor of Animal Genetics at the university and her mother was an architect in the Scottish Development Office. She received her B.Sc. from the University of Edinburgh in 1967 and then went to Cambridge, England, where she got a Ph.D. in 1971. She held a research fellowship in Cambridge from 1970 to 1972 and then took up lectureships at the universities of York (till 1976) and Warwick. During this time she also spent a year as a Visiting Assistant Professor at MIT and two semesters at the Institute for Advanced Study in Princeton. She moved to SUNY at Stony Brook in 1978 and has remained there ever since. She was promoted to full professor in 1984. McDuff's thesis was in functional analysis, but while still a graduate student she visited Moscow for six months and studied with I. M. Gelfand. It was under his influence that she started to work in topology, which has remained her primary interest ever since. Starting in 1972 she worked with Graeme Segal on classifying spaces for foliations, exploring ways to construct interesting spaces by pulling apart groups of diffeomorphisms. This led her to work with diffeomorphisms that preserve an additional geometric structure, such as a volume element or symplectic form. Just as she became interested in symplectic geometry in 1983, new ideas were developed that made it possible to understand symplectic structures in a much deeper way. Since then she has worked almost exclusively in this field.

In her Noether lecture, McDuff described this new understanding of symplectic structures and discussed some of the ways in which it is relevant to other fields in mathematics.

McDuff has published over 50 research papers, over 30 of them in symplectic geometry. Recently she has been working in collaboration, notably with Francois Lalonde and Dietmar Salamon. She has written two monographs with Salamon on different aspects of symplectic geometry. She was awarded the first Ruth Lyttle Satter Prize in 1991 and was elected a Fellow of the Royal Society of London in 1994 and a Fellow of the American Academy of Arts and Sciences in 1995. She has given many lectures on symplectic geometry, in particular an

Sylvia Wiegand (University of Nebraska), AWM President, and Dusa McDuff (SUNY at Stony Brook), 19th Annual Noether Lecturer

AMS Invited Address at the winter meeting in Atlanta (1988), the first Progress in Mathematics lecture at the AMS summer meeting in Boulder 1989, an Invited Address at the Kyoto ICM 1990 and a Plenary Address at the 2nd European Congress in Budapest (1996).

She was Chair of the Mathematics Department at Stony Brook, 1991–93 and Chair of the Scientific Advisory Council of MSRI, Berkeley, 1993–96. McDuff has served on many other committees, both in the university and in the wider mathematical community. She is very interested in encouraging women in mathematics and recently helped to institute a British Women's Mathematics Day. She has also recently developed some new undergraduate courses that try to foster mathematical creativity.

McDuff's main interests besides mathematics are reading, playing the cello, gardening, walking, and talking to friends. She has two children, a daughter now living in London and a teenage son, and is married to John Milnor.

Abstract: The talk described what is known about the geometric features of a symplectic structure and explained some recent applications in dynamics and in the theory of four-manifolds.

Alice T. Schafer Prize

In 1990, the Executive Committee of the Association for Women in Mathematics established the annual Alice T. Schafer Prize for excellence in mathematics by an undergraduate woman. The prize is named for former AWM president and one of its founding members, Alice T. Schafer (Professor Emerita from Wellesley College), who has contributed a great deal to women in mathematics throughout her career. The criteria for selection includes, but is not limited to, the quality of the nominees' performance in mathematics courses and special programs, an exhibition of real interest in mathematics, the ability to do independent work, and if applicable, performance in mathematical competitions.

AWM is pleased to present the Eighth Annual Alice T. Schafer Prize to two outstanding young women mathematicians: SHARON ANN LOZANO of the University of Texas at Austin and JESSICA A. SHEPHERD of the University of Utah.

Three additional outstanding young women are also recognized in the Prize competition. JIE LI, a senior at the University of Michigan with a dual concentration in mathematics and political science, was selected as runner-up in the competition. Honorable mentions were presented to PATIENCE MORENO, a senior mathematics major at Carnegie Mellon University and VERA PESHCHANSKY, a senior in mathematics and computer science at the Polytechnic Institute of Brooklyn.

Citation for Sharon Ann Lozano

Sharon Ann Lozano is a senior mathematics major whose outstanding academic record at the University of Texas places her in the top one percent of over five hundred mathematics majors. According to her professors, Sharon has been the top student in most of her mathematics courses. In her first year, she tied for first place in the Mathematics Department's A.E. Bennett Examination, a contest that has been in existence for over fifty years and whose winners include many who subsequently distinguished themselves in mathematics and engineering.

Sharon has participated in two summer research programs, the Cornell SACNAS Summer Institute and the Mills Summer Institute. She has written three research reports, one of which provided the background for her senior honors thesis involving numerical modeling of surface water flow under the

direction of Professor Mary Wheeler. In the Spring of 1997, Lozano was a member of her department's team which received an Honorable Mention in the COMAP Mathematics Contest in Modeling. Sharon has also served her department and community in many ways, particularly through her involvement in the AmeriCorps Program.

In the words of one of her professors, "Sharon is an extraordinary individual and brings to mathematics an excitement and vitality that enlivens the possibilities for the future of the profession.... Sharon, while still an undergraduate, has shaped a mathematical life that merges research with community service and leadership. While pursuing an active mathematical research agenda, Sharon has also blazed a pathway of community service that invites more students from diverse backgrounds to participate in and appreciate mathematics."

Response from Lozano

There are many talented undergraduate women in mathematics. It is an honor to be considered among them and to have been awarded the Alice T. Schafer Prize this year. I thank the people and organizations, such as AWM, that do more than share their knowledge. They genuinely believe in and inspire the success of all students. In particular, I would like to thank Efraim Armendariz, Mary Wheeler, Uri Treisman, James Epperson, Monica Martinez, and Jackie McCaffery for inspiring me.

Jessica A. Shepherd

Jessica A. Shepherd is a senior mathematics major with a minor in computer science at the University of Utah. Her professors are uniform in their praise of her extraordinary mathematical talent; many feel that she is the strongest mathematics student they have seen at Utah in decades, and is in fact on par with their strongest graduate students. She has received many prizes and awards, including the Gibson Award for outstanding achievement in mathematics, and has done research in both mathematics and computer science.

In 1995, Jessica participated in research in the PipeLink Program at Rensselaer Polytechnic Institute, and in 1996, she participated in the SIMS

Schafer Prize Presentation at the Joint Prize Session: Jessica A. Shepherd (University of Utah), winner; Sharon Ann Lozano (University of Texas), winner; Alice T. Schafer (Wellesley College), presenter; Sylvia Wiegand (University of Nebraska), AWM President; seated: Martha J. Siegel (Towson University), MAA Secretary; Gerry Alexanderson (Santa Clara University), MAA President

program at the University of California, Berkeley. She has co-authored two papers, "The Multiplier in Fractals Bounded by Regular Polygons," written with Professor Anne Roberts, and "A Corpus-Based Approach for Building Semantic Lexicons" with Professor Ellen Riloff.

One of her professors states, "Jessica has a superb intellect and tremendous drive and discipline. She has the potential to become an intellectual leader." According to another, "She is an absolute joy as a student and I am sure that she will go on to have a fine career. She is outstanding by any standard whatsoever..." Finally, "Jessica is the brightest undergraduate I have ever met. Jessica has a combination of raw intellectual power, self-discipline, motivation, and character that is extraordinarily rare. I fully expect to run across her name again some day, perhaps as a professor at a prestigious university or as the winner of a major award."

Response from Shepherd

I feel extremely honored to have been selected for the Alice T. Schafer Prize. I would like to respond by thanking all the teachers and professors in my life who have taken the time to make mathematics not just possible, but exciting. This award belongs more to them than to me. Thanks especially to Anne Roberts and Ellen Riloff for offering advice and opening doors, both literally and figuratively. Finally, thanks to the AWM and all those who believe in the capabilities of women enough to provide encouragement that helps them excel.

Citation for Jie Li

Jie Li is a senior at the University of Michigan with a dual concentration in mathematics and political science. Jie has done exceptionally well in a challenging mathematics program. She began her involvement in research at an exceptionally early stage in her career and has participated in three summer research programs, at Michigan, Williams College, and Cornell University. As a sophomore, she answered a question about the minima of polynomials of several variables posed by Professor A. Blass. This work was deemed "...a fine accomplishment for a senior. To have done it after her first year is a sign of extraordinary ability and drive." Li's paper on "Stick Knots" with Professor Colin Adams will be submitted for publication. According to her professors, "We all expect a great future for Jie and think that she richly deserves national recognition for her accomplishments."

Response from Li

In making the connection with the individual student, math needs to overcome popular conceptions of being a difficult and esoteric subject. Hence, teachers are so important in guiding the student during the initial stages of learning. I would like to express my appreciation to my professors at The University of Michigan for their patience, kindness, and, more importantly, for a glimpse of their energy and passion for the subject.

Citation for Patience Elizabeth Moreno

Patience Elizabeth Moreno is a senior mathematics major at Carnegie Mellon University. She has excelled in her mathematics courses and for the past year has been doing independent research in applied statistics, which her research advisor considers "genuine cutting-edge research." According to one of her professors, "She is by far the most knowledgeable and most capable of the undergraduates I have had close contact with through my research. She has the clear ability to do independent work in mathematics and statistics." According to another, "Patience is one

Jie Li (University of Michigan), runner-up

Vera Peshchansky (Polytechnic University), honorable mention

of the strongest undergraduate students that I have taught at Carnegie Mellon over the last fifteen years."

Response from Moreno

I would like to thank the Association for Women in Mathematics for honoring me with an Honorable Mention for the Alice T. Schafer Prize. I would also like to thank the professors who have been instrumental in my development as a mathematician, Juan Jorge Schäffer, Victor Mizel, William Hrusa, William Eddy, Stephanie Land, and Russell Walker.

Vera Peshchansky

Vera Peshchansky is a senior in a joint program in mathematics and computer science at the Polytechnic Institute of Brooklyn. She has won many awards and prizes, including the George Bachman Award presented to an outstanding undergraduate majoring in mathematics and the Kinsella Humanitarian Award. She is currently involved in the writing of a senior class project which involves both number theory and computer science. Her professors are uniform in their praise of her mathematical talent and motivation. One of Vera's professors states, "Vera is the most talented student, either in the graduate or undergraduate category, that I have seen at Poly in the last ten years. She has all the ingredients to become a really first rate research mathematician."

Response from Peshchansky

I'd like to thank the Association for Women in Mathematics for awarding me an Honorable Mention in this year's Alice T. Schafer Prize competition. This is a great honor both for me personally and for my school — Polytechnic University. I would particularly like to thank Professor Lesley Sibner for nominating me.

Louise Hay Award for Contributions to Mathematics Education

In 1990, the Executive Committee of the Association for Women in Mathematics established the annual Louise Hay Award for Contributions to Mathematics Education. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in

Schafer Prize Presentation after the AWM Panel: Rhonda J. Hughes (Bryn Mawr College), Schafer Prize Committee Chair and Patience Moreno (Carnegie Mellon University), honorable mention

the broadest possible sense. While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secure her reputation as a consummate educator. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

Citation for Deborah Hughes Hallett

The AWM is pleased to present the Eighth Annual Louise Hay Award to DEBORAH HUGHES HALLETT of Harvard University and the University of Arizona.

In the tradition of Louise Hay, Deborah Hughes Hallett is a first-rate classroom teacher as well as a strong administrator. She has made a very strong impact on undergraduate and high school mathematics education both nationally and internationally.

In the classroom, Hughes Hallett has been a dedicated teacher who knows how to involve students and get them to realize their potential. She has
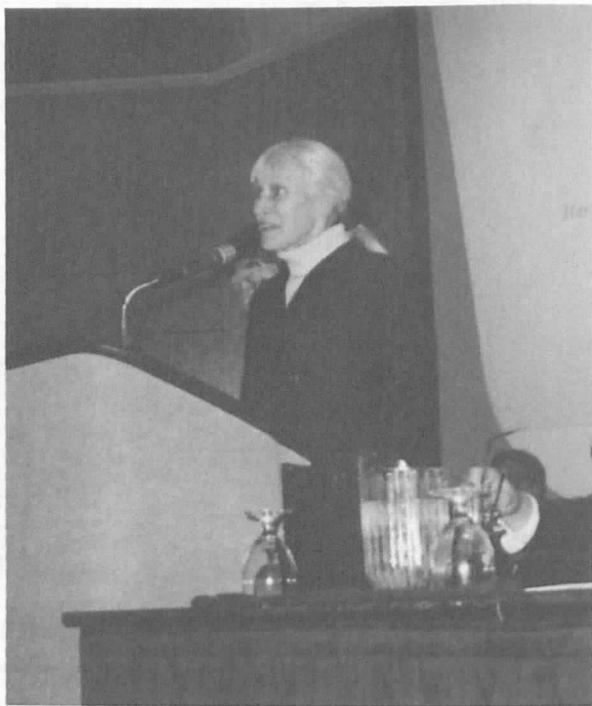
Deborah Hughes Hallett (Harvard University and University of Arizona), Hay Award winner

a unique ability to get into students' minds, to work out what they are missing and to devise a new way to explain something that overcomes the obstacle. Former students write, "her teaching was a model of how to get people interested in learning" and "she engages her students in mathematics by allowing them to discover for themselves the answers to problems and the significance of applications."

Her influence has spread far beyond her own classroom to many other teachers: undergraduates whom she trained to teach a precalculus course at Harvard that she pioneered; graduate teaching assistants; and university and high school teachers across the country who have attended her workshops on teaching calculus. A former undergraduate instructor Stephen Modzelewski, himself a Putnam winner, writes that the instructors "all gain mathematically as a result of being a part of this community" and grow in "their attitudes towards standards and intellectual rigor" both in their teaching and their own studies.

Hughes Hallett's courses involve a fundamental rethinking of curriculum and teaching. Because of their design, they are programs that survive after

she leaves them. The calculus book with which she is associated has triggered an extensive debate on educational ideas in the mathematics community. The controversy surrounding it shows how truly innovative it is. Through her workshops and textbooks, her insights into teaching and learning have been conveyed to teachers and students far from Cambridge and Tucson. A German mathematician says, "Her outstanding contribution has influenced many didacticians."

As a mathematics teacher, mentor, textbook author, and teacher educator whose scope and influence have reached far beyond her immediate students, Deborah Hughes Hallett is an extremely worthy recipient of the Louise Hay Award for Contributions to Mathematics Education.

Response from Hughes Hallett

I am surprised and honored to have won the Louise Hay Award for Contributions to Mathematics Education.

This prize complements the other prize of my professional life, which is the opportunity I have had to collaborate with such a spectacular group of mathematicians and teachers. It is an inspiration to see research mathematicians and high school teachers listen carefully to each other and combine their wisdom to work out the best way to teach something. I have learned from all these colleagues. I have also learned from the many Harvard and Arizona students who kindly taught me how they thought about mathematics, and thereby taught me how to teach.

I particularly want to thank the research community for welcoming me, an immigrant, into its midst. Mathematics has always been impressively open to people with different accents and different passports, and the field has flourished because of this. However, research mathematics is now faced with a different breed of immigrants. Our accents and passports may be the same as yours, but our lives are focused differently: on teaching and education. All immigrant groups bring with them different cultures, different values, and different religions. These differences always produce strain and often conflict. Yet, as the history of the U.S. has clearly demonstrated, a society is strengthened by being able to draw on the talents of its immigrants. I hope that U.S. mathematics will continue its tradition of leadership of welcoming immigrants such as I.

AWM Workshop for Graduate Students & Postdoctoral Mathematicians

The AWM Workshop sponsored by ONR was a full-day event on Saturday, January 10 in Baltimore. The workshop provides the participants with the opportunity to present and discuss research and to meet with other women mathematicians at all stages of their careers. A panel on "Launching a Career in Mathematics" was held. A Workshop dinner and discussion group for participants were held on Thursday, January 8. The co-organizers were Carolyn S. Gordon, Dartmouth College; Gail Ratcliff, University of Missouri at St. Louis; and Catherine Roberts, Northern Arizona University.

The postdoctoral mathematicians and the titles of their talks are:

Claire Baribaud, Florida State University
"Closed geodesics on a pair of pants"

Jeanne Nielsen Clelland, Institute for Advanced Study
"Bäcklund transformations of hyperbolic Monge-Ampère systems"

Deborah Heicklen, University of California, Berkeley
"Independence in ergodic theory"

May M. Nilsen, University of Nebraska-Lincoln
"Group duals: The non-abelian case and the role of Hopf C*-algebras"

Kimberly Pearson, Valparaiso University
"Lower algebraic K-theory of Bianchi groups"

Natalie M. Priebe, Rensselaer Polytechnic Institute
"Derived Voronoï tilings and how they can be used to analyze hierarchy in tilings"

Sylvia Silberger, Lafayette College
"Entropies of one-dimensional tiling subshifts"

Caryn Werner, University of Michigan
"Counting moduli for some surfaces of general type"

The graduate students and the titles of their posters are:

Nancy E. Cunningham, Rice University
"A variational approach to the local uniqueness of minimal surfaces in R^3"

Stephanie P. Edwards, University of Wisconsin
"The non-real zeros of f'' and the Wiman conjecture"

Cheryl Grood, University of Wisconsin
"Even more Brauer algebras"

Chawne M. Kimber, University of Florida
"The structure of prime ideal spectra in rings of continuous functions"

Lorelei Koss, University of North Carolina
"Ergodic theory of analytic maps of complex projective space"

Céline M. Lossa, University of Rochester
"The singular homology of strong bouquets of Moore spaces"

Cynthia McCabe, University of Iowa
"Upper bounds on edge numbers of knots and links"

Lisa A. Orlandi-Korner, Cornell University
"Group actions on R-trees"

Lisbeth E. Schaubroeck, University of North Carolina
"Subordination and shears of plane harmonic functions"

Olga Simek, University of Arizona
"Heat trace asymptotics for domains with singular boundaries"

Elizabeth Lee Wilmer, Harvard University
"Exact rates of convergence for some non-reversible Markov chains"

Carolyn Yackel, University of Michigan
"Asymptotic bounds for annihilator lengths in quotient rings"

AWARDS AND HONORS

Not only did we present our AWM awards at the Joint Prize Session, but also several AWM members and friends received awards. Congratulations to all of them!

Gung and Hu Award for Distinguished Service

The Mathematical Association of America (MAA) presented the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics to one of our founders and past presidents, ALICE T. SCHAFER.

Her citation reads:

The curriculum vitae of Alice Turner Schafer lists two specializations: abstract algebra (group theory) and women in mathematics. As early as her high school years Alice exhibited a love for mathematics and an interest in teaching as a career. As a mathematics educator she championed the full participation of women in mathematics. She has been a strong role model for many women and has worked to establish support groups for women in mathematics, to eliminate barriers women face in their study of mathematics and participation in the mathematics community, and to provide opportunity and encouragement for women in mathematics. She was one of the central figures in the early days of the Association for Women in Mathematics (AWM), through which she has helped to change the place of women in American mathematics. Yet her service goes far beyond her work on behalf of women.

Alice Turner is a native of Virginia, where she spent her school years, earning a B.A. in mathematics from the University of Richmond. Lacking the financial means to attend graduate school, she taught secondary school mathematics for three years and then entered the University of Chicago, where she earned an M.S. and a Ph.D. Her dissertation in projective differential geometry was supervised by E. P. Lane, and her published research in this area appeared in the *Duke Mathematical Journal* and in the *American Journal of Mathematics*.

At the University of Chicago Alice met Richard Schafer, who was seeking a Ph.D. in mathematics. They were married as they completed their degrees. This union has been blessed with two sons and three grandchildren.

The Schafer's marriage was an early example of the "two-body problem" and the "commuter marriage." Alice's first postgraduate position was at Connecticut College, followed by a year at The Johns Hopkins Applied Physics Laboratory. She then held positions at the University of Michigan, Douglass College, Swarthmore College, Drexel Institute of Technology, and the University of Connecticut before returning to Connecticut College, where she advanced to full professor. Moving to Wellesley College (by now Richard was at MIT), she soon became department head and the Helen Day Gould Professor of Mathematics, retiring in 1980.

citation written by Linda R. Sons, Northern Illinois University

Indefatigable, Professor Schafer continued teaching, at Simmons College and in the management program in the Radcliffe College Seminars. Upon Richard's retirement from MIT, they moved to Arlington, Virginia, where Alice became professor of mathematics at Marymount University, retiring once again in 1996.

While living in the Boston area, Professor Schafer joined then-graduate student Linda Rothschild and Bhama Srinivasan to organize a group of women mathematicians and students who met every few weeks to discuss common problems and goals. The group anticipated both the AWM and a similar organization in Europe.

At the Atlantic City mathematics meetings in 1971, Mary Gray led a women's caucus of the Mathematics Action Group in organizing the AWM. Alice Schafer served as the second president, and under her guidance the Association was incorporated, secured financial footing, and established an office at Wellesley College. Professor Schafer prepared AWM to become a full member of the Conference Board of the Mathematical Sciences, and she and Mary Gray attained international recognition for AWM through its sponsorship of programs at the International Congress of Mathematicians at Vancouver. Essential to the high regard in which AWM is now held by men and women are the excellent mathematical invited talks at its sessions, a feature begun by Schafer. Even after her presidency, Alice Schafer has continued for two decades to give dedicated service and guidance to AWM. Her successors in the presidency rely on her wisdom and good counsel. In recognition of Professor Schafer's contributions, AWM now awards an annual prize in her honor for excellence in mathematics by undergraduate women.

Throughout her career, Professor Schafer sought to eliminate barriers to women in mathematics and to promote human rights for all mathematicians. She directed the Wellesley Mathematics Project (continued jointly with Wesleyan University) aimed at reducing fear of mathematics for women. She helped to prepare lists of women who were eligible for grants and fellowships, including invited lectureships. She chaired the AMS Committee on Postdoctoral Fellowships and the Committee on Human Rights and served on Committee W and the National Council for the American Association of University Professors. She has chaired the mathematics section of the American Association for the Advancement of Science.

Professor Schafer has served on the CBMS Committee on Women in the Mathematical Sciences

for six years and has worked for many years for the MAA Women and Mathematics Program. Three times in recent years, through the People-to-People program, she led delegations to China — one concerning women research mathematicians, one concerning mathematics education, and one concerning women's issues in mathematics and science.

Professor Schafer is known for her love of people, her boundless energy, and her fierce determination for a just cause. Her lifetime achievements and her pioneering efforts to secure opportunities for all mathematicians make her a most worthy recipient of the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics.

Response from Professor Schafer:

I thank the [MAA] for ... the ... Award for Distinguished Service to Mathematics. It is very gratifying. Also I want to express my appreciation to the Committee on the Award for nominating me. Lastly, I want to thank the MAA for its work over the years toward increasing the opportunities for women in mathematics.

Haimo Teaching Awards

In 1991, the Mathematical Association of America (MAA) instituted Awards for Distinguished College or University Teaching in Mathematics in order to honor teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions. In 1993, the MAA Board of Governors renamed the award to honor Deborah and Franklin Tepper Haimo. Deborah Tepper Haimo was President of the MAA in 1991–92. Two of the three awards made this year went to AWM members.

The citation for RHONDA L. HATCHER reads:

Professor Hatcher is one of the finest, most conscientious teachers on the Texas Christian University campus. Her faculty evaluations are among the best anywhere, and the student comments about Professor Hatcher show clearly that she is held in the very highest esteem ("awesome," they said).

What is it about Professor Hatcher that causes students to universally express their admiration for her and flock to her classes? First of all, she knows her subject, is extremely well organized, and is very personable. She prepares her classes

with extreme care. She does this out of a sense of obligation to her students. She cares deeply about them and wants to do the very best job she can for them. Students praise her willingness to help, her patience with them, her constant availability, her friendliness, and her openness. She is enthusiastic, always has a smile, and her office door stays open except when she is in class.

She is a combination of coach, cheerleader, and mentor all at once. She paces her classes just right, challenges students with perceptive questions, and knows just the right balance among theory, applications, and the use of technology. Her classes buzz with excitement; her students are having fun learning nontrivial mathematics. Combining all this with her excellent organization and flawless handwriting, the result is almost a perfect ten out of ten. Quite simply, Professor Hatcher is as close to being a perfect mathematics teacher as we are likely to see.

Not only is Professor Hatcher a first-rate teacher, she is also an excellent scholar. She is a *summa cum laude* Phi Beta Kappa graduate of the University of Colorado with master's and Ph.D. degrees from Harvard. She is actively involved with research in a deep area of number theory that deals with L-series and modular forms.

For the past three summers, as Principal Investigator on NSF grants, she attracted outstanding undergraduates from around the nation to TCU to work on projects entitled "Zeros of Special Functions" and "Computational Group and Graph Theory." The resulting research has led to publications by the students in major refereed journals. Also during the summer, Professor Hatcher has been a lecturer in the Advanced Placement Teachers Calculus Programs at TCU. This gives her the opportunity to demonstrate her wonderful teaching skills to Texas high school mathematics teachers. It is no surprise, therefore, that Professor Hatcher was selected to receive the prestigious awards for teaching at both Harvard and TCU.

The MAA is fortunate to have a way of recognizing her many effective contributions to the improvement of college teaching of mathematics at so many different levels by conferring upon her the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. It is a distinct pleasure to be able to do so.

Biographical note:

Rhonda Hatcher earned a B.A. in mathematics from the University of Colorado at Boulder in

1980. From there, she went on to graduate school at Harvard University, where she earned an A.M. in mathematics in 1982 and a Ph.D. in 1987. Her graduate advisor was Benedict Gross. While at Harvard, she met and married fellow number theorist George Gilbert, and their first child, Nolan, was born. During the first three years after graduate school, she taught at St. Olaf College, and her second son, Alexander, was born. Since 1990, she and her husband have been on the faculty of Texas Christian University.

Response from Professor Hatcher:

I am both surprised and delighted to have been named one of the recipients of the ... Haimo Awards.... Teaching and working with students is a pleasure and a privilege, and to have my work recognized in this way is truly an honor. I would like to acknowledge the support and contributions of my husband, George Gilbert. Some of the work for which I am being recognized, most notably the NSF Research for Undergraduate projects at TCU, were joint projects. I also would like to thank Professor Robert Doran, the chair of the Mathematics Department at Texas Christian University, for being a wonderful role model as a teacher and for fostering an atmosphere where excellence in teaching is encouraged and rewarded.

The citation for RHONDA J. HUGHES reads:

Professor Hughes is the consummate teacher. She has had a profound influence on students at all levels. Her teaching style is one of the most natural and effective, one that draws the very best in all of her students. She has a penetrating vision of what constitutes a successful mathematics program and has had tremendous success in building such a program at Bryn Mawr.

Professor Hughes is adamant in seeing that students are always first in the educational process and that they get the absolutely best service possible, regardless of the sacrifices she herself must make for this to occur. It is a rare person, indeed, who does not recognize her impeccable competency, her reliability in every detail, and her resourcefulness and flexibility.

She has been the energy behind monumental progress in the Department of Mathematics at Bryn Mawr College. It is the only department on that campus that has seen a dramatic growth in faculty over the last twelve years, a reflection on the increasing numbers of students who have been attracted to the mathematics program. She has introduced courses with more applied content,

integrated the computer into all the introductory courses, and developed a number of innovative, attractive middle- and upper-level courses for the majors. The impressive result of this has been that, in addition to the increasingly large enrollments in the introductory-level courses, the number of mathematics majors has increased from only three students when she arrived at Bryn Mawr in 1980 to twenty-three students who graduated in May 1995.

From 1992 to 1995, Professor Hughes with Sylvia Bozeman organized a summer research program with Spelman College in Atlanta, Georgia, in which undergraduates participate in research using the computer as an investigative tool. This NSF-sponsored project was the successor of a program first developed by her eight years ago at Bryn Mawr. Both programs were very successful, with many of the graduates choosing either careers in mathematics or to go on to graduate school, one receiving an NSF Graduate Fellowship, and three others receiving the Goldwater National Fellowship based on their research under the Spelman Program.

Perhaps the greatest attribute of Professor Hughes is her ability to share her enthusiasm for mathematics with others. Exceptional in her ability to communicate, she has a positive outlook and a fine sense of humor that combine to afford her an optimistic approach to her work in everyday life. The advanced students that she supervises in research pursuits excel in dealing with almost any mathematical problems that arise due to the fact that she has had the foresight to instill in each one of them a love of deductive reasoning. Her encouragement urges them to look beyond pure mathematics to such areas as statistics, operations research, and other scientific field for graduate work. Professor Hughes's interest in her students' careers and futures both as mathematicians and *as people* is unsurpassed.

Professor Hughes's talents as an extraordinarily successful teacher were recognized in 1991 with the Sears Roebuck Foundation Award for Teaching Excellence and Campus Leadership. The highest esteem in which she is held for her qualities as a teacher make her an outstanding candidate for the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. It is a great pleasure to be able to pay tribute to her in this way.

Biographical note:

Rhonda Hughes received her B.S., M.S., and Ph.D. from the University of Illinois at Chicago.

She is currently Helen Hermann Professor of Mathematics at Bryn Mawr College, where she has taught since 1980. She has been a Fellow of the Bunting Institute of Radcliffe and served as President of the Association for Women in Mathematics (1987–88). In addition to her research interests in functional analysis and operator theory, she enjoys learning new areas of mathematics along with her students, both undergraduate and graduate. For the past several years, she has collaborated with Professor Sylvia Bozeman of Spelman College on the Spelman-Bryn Mawr Summer Mathematics Program and on the new NSF-funded program Enhancing Diversity in Graduate Education. She enjoys aerobics and dancing; has two wonderful children, Sarah, 18, and Jeremy, 11; and is married to Michael Reed of Duke University.

Response from Professor Hughes:

I am pleased and honored to receive the ... Haimo Award ... particularly as it is named for a friend and long-time supporter of women mathematicians. I gratefully accept this award with thanks to the Selection Committee and to my colleague Mary Louise Cookson, who nominated me for the EPADEL Section Award.

JPBM Communications Award

The Joint Policy Board for Mathematics Communications Award was established in 1988 to reward and encourage journalists and other communicators who, on a sustained basis, bring accurate mathematical information to nonmathematical audiences. Any person is eligible as long as that person's work communicates primarily with nonmathematical audiences. The award recognizes a significant contribution or accumulated contributions to public understanding of mathematics. It is a lifetime award. This year, it is awarded to CONSTANCE REID.

Her citation reads:

According to Martin Gardner, "No one today has written about mathematics with more grace, knowledge, skill and clarity than Constance Reid." *From Zero to Infinity*, her first book on mathematics, was published in 1955 and is now in its fourth edition. Turning to geometry, she wrote *A Long Way from Euclid*, the second edition due for publication by the MAA in 1998.

In the late sixties, her sister, Julia Robinson, suggested she do a book of short biographies of mathematicians. Instead of short biographies, she

Two AWM past presidents honored:
Alice T. Schafer (Wellesley College),
Gung and Hu Award, and Rhonda J. Hughes
(Bryn Mawr College), Haimo Award

ended up doing several book-length biographies. *Hilbert*, the first of them, was published to great acclaim in 1970.

As a biographer she has always chosen to write about mathematicians whose contributions to mathematics have gone beyond their mathematical research. She followed *Hilbert* with the lives of Richard Courant, Jerzy Neyman, and E. T. Bell.

Of her Courant biography, Gerald L. Alexanderson, President of the Mathematical Association of America, says: "When *Courant* came out, I read it in one sitting, way into the night. It was as gripping for me as a mystery novel. A 'good' mystery novel. Her ability to grab the attention of both professional and nonprofessional audiences and get them involved in mathematics and mathematical culture is extraordinary."

In collaboration with Donald J. Albers and G. L. Alexanderson, she also edited *More Mathematical People* and an illustrated history of the International Mathematical Congresses.

Her most recent work, *Julia: A Life in Mathematics*, gives us a personal, warm, and inspirational portrait of her sister, Julia Robinson, one of the great mathematicians of the twentieth century. Carol Wood, former President of the Association for Women in Mathematics, calls the book a

Constance Reid, JPBM Communications Award and
Arthur Jaffe (Harvard University), AMS President

"small treasure. I can think of no better advice to
give a young mathematician than 'Be like Julia.' "

She has won many other awards for her writing,
including both the Pólya Prize and the Beckenbach Book Prize of the Mathematical Association
of America.

John Ewing, Executive Director of the American
Mathematical Society, reflecting on her work,
says: "She has a special talent for understanding
mathematicians and their culture. She understands
us. She is the Boswell for mathematics — a
biographer who has made the mathematical life
understandable both to the general public and to
mathematicians themselves. Her work has
enriched our entire profession."

Response from Reid:

I am very honored to receive the Communications
Award....

I am also pleased because it gives me an opportunity to acknowledge five individuals who by their
interest in communicating mathematics have
played a role in my career.

The first of these was Robert L. Crowell, who,
reading a housewife's article on perfect numbers
in *Scientific American*, invited her to do a "little
book on numbers" for his family publishing firm
— a kind of firm that unfortunately no longer
exists.

The second and the third were my sister and
brother-in-law, Julia and Raphael Robinson, who

were — like most mathematicians — eager to
communicate the joys of their subject. Their attitude was that if they could interest Julia's nonmathematical sister, Constance, in mathematics,
why couldn't she interest others? To a certain
extent they risked their professional reputations to
back me, first in writing *From Zero to Infinity* and
then in writing the life of the incomparable German mathematician David Hilbert — an audacious project.

The fourth is Klaus Peters, now the president of
AK Peters Ltd., but at that time the mathematics
editor of Springer-Verlag. It was Klaus who dared
to take a life of Hilbert written by a woman who
was not a mathematician, who was not a German,
who had not personally known Hilbert and publish it under the distinguished imprint of Springer.

The fifth is Don Albers, the Publications Director
of the Mathematical Association of America, who
is simply indefatigable in his efforts to urge others
to communicate the charm and excitement and
reality of mathematics. But, in addition, in my
own case he has permitted me to essentially
design my last two books, *The Search for E. T.
Bell* and *Julia, A Life in Mathematics* — for me,
another part of the communication process in
which I have not been able to participate in the
past.

So I accept with great pleasure the Communications Award of the Joint Policy Board, both for
myself and for these five who have played such
important roles in my own career — and, may I
also say, for everyone from research mathematicians to high school teachers — who make the
effort to communicate to others the beauty of the
subject that a great mathematician called "the
Queen of the Sciences" and an unknown poet
described as always "fresh as May."

Certificates of Meritorious Service

The Certificates of Meritorious Service are presented for service to the MAA at the national level
or for service to a Section of the Association. The
first such awards were made in 1984. At each January meeting of the Association, honorees from
roughly six sections are recognized.

The citation for LINDA R. SONS, Illinois Section,
reads:

It is with great pleasure that the Illinois Section of
the Mathematical Association of America recognizes Linda R. Sons as its 1998 recipient of the
Certificate of Meritorious Service. We gratefully

acknowledge Linda's devotion to the purposes of the MAA, her distinguished career as a mathematician and educator, and her exemplary and consistent contributions of service to the Illinois Section for more than 25 years.

Professor Sons began her official service in ISMAA serving on the Membership Committee in 1972. From that beginning she has served as Vice Chair of the Section (1982–84), Chair of the Section (1985–86; chair-elect 1984–85 and past chair 1986–87), Newsletter Editor (1989–92), and as a member of the Finance Committee (chair the last two years) from 1989 to the present. During her tenure as Chair of the Section, she effectively implemented the Board of Directors form of governance that had been developed by the Section. Recent improvements in financial planning for the Section have been the results of the excellent work of the Finance Committee. Linda has served as invited speaker at sectional meetings and was the 1998 recipient of the Section's Award for Distinguished College or University Teaching.

On the national level, in addition to representing the Illinois Section as Governor, Professor Sons has served as a member of the Committee on Sections (1987–90) (and as a member of many other committees and panels), as well as an invited panelist and speaker on quantitative literacy and instructor for a minicourse and moderator of the electronic conference on the same subject.

Response from Professor Sons:

I feel highly honored and specially blessed to be a recipient of this award. Through the MAA I have been privileged to make many friends and to work with many committed colleagues in the mathematics community for the cause of improved collegiate mathematics education; together we continue to make a difference for students. For the accomplishments this award recognizes, my thanks goes to the ISMAA Awards Committee, to the MAA members with whom I have worked, to my colleagues at NIU who have supported my work, and to my Lord who has enabled me to serve.

The citation for CHRISTINE SHANNON, Kentucky Section, reads:

The Kentucky Section is pleased to honor Christine Shannon with the Certificate of Meritorious Service. Shannon has been a member of MAA since 1971. She has been very active in sectional meetings. Her sectional activities include being a member of a panel on "The Role of Women in Mathematics," MAA student chapter advisor for eight years at Centre College, active involvement in local arrangements for the annual sectional meeting at Georgetown College in the 1980's, chair of the local arrangements committee for the annual sectional meeting at Centre College in 1993, and giving one of the two invited hour

NSF-AWM TRAVEL GRANTS FOR WOMEN

The objective of the NSF-AWM Travel Grants program is to enable women to attend research conferences in their fields, thereby providing a valuable opportunity to advance their research activities and their visibility in the research community. By having more women attend such meetings, we also increase the size of the pool from which speakers at subsequent meetings may be drawn and thus address the persistent problem of the absence of women speakers at some research conferences.

Travel Grants. These grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization. A maximum of $1000 for domestic travel and of $2000 for foreign travel will be applied. International travel must be on U.S. flag carriers whenever possible.

Eligibility. These travel funds are provided by the Division of Mathematical Sciences of NSF, and the research conference must be in an area supported by DMS. For example, this includes certain areas of statistics, but excludes most areas of mathematics education and history of mathematics. Applicants must be women holding a doctorate (or equivalent experience) and having a work address in the U.S. (or home address, in the case of unemployed mathematicians). Anyone who has been awarded an AWM-NSF travel grant in the past two years or who has other sources of external funding, including *any* NSF grant, is ineligible. Partial support from the applicant's institution or from a non-governmental agency does not, however, make the applicant ineligible.

Applications. There will be one more award period from the current grant, with applications due **May 1, 1998**. An applicant should send *five* copies of 1) a description of her current research and of how the proposed travel would benefit her research program, 2) her curriculum vitae, 3) a budget for the proposed travel, and 4) information about all other sources of travel funding available to the applicant along with *five* copies of her cover letter to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. For more information, contact AWM at 301-405-7892 or awm@math.umd.edu. Applications via email or fax will not be accepted.

lectures at the sectional meeting in 1991 at Northern Kentucky University. Professor Shannon was Governor of the Kentucky Section from June 1993 to June 1996. During this time, she served on a national task force on Board Effectiveness, writing the final draft and delivering the report at the 1996 Board of Governors' meeting. At this meeting, she also participated in the orientation for new governors. She served on the nominating committee for the Secretary of the MAA.

Professor Shannon received her B.S. in mathematics from Marygrove College in 1967 and her M.S. and Ph.D. in mathematics from Purdue University in 1969 and 1972, respectively. In 1984, she received an M.S. in computer science from the University of Kentucky. She was a DANA Fellow at Cornell University during the 1986–87 academic year. She currently is professor of mathematics and computer science at Centre College, where she holds the Margaret V. Haggin Professor of Science Chair and is the current chair of the Division of Science and Mathematics. The Kentucky Section acknowledges the dedication of Christine Shannon with this award.

Response from Professor Shannon:

I am very surprised and greatly honored to be named for this award. I have truly enjoyed all the work I have done with the MAA both at the local and the national level. In both situations it has been a pleasure to meet and work with many wonderful mathematicians who are committed to excellence both in teaching and scholarship. I look forward to many more years of association with all of you. Thank you very much.

PROJECT NEXT

Project NExT (New Experiences in Teaching), a program for new or recent Ph.D.'s in the mathematical sciences interested in improving the teaching and learning of undergraduate mathematics, explores "new jobs, new responsibilities, new ideas." Faculty who are just beginning or just completing their first year of full-time teaching at the college/university level are invited to apply to become Project NExT Fellows. The first event for the 1998–1999 Fellows will be a Workshop, July 13–15, 1998, just prior to the summer MAA Mathfest in Toronto, Canada (July 16–18). At this Workshop and at Project NExT sessions during the Mathfest, Fellows will explore and discuss a broad range of issues that are of special relevance to beginning faculty, including new approaches to teaching calculus and precalculus, alternative methods of teaching and assessing student learning, using technology in the classroom; perspectives from pedagogical research, writing grant proposals, and balancing teaching and research. The Fellows will also have an opportunity to interact with Fellows who began the program in previous years.

Invited speakers include Gerald Alexanderson, Santa Clara University, MAA President; Lloyd Douglas, National Science Foundation; Joseph Gallian, University of Minnesota-Duluth; Anita Solow, DePauw University; Steven Dunbar, University of Nebraska; Glenda Lappan, Michigan State University; and Morton Brown, University of Michigan.

Following the Workshop, Project NExT Fellows will attend the Mathfest, enjoying all the opportunities of that meeting, and will choose among special short courses designed for Fellows. During the following year, Project NExT Fellows will participate in a network that links Project NExT Fellows with one another and with distinguished teachers of mathematics; special events at the Joint Mathematics Meetings in San Antonio, TX, January 13–16, 1999; and a second workshop in the summer of 1999.

Approximately sixty Project NExT Fellows will be selected for the 1998–99 year. Funding for room and board at the Workshop in Toronto, Canada, and for the short courses at the 1998 Mathfest will be provided. Institutions employing the Fellows are expected to provide financial assistance for travel and attendance at the national meetings. Limited funds are available to assist those institutions that are unable to afford full or partial support.

To apply, send the application form and chair's letter of support by **March 27, 1998**, to the address below (if the deadline has passed, contact us to find out if space is still available.). Applicants will be notified whether they have been selected by May 15, 1998. For more information and application forms, see http://archives.math.utk.edu/projnext/ or contact one of the co-directors: James R. C. Leitzel, Department of Mathematics, University of New Hampshire, Kingsbury Hall, Durham, NH 03824 (603-862-4546; jrcl@christa.unh.edu) or T. Christine Stevens, Department of Mathematics and Computer Science, Saint Louis University, 221 North Grand Boulevard, Saint Louis, MO 63103 (314-977-2444; stevensc@slu.edu).

EDUCATION COLUMN

How do you evaluate the work of a faculty member? In particular, how do you evaluate work that falls outside of the category of mathematical research? This is the question Pamela Cook and Richard Phillips addressed in a pair of talks cosponsored by AWM in the MER session at the Baltimore meetings in January. Phillips, the past chair of mathematics at Michigan State University, examined the situation from a global perspective: what are the issues universally faced by mathematics departments in this country, and what are the questions that each of them should address? Cook, chair of the mathematics department at the University of Delaware, has held her position for six years and gave a good, clear look at the nitty-gritty from one local perspective. This produced a nice balance.

Since both speakers kindly supplied me with their overhead slides, the following is a blend of a report and a reproduction of the talks. I hope it can convey something of their liveliness and clarity.

Phillips began with a challenge: "How many of your departments have a clear and visible mission statement?" When this failed to produce a large show of hands, he commented that we probably all have an official one, and we can find it if we check the files somewhere between the exam schedule and the recycling code. And we all ought to have one, because the day when our mission was universal and unambiguous is long gone. In rough outline, however, the mission and responsibilities can be described: a) research, to which he gave the working definition of the creation of new knowledge (and not exclusively new mathematics); b) teaching of many categories of undergraduates, and of graduate students; c) governance, both at the college and university levels and in the department; d) advising; and e) outreach.

The faculty duties associated with each of these departmental responsibilities can also be described: a) writings and publications, but also seminars where faculty and graduate students bushwhack their way through unfamiliar material; b) all the variants on teaching now visible on campuses, from lectures with a textbook and set syllabus to group work to computer-based instruction; c) committees, more committees, course development and (the

by Column Editor Ginger Warfield, University of Washington, Seattle, WA 98195; warfield@math.washington.edu

phrase chosen by an erstwhile chair) administrative whims; d) meeting and consultation with students; and e) liaisons with industry, school systems and other departments, which can take many forms.

These then are faculty duties which should be evaluated. One thing is absolutely clear: All faculty should know what constitutes their duties and by what means they are being evaluated. But once past that absolute, the situation suddenly sprouts a huge collection of question marks: What does the evaluation of research encompass? Seminar activity? Guidance of Ph.D. students? Expository writing? Writing on pedagogical issues? Computer oriented work? If the answer to any of the above (or many other similar categories) is *no*, then under which category do they fall? What constitutes teaching, and which instruments of evaluation are being used? Is account being taken of the difficulty of the assignment? What yardsticks are being used to gauge performance levels on committees, advising, and outreach? There are hundreds of schemes for faculty evaluation which vary from department to department. The mode should reflect both the mission of the department and the work assignments of individual faculty.

Phillips finished with five actions which any faculty member ought to take, regardless of the mission and the mode of evaluation: Know what you are expected to do and in which manner it will be evaluated. Keep a log of time spent on projects, especially those which are traditionally less glamorous (writing common finals, for instance, or organizing flocks of teaching assistants). Indicate (to the department chair, the dean and/or the relevant committee) what your work entails, and ask to be evaluated accordingly. Know how the faculty evaluation process is tied to raises. Publicize your work. Document time spent and benefits derived from your efforts.

That's the general scene. How does it play out at one particular university? Pam Cook gave us a look at that. To start, she set the context: the University of Delaware has 14,500 undergraduate students and 2,250 graduate students. The Department of Mathematics has 37 tenured or tenure-track faculty, three full-time non-tenure-track faculty, eight teaching professionals and 40 graduate students. Its standard workload is 50% teaching, 40% research and 10% service (note that this statement implies that they have answered some of the questions Phillips was advocating). There is a peer evaluation system in effect for promotion and tenure decisions, and also

for the review of post-tenure cases that is required once every five to seven years. The chair also does an annual evaluation, which is tied to raises.

Activities are divided into the standard three categories: research, teaching and service, with the last containing all three of Phillips' last categories. Each is looked at for purposes of evaluation, but teaching is much more difficult to evaluate. Why should this be? Cook gave an elegant analysis of the factors involved. For research there are natural external sources of judgment. Whether a refereed paper is accepted by a recognized journal is not an issue decided by local colleagues. Likewise grants and invitations to speak at national or international meetings are evidence of the opinion of someone far from the local campus. When promotion and tenure cases come up, it is reasonable to get outside letters.

Teaching, on the other hand, must necessarily be judged by people right in the vicinity. One option is student evaluations, and we all know the hazards there. Another is peer teaching evaluation, for which the major hazard is collegiality. There are other aspects of teaching — developing software, notes, manuals and texts; being a mentor to research students at either the undergraduate or the graduate level; developing new courses; and coordinating activities — but none is easy to evaluate. The only external sources of information are invitations to talk about teaching, reception of grants and publication of textbooks.

A further difference in the difficulty of evaluation comes from the width of the spectrum of activity. In research, the spectrum is very wide. On a scale of 1 to 9, it has plenty of 1's and of 8's and 9's. The teaching spectrum, on the other hand, on the same scale by and large clocks in with large numbers of 6's and 7's. Everyone starts at competent (meets classes, follows the syllabus, meets deadlines), or if they don't they disappear swiftly enough not to be part of the general evaluation pool.

And on top of that, an agreement on teaching goals is much needed: are you a "better" teacher if you get rid of fully 40% of the class and then accomplish great things with the rest, or if you try to reach a higher percentage of the class, thereby reducing the amount of progress possible?

For those considering the issues, Cook recommended *Collaborative Peer Review: The Role of Faculty in Improving College Teaching*, an ASHE-ERIC Higher Ed Report by Kieg and Wagonner. The report makes it clear that the major issues are time, academic freedom, subjectivity, faculty values, and institutional incentives and rewards. Also, unless faculty members are willing to leave the evaluation of teaching to students, who have only a limited view, or to administrators, who often don't have the time or necessary background, they must be willing to invest their time and efforts in peer evaluation of teaching.

On the service front, there is a similar array of difficulties. One is the existence of various new forms of service (secondary education liaison, industrial liaison, systems management, etc.). Another is the question of how to judge contributions to committees (for instance, how do you distinguish between the faculty member who spends hours conscientiously preparing committee work and the one who simply turns up for the meetings, and reads a newspaper at that?) And should more service be expected at certain professorial ranks? For this category, Cook recommends a service portfolio. And, while we're at it, why not a teaching portfolio, too?

This ties in neatly to the final admonition in Phillips' talk: Whatever it is you are doing, document it!

FULBRIGHT AWARDS

Opportunities for lecturing or advanced research in over 125 countries are available to college and university faculty and professionals outside academe. U.S. citizenship and the Ph.D. or comparable professional qualifications are required. For lecturing awards, university or college teaching experience is expected. Foreign language skills are needed for some countries, but most lecturing assignments are in English.

Deadlines are **August 1, 1998** for lecturing and research grants in academic year 1999–2000; **May 1, 1998** for distinguished Fulbright chairs in Western Europe and Canada; and **November 1, 1998** for international education and academic administrator seminars. Contact: USIA Fulbright Senior Scholar Program, Council for International Exchange of Scholars, 3007 Tilden Street, NW, Suite 5L, Box GNEWS, Washington, DC 20008; 202-686-7877; http://www.cies.org; apprequest@cies.iie.org (requests for application materials only).

BOOK REVIEW

Emily Toth, **Ms. Mentor's Impeccable Advice for Women in Academia**, University of Pennsylvania Press, Philadelphia 1997. xiv+222. ISBN 0-8122-1566-4 (paper), $15.95.

Reviewed by: Marge Murray, Book Review Editor, Department of Mathematics, Virginia Tech, Blacksburg VA 24061-0123; murray@calvin.math.vt.edu

Ms. Mentor is academia's answer to Miss Manners — a wise, all-knowing fount of advice to women at (nearly) every stage of their academic lives. Ms. Mentor is, in real life, Emily Toth, professor of English and women's studies at Louisiana State University. In 1992, Emily Toth donned the persona of Ms. Mentor and began writing an advice column in the journal of the Women's Caucus for the Modern Languages, *Concerns*. In the years that followed, it became clear that her incisive, witty commentaries on the academic life had an appeal far beyond departments of English and foreign languages. In the interest of reaching women in all corners of academe, the present book was born.

The book is an anthology of letters to Ms. Mentor, organized chronologically, covering the stages of the academic life from graduate school through tenure and beyond. The book's greatest appeal is for those who have not yet achieved tenure; eight of the eleven chapters are devoted to pre-tenure issues. As Ms. Mentor writes in the preface, "Only tenured professors have the power in academia — and so women need to get tenure. Ms. Mentor can help them, and will."

While the tone is amusing and pithy — and occasionally hilarious — throughout, this book provides valuable insight into the realities of life for women in higher education in the 1990's. The advice is informed by equal doses of feminist idealism and real-world pragmatism. The topics addressed range from writing and completing a doctoral dissertation, to appropriate and inappropriate dress, to surviving and enjoying an academic conference, to getting along with colleagues and students, to strategies for publication. While most of the specific examples clearly come from the humanities and social sciences, there are occasional queries about scientific fields, and most of the situations described have natural analogues in other disciplines.

One particularly helpful piece of advice to the untenured is the suggestion that they keep a Tenure Diary. The Tenure Diary, which every wise woman academic should begin to keep during the first year of her first tenure-track job, is the place for:

> noting and filing every piece of paper about her work and worth ... copies of her contract and contractual agreements; student evaluations; peer reports from colleagues who observed her teaching; and favorable reactions to her publications or research plans. (p. 60)

Moreover, the Tenure Diary is the place to record short- and long-term goals in research, teaching and service, as well as troubling incidents involving colleagues, students, and institutional violations of official policy and procedure. The Tenure Diary is intended to provide a complete record of the pre-tenure experience, and as such it probably should be called the Tenure Scrapbook, the Tenure File, the Tenure Box, or even the Tenure Trunk. Whatever its size or shape, the Tenure Diary seems like a prudent idea.

The advice of Ms. Mentor, perhaps more frequently than that of Miss Manners, is occasionally open to question. For example, while her recommendations on dress for job interviews seem appropriately conservative, her (numerous) discussions of dress for teaching seem open to debate and discussion. Mathematics and science departments often have less rigorous standards of appropriate dress than the humanities and social science departments from which many of Ms. Mentor's examples are drawn. Moreover, Ms. Mentor is categorically opposed to one of my favorite activities, bicycling to work. Needless to say, Ms. Mentor's advice must be adapted to the conditions which prevail at your particular institution. If nothing else, Ms. Mentor's commentaries underscore the importance of having a sense of where you are. Joining an academic department is an anthropological adventure, and the wise new hire will make it her business to understand the local culture and mores if she hopes to be kept on as a permanent member.

Regrettably, Ms. Mentor devotes relatively little space to what the woman academic might do with tenure once she's earned it. But perhaps that's the material for another book. One of the added bonuses of this volume is its concluding seven-page bibliography which surveys the terrain of scholarly and non-scholarly writing on the subject of women in academia and in the workplace more generally.

Many of the books and articles listed there are eminently worth a look. On balance, *Ms. Mentor's Impeccable Advice for Women in Academia* is a book which you will enjoy reading (aloud, on occasion) again and again.

Note

Common Threads, the book which Claudia Zaslavsky reviewed in the January-February *Newsletter*, will be distributed in the United States by Stylus Publishing, Stylus Publishing, 22883 Quicksilver Drive, Sterling VA 20166-2012, phone: 703-661-1500; fax: 703-661-1501; email: styluspub@aol.com.

A CELEBRATION OF WOMEN

"A Celebration of Women in the Mathematical, Statistical And Computer Sciences" is a conference to be held May 22–23, 1998, University of Waterloo. The primary goals of the conference are to promote scientific interaction between women from across Canada and to allow for discussion of the common problems faced by women mathematical scientists. The program comprises oral and poster technical sessions in which participants may present their work, panel discussions about issues facing women in the mathematical sciences, and plenary talks to be given by Leah Edelstein-Keshet (Mathematics, University of British Columbia), Maria Klawe (Computer Science, University of British Columbia), and Nancy Reid (Statistics, University of Toronto).

Women faculty, postdocs, and senior Ph.D. graduate students are invited to give a technical talk or display a poster. Intentions to participate in the technical sessions must be received by **March 15**; final titles and abstracts must be received by **March 31**. Intentions to participate in the poster sessions must be received by **April 30**. Submissions will not be reviewed; the conference will be an open forum for participants to publicize their work and to discover research connections.

For more information, contact: CWIM, Faculty of Mathematics, University of Waterloo, Waterloo, ON N2L 3G1; email: cwim@math.uwaterloo.ca; web: http://www.math.uwaterloo.ca/~cwim.

MYRA SADKER DAY

The first Myra Sadker Day, March 5, 1998, is intended to rally us to promote gender equity. The day honors Dr. Myra Pollack Sadker (1943–95), who pioneered much of the research documenting gender bias in America's schools. From grade school through graduate school, from inner city to rural towns, she found not only blatant gender discrimination in textbooks and sports funding, but also subtle patterns of inequities that shaped teachers' methods of instruction. She found that boys dominated the classroom, receiving more frequent, active, direct and precise instruction. Sitting in the same classroom, she found that girls, regardless of racial or ethnic or class background, were being consistently, if unintentionally, shortchanged.

Such bias is not confined to schools. From board rooms to social and recreational settings, females are the object of biased words and behaviors and are frequently silenced or shortchanged. Males also pay a price. Sexism often blinds boys to a real understanding of their future roles as husbands and fathers, adding to high divorce and child abandonment rates later in life. High teenage pregnancy rates and the culture of violence surrounding males are other costs of gender stereotyping. Sexism is a two-edged sword which injures girls but harms boys as well.

Through her writings and lectures, Myra Sadker alerted Americans to the academic, physical, psychological and career costs of sexism. In 1994, she coauthored *Failing at Fairness: How America's Schools Cheat Girls*. She wrote scores of articles on how to raise and teach children free from the debilitating impact of sexism.

For more information, contact: Myra Sadker Advocates, David Sadker, Suite 300, 1401 Rockville Pike, Rockville, MD 20852, phone: (301) 738-7113; fax: (301) 424-0474; email DSadker@aol.com.

MAW 1998

Don't forget Mathematics Awareness Week 1998, **April 26** to **May 2!** The theme this year is "Mathematics and Imaging." For lots of ideas, see http://forum.swarthmore.edu/maw/.

HUDSON RIVER CONFERENCE

The fifth annual Hudson River Undergraduate Mathematics Conference will be held at Union College in Schenectady, New York on Saturday, April 18, 1998. At this conference, students and faculty will participate as equals giving talks aimed at either a general undergraduate audience or at undergraduate mathematics majors. We are especially pleased to announce that the keynote speaker will be Joseph Gallian. An exciting new feature for 1998 will be a *math pun contest*, complete with prizes (leave your good taste at home). Registration and breakfast will begin at 8:45 A.M. and the talks will end around 5 P.M. All are welcome to attend.

We gratefully acknowledge financial support for the 1998 conference from the New York Cluster of the Pew Science Program in Undergraduate Education. In previous years, the following organizations have contributed financial support: New England Consortium for Undergraduate Science Education (NECUSE), Howard Hughes Medical Institute (grant to Williams College), Alfred P. Sloan Foundation, the National Science Foundation, the General Electric Fund, the AMS, ASA, AWM, INFORMS, MAA, SIAM, and the Peace Corps.

For more information about the 1998 conference, please visit the HRUMC homepage at http://www.skidmore.edu/academics/mcs/hrumc.htm or contact a member of the steering committee: Graham Bryce '98, Union College (bryceg@union.edu), Laura Dalzell '98, Union College (dalzelll@union.edu), Joan Hart, Union College (hartj2@union.edu), Emelie Kenney, Siena College (kenney@siena.edu), Susan Loepp, Williams College (sloepp@williams.edu), Scott Vandenberg, Siena College (vandenberg@siena.edu), David Vella, Skidmore College (dvella@scott.skidmore.edu), or William Zwicker, Union College (zwickerw@union.edu).

NSF INITIATIVE

The recent growth in computer power and connectivity has changed the face of science and engineering. It permits us to study vastly more complex systems than was hitherto possible and provides a foundation for rapid advances in understanding of learning and intelligent behavior. The future promises continued acceleration of these changes. The challenge today is to build upon this revolution; the NSF Initiative on Knowledge and Distributed Intelligence (KDI) is a Foundation-wide effort designed to catalyze the next step. In FY 1998, KDI will have three foci: Knowledge Networking (KN), Learning and Intelligent Systems (LIS), and New Computational Challenges (NCC). For more information and contacts, see http://www.nsf.gov/kdi. Deadlines are **April 1, 1998** for letter of intent and **May 8, 1998** for full proposals. The next proposal deadline will be February 1, 1999.

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings every January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense.

While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secure her reputation as a consummate educator. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. *Five* complete copies of nomination materials for this award should be sent to The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461 and should be received by **October 1, 1998**. For more information, phone (301) 405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

SONIA KOVALEVSKY HIGH SCHOOL DAYS

Norfolk State University

The Norfolk State University administration and mathematics faculty thank AWM for another successful Sonia Kovalevsky High School Day. On Saturday, November 15, 1997, 200 high school women and 25 high school teachers participated in the activities. The participants represented one Catholic and eight public high schools located in Norfolk, Virginia Beach, Chesapeake, and Portsmouth. The participants also included one home-schooled tenth grader, the daughter of Dr. Ann Cox of the National Security Agency. (Dr. Cox was a panelist for the luncheon program.)

The luncheon panelists, an African-American electronic engineer (who graduated from Norfolk State), an Asian-American laboratory technologist, and the European-American mathematician from NSA, were personable, creditable, and inspirational young women who told how mathematics was applicable to their respective endeavors.

Every student and teacher received a Certificate of Participation, while those students on problem solving teams which placed first, second, or third also receiving Outstanding Achievement Certificates. Dr. Poiani, the keynote speaker, brought a Saint Peter's College ballpoint pen for each participant and an intriguing Square Me Puzzle for those who received the Outstanding Achievement Certificates. Catherine Bell, a Texas Instrument representative, sent a TI-83 calculator to be presented to the winner of a lottery drawing among the outstanding achievers who did not own a graphing calculator.

The questionnaire in the information packet sent by AWM was used to evaluate the program. Race was optional, and several chose not to respond. Based on 167 responses (and supported by my observation) 47% of the participants were white, 40% black, 8% Asian, and 5% Hispanic. Only three students indicated that someone other than her teacher told her about the program. Most were quite pleased with the workshops. Some thought the level of problems was difficult. Seven were surprised to learn that a lot of black people like mathematics. Most considered the luncheon panel as the most enjoyable activity. Many commented that they would like to participate in another Math Day soon.

North Dakota State University

The North Dakota State Sonia Kovalevsky High School Day, sponsored by AWM and the NDSU College of Science and Mathematics, was held on Saturday, November 1, 1997. Twenty-three students and teachers from the area participated in the event.

Following a continental breakfast everyone was welcomed by Dean Fischer of the NDSU College of Science and Mathematics. Each participant received a folder, notepad, pen and program for the day. Dr. Joan Hutchinson presented a talk on map coloring. Joan passed out a variety of maps for the students to color and ultimately explained the four-color theorem to the participants. Students and teachers alike enthusiastically enjoyed the talk. Before Dr. Hutchinson completed her presentation, one of the students was able to determine that four colors were needed to color the map of the continental U.S. and that the fourth color was only needed twice!

After the keynote address the students participated in two workshops: "Inverse problems" and "Reading barcodes." During these morning workshops the teachers participated in a discussion about engaging students in mathematics. Barbara Deuink, visiting from the NSA, presented the workshop on reading barcodes and included a discussion period about career opportunities in mathematics. The other workshop and the afternoon workshops were presented by NDSU professors.

Participants were treated to a sandwich bar lunch in the Student Union where students, teachers, visitors and faculty interacted, discussing, among other things, career opportunities in mathematics.

After lunch both teachers and students took part in three more workshops: "The cubic equation and the associated Italian scandal," "Tiling the plane"

Eleanor G.D. Jones

Kenneth Johnson

North Dakota State SK Day: End of day demonstration for the TV cameras of some things they've learned

and "Cryptology." At the end of a long day for all, each of the participants received a copy of the MAA book *She Does Math!* One of the local television stations did a news report on the event.

From the organizers' point of view, we were extremely happy with the day. Participation was less than we had hoped for, having sent invitations to over 300 high schools, but there were extenuating circumstances. Our event conflicted with the SAT exam (although few North Dakota students take it, the best students are the ones who do so). There was also a large girls volleyball tournament that weekend which prevented several girls from attending. Finally, six girls who registered did not attend (possibly due to forecasted inclement weather). With the grants awarded in March, there is little time for preparation of a spring semester event, but in the fall the event must be scheduled before the risk of cancellation due to the weather becomes significant. Thus early November was the best compromise for scheduling our event. The teachers agreed with us that spring would be a better time for the event as they would have had more time to get to know their students, weather would not be an issue, and sports would be less of a problem.

In any case, judging by the responses we have received so far to the questionnaire we mailed, both students and teachers greatly enjoyed the event. We asked participants for comments on each of the workshops and whether or not our event had changed their perception of mathematics. Two of our favorite responses so far to the questionnaire are: "I always figured there weren't any careers really involving math — this changed my mind" and "I'm interested in pursuing a career in mathematics now." In the future, we plan to track the students progress through school to ascertain how may of them pursue degrees in mathematics or related subjects.

University of Alaska Fairbanks

The first University of Alaska Sonia Kovalevsky High School Mathematics Day was held October 25, 1997, two weeks after a visit from Sylvia Wiegand, AWM President. Sylvia was kind enough to promote the event when she met with area high school students. In addition, each high school mathematics teacher in the area received an information packet about the UAF Department of Mathematical Sciences and upcoming events such as the UAF SK Day at a reception in Sylvia's honor.

The organization of the event went smoothly. There were 25 volunteers who did all they could to

Kara L. Nance

help make the event a success. The most difficult task was getting the high school teachers to sign the girls up and turn in the forms on time. When the deadline came, we had not received *any* registration forms. Hurried calls to the high schools confirmed that there were some girls signed up, but that it was going slowly. Within a week, we had 70+ registration forms, many of which arrived the day before the event. This made planning difficult and hectic.

Unfortunately the Alaskan weather was uncooperative, and we received our first *major* snow of the year right before the event. We also made the unfortunate error of scheduling the event the same day as the ACT test. As a result, only 30 girls were able to attend … but they were 30 *very* enthusiastic girls. We broke the day up by alternating small and large group presentations. We had three small group activities where the girls broke into groups of about five, each with two team leaders from our set of wonderful volunteers. These volunteers had met several times during the weeks prior to the event, so each was aware of the underlying mathematics of the projects and was prepared with backup projects if time permitted.

The large group presentations were varied. As an opening activity, I spent a few minutes deriving a "proof" for im_0a^2 (I am not a square!). This was our theme formula and was on the T-shirts. It was amusing to watch as the girls realized what we were deriving! Other large groups presentations included the introduction of the area professional women in related fields. (Most popular was a pediatrician who had graduated from a local high school.) Other presentations included discussions about the history of women in mathematics, opportunities for women today, and discussions about perceptions.

Before leaving for the day, the girls were asked to fill out survey forms. On one form, the name was optional, and on the other we asked for their names. Most felt comfortable enough to put their name on both sheets. They were overwhelmingly supportive and enthusiastic.

Because we had planned for higher attendance, we repeated the event a few weeks later with the leftover supplies (and new food!). The turnout was similar. This group wanted more advanced mathematics, so we did more large group presentations on fractals, investigating both the mathematics and computer science aspects of them. Some girls found the presentation overwhelming and others wanted even more detail, but they all agreed that the fractals we generated were beautiful.

One of the most popular "gimmicks" was the emergency math study kit. Each kit was a brightly colored paper bag with a seal to be "broken only in an extreme mathematics study situation." Each kit contained cheese and crackers, candy bars, and Jolt cola. There were also kits that had Mountain Dew rather than Jolt cola for minor quizzes and homework. Those kits were used throughout the day for various demonstrations and activities, and then each girl was given one to take home for "emergencies." We also had T-shirts and mousepads with our theme formula and the DMS logo, as well as puzzle games.

We (the volunteers) learned a lot about what works and doesn't work with high school girls, particularly with respect to advertising an event. Word of mouth works … teacher recruitment doesn't! The biggest difficulty we faced was the mathematical diversity of the girls who attended. Had we known in advance (as desired) the number of girls coming and their mathematical backgrounds, we could have accommodated each group. We came up with the best range of events we could; the students' math levels ranged from pre-algebra to calculus. All were welcome, and all want to come back next year.

This summary cannot convey the enthusiasm of the girls and the bonding that took place. The girls volunteered to participate in the UAF Mathematics Awareness Week Activities: If they weren't comfortable as competitors, they volunteered to judge the elementary school poster competition. It was a fun event and will be bigger and better next year if our funding is renewed. The best reward for us was all the smiling faces!

Valdosta State University

The second Sonia Kovalevsky High School Mathematics Day (SK Day) at Valdosta State University (VSU) in Valdosta, Georgia was held on Thursday, October 16, 1997, the first having been held on May 16, 1997. It was supported by a grant from AWM and the NSA. Eighteen students and four teachers from four local schools attended. The students were sophomores, juniors, and seniors. Many had never previously attended a math day of any kind. VSU invited eleven schools to both events; all but three of the schools participated in at least one of the two days.

Kathy Simons and Denise Taunton
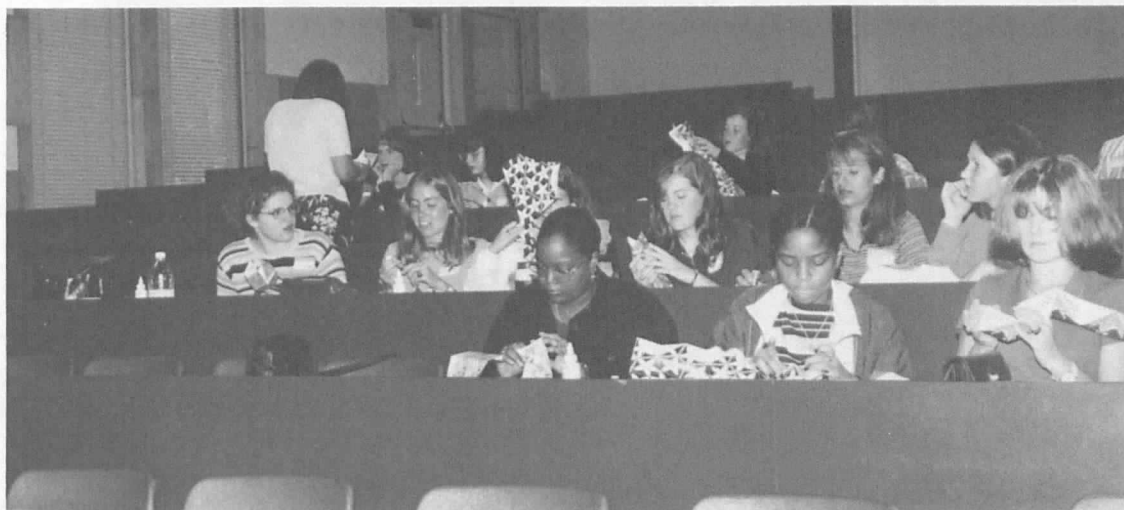
Valdosta State: Making Escher kaleidocycles at the tesselation workshop

The participants had a full day of activities. There were three workshops, on tesselations, Fibonacci numbers, and origami. The tesselation workshop was led by Dr. Mary Kay Corbitt, the Assistant Dean of the College of Arts and Sciences at VSU; the participants built Escher kaleidocycles and platonic solids of tesselations. The Fibonacci workshop was led by Dr. Denise Taunton, Assistant Professor of Mathematics, VSU. The students learned how Fibonacci sequences appear in such things as sunflowers, pineapples, and the genetic trees of bees and created some Fibonacci checkerboard art. The origami workshop was led by Mr. Wing Li, Assistant Professor of Development Studies, VSU. The students worked in groups to create three-dimensional models by folding paper. The evaluations completed by the participants clearly showed that the workshops were a success. They enjoyed the hands-on activities and the interaction among the participants. Two speakers came to talk with the students. Dr. Teresa Doscher, a local veterinarian, talked about medical fields and professional schools; she showed the girls a short video and entertained questions. The second speaker was Ms. Carol Malloy from the NSA; she spoke on career opportunities there. Also included in the activities was a mathematics competition, consisting of twenty-five multiple-choice questions.

Juice, donuts, and muffins were available when the participants arrived. During this time, the participants registered and mingled. They also had a chance to look at several displays, including posters of tesselations and Fibonacci art, brochures on mathematics and career opportunities, models of Escher kaleidocycles, and a scrapbook from VSU's first SK Day. Later a buffet lunch was served; during lunch, the speakers and participants got a chance to interact.

Door prizes were given to both students and teachers at the opening and closing of the day's events. At the closing, the winners of the mathematics competition were announced. The first prize was a TI-92 calculator; the second and third prizes were gift certificates to Books-A-Million.

Dr. Ashok Kumar, Head of the Department of Mathematics and Computer Science, as well as several faculty members of the Department, attended the day. Dr. Corbitt, one of the workshop presenters, gave the opening remarks, which included a biography of Sonia Kovalevsky. There were also several student volunteers from VSU. The local newspaper and television station provided coverage of the event. The students were very excited about getting to be on the local television news.

Both days were a success. The participants filled out questionnaires at the end of both days. The responses were very positive. They appreciated the opportunity to be included in such an event. The favorite events of both days were clearly the workshops. Both teachers and students expressed an

interest in attending another SK day. These two days would not have been possible without the grant. We truly appreciate your giving us the opportunity to show these young girls how exciting and rewarding mathematics can be.
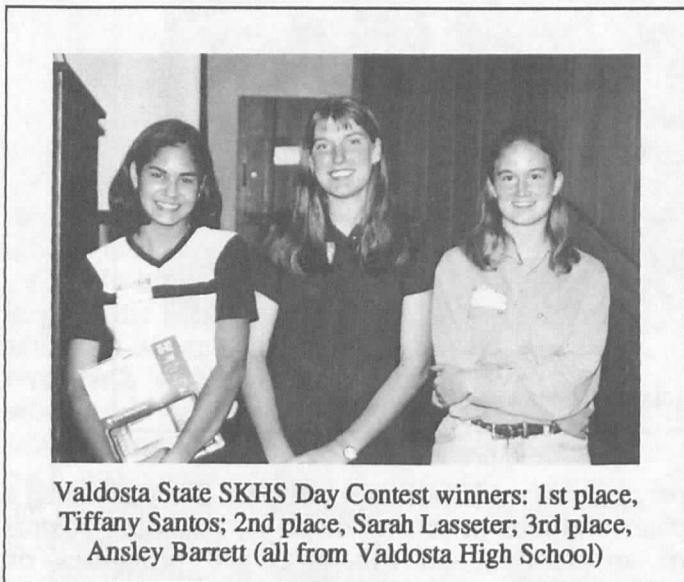
Valdosta State SKHS Day Contest winners: 1st place, Tiffany Santos; 2nd place, Sarah Lasseter; 3rd place, Ansley Barrett (all from Valdosta High School)

MORGAN PRIZE AWARDED

The 1997 AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student will be awarded to Jade P. Vinson, Washington University, St. Louis (now in graduate school at Princeton) at the SIAM meeting this summer in Toronto. Vinson's work includes fractals, sphere packing and other areas of computational convexity theory, and Bloch and Landau constants for coverings of disks by holomorphic functions. Honorable mention will go to Vikaas S. Sohal, Harvard University, now at Cambridge University, England. Sohal's work in applied mathematics involves the analysis of the dynamics of neural systems.

The prize is awarded based on undergraduate research papers, whether or not published. Nominations are due each year by **June 30** and may be made by the student or by a nominator. For more information, see http://www.ams.org or http://www. maa.org.

NSF-CBMS REGIONAL RESEARCH CONFERENCES

Contingent upon funding, six NSF-CBMS regional research conferences will be held this summer. These four will bring to 267 the total number of such conferences held in the thirty year history of this NSF-CBMS Regional Research Conference Series.

Support for about thirty participants is provided for each conference; the organizer invites both established researchers and interested newcomers, including postdoctoral fellows and graduate students, to attend. This summer's topics are: Wavelet Analysis as a Tool for Computational and Harmonic Analysis; Blocks of Finite Reductive Groups, Deligne-Lustig Varieties, and Complex Reflection Groups; Lecture on Division Algebras; and Ergodic Theory, Groups, and Geometry.

Proposals for 1999 conferences are requested; the closing date is **April 6, 1998**. Each five-day conference features a distinguished lecturer who delivers ten lectures on a topic of important current research in one sharply focused area of the mathematical sciences. The lecturer subsequently prepares an expository monograph based upon these lectures, which is normally published as a part of a regional conference series.

Information about 1998 conferences may be obtained by contacting the conference organizers (see the AMS *Notices* or http://www.ams.org for more information). Information about the series and guidelines for submitting proposals for future conferences may be obtained from: CBMS, 1529 Eighteenth Street, NW, Washington, DC 20036; 202-293-1170; http://www.maa.org/cbms/cbms.html.

IMA WORKSHOP

The Institute for Mathematics and Its Applications (IMA) is holding a ten-day Workshop on Mathematical Modeling in Industry, July 22–31, 1998 for graduate students and qualified advanced undergraduates. The workshop is meant to provide students with first-hand experience in industrial research. For more info, see the ad on page 36.

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND POSTDOCTORAL MATHEMATICIANS

supported by the Office of Naval Research, the National Science Foundation,
and the Association for Women in Mathematics

Over the past ten years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s (referred to as "postdocs" below) in conjunction with major mathematics meetings.

WHEN: The next AWM Workshop will be held in conjunction with the annual Joint Mathematics Meetings in San Antonio, Texas, January 13-16, 1999 *(pending renewal of funds)*. The exact date of the workshop is not known at this point but will be sometime during the week of the meeting.

WORKSHOP: Twenty women will be selected in advance of the workshop to present their work: the selected graduate students will present posters and the postdocs will give twenty-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. The workshop will also include a panel discussion on issues of career development and a luncheon. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and postdocs who do not receive funding to obtain some institutional support to attend the workshop and the associated meetings.

MENTORS: We also seek volunteers to lead discussion groups and to act as mentors for workshop participants. If you are interested in volunteering, please contact the AWM office.

APPLICATIONS: To be eligible for funding, *graduate students* should have made substantial progress toward their theses. The word "postdoc" refers to any mathematician who has received her Ph.D. within approximately the last five years, whether or not she currently holds a postdoctoral or other academic position. All non-U.S. citizen applicants must have a current U.S. address. All applications should include a curriculum vita, a concise description of research (two to three pages), and a title for the proposed talk/poster. All applications should also include at least one letter of recommendation; in particular, a graduate student should include a letter of recommendation from her thesis advisor. Nominations by other mathematicians (along with the information described above) are also welcome.

Send **five** complete copies of the application materials (including the cover letter) to:

> Workshop Selection Committee
> Association for Women in Mathematics
> 4114 Computer & Space Sciences Building
> University of Maryland
> College Park, Maryland 20742-2461
>
> Phone: 301-405-7892
> Email: awm@math.umd.edu
>
> (Applications via email or fax will not be accepted.)

APPLICATION DEADLINE: Applications must be received by **September 1, 1998**

AWM IN BALTIMORE

AWM Workshop Panel: Catherine Roberts, Northern Arizona University (moderator);
Jill Dietz, St. Olaf College; Rachel Kuske, University of Minnesota; Patty Anthony Ashford,
National Security Agency; Ruth Gornet, Texas Tech University and University of Kentucky

Sue Geller, Texas A&M University; Chawne M. Kimber, University of Florida; and
Carolyn S. Gordon, Dartmouth College (AWM Workshop Organizer) next to Kimber's poster

Rhonda J. Hughes (Bryn Mawr College), Schafer Prize Committee Chair;
Jessica A. Shepherd (University of Utah), winner; Sharon Ann Lozana (University of Texas), winner;
Patience Moreno (Carnegie-Mellon University), honorable mention; Sylvia Wiegand
(University of Nebraska), AWM President. Jie Li (University of Michigan), runner-up and
Vera Peshchansky (Brooklyn Polytechnic), honorable mention, were unable to attend.

Deborah Hughes Hallett (Harvard University and University of Arizona), Hay Award winner;
Martha J. Siegel (Towson University), MAA Secretary; Cora Sadosky (Howard University), former
AWM president; Anne Leggett (Loyola University Chicago), AWM Newsletter Editor; Sylvia Wiegand
(University of Nebraska), AWM President; Jessica A. Shepherd (University of Utah), Schafer Prize winner;
Alice T. Schafer (Wellesley College), former AWM President; Cathleen Morawetz (Courant Institute),
AMS past president; Sharon Ann Lozano (University of Texas), Schafer Prize winner

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BARUCH COLLEGE/CUNY - DEPARTMENT OF MATHEMATICS - Faculty Position - Two tenure-track Assistant Professor positions in the Department of Mathematics, beginning September 1998. Duties include research, teaching, and service. Highest priority will be given to applicants with expertise in areas of mathematics related to business, including partial differential equations, mathematical probability and statistics, numerical methods, and operations research. Ideally, candidates should have some experience applying their education and research to financial mathematics, possibly in financial institutions. A Ph.D. is required for an appointment as an Assistant Professor. Salary range: $40,440-$52,213, depending on qualifications and experience. Baruch College is a senior college of The City University of New York and is located in the historic Gramercy Park area of Manhattan. The College has an enrollment of approximately 15,000 undergraduate and graduate students in its three schools. Send curriculum vitae, the names of three references, and copies of publications by April 1, 1998, to: **Warren B. Gordon, Chair, Mathematics Department, Baruch College/CUNY, 17 Lexington Avenue, Box G-0930, New York, NY 10010.** An AA/EO/IRCA/ADA employer.

BOWDOIN COLLEGE - DEPARTMENT OF MATHEMATICS - One-year sabbatical replacement at instructor, asst. prof. level starting Fall 1998. Applications from all fields welcome. Ph.D. preferred; strong record of successful teaching expected. Load: two courses per semester. Review starts 3/15/98; applications accepted until position filled. Send completed *AMS cover sheet*, resume, email address, 3 letters of recommendation to: **Chair, Mathematics, Bowdoin College, 8600 College Station, Brunswick, ME 04011-8486.** Bowdoin College is committed to equal opportunity through affirmative action. Women and minorities are encouraged to apply.

FRANKLIN & MARSHALL COLLEGE - DEPARTMENT OF MATHEMATICS - Visiting Assistant Professor of Mathematics - Undergraduate mathematics department has a two-year visiting position starting Fall 1998. Ph.D. in mathematics or mathematics education expected by Sept. 1998. We encourage applications from candidates who share scholarly interests with members of the department. Teaching: 5 courses per year. Send resume; graduate and undergraduate transcripts; four letters of recommendation, two of which address teaching ability; list of courses taught, including applicant's responsibilities; and *AMS Application Cover Sheet* to: **Robert Gethner, Chair, Department of Mathematics, Franklin & Marshall College, Lancaster, PA 17604-3003.** Application must be received by March 10, 1998 in order to ensure consideration. Franklin & Marshall is committed to cultural pluralism, and strongly encourages applications from minorities and women. Additional information about the Mathematics Department may be found at our WWW site at http://www.fandm.edu/Departments/Mathematics/Mathematics.html/ . EOE/AA.

LOYOLA UNIVERSITY CHICAGO - DEPARTMENT OF MATHEMATICAL AND COMPUTER SCIENCES - The Department of Mathematical and Computer Sciences at Loyola University Chicago has five tenure track positions, two in mathematics, two in computer science, and one in statistics, beginning August 1998. Requirements are the Ph.D. in an appropriate field and a commitment to excellence in both research and teaching. The department seeks applications from outstanding candidates in all areas of these fields. The department awards B.S. degrees in mathematics, computer science, and statistics and M. S. degrees in mathematics and computer science. The department has 34 full-time faculty, over 260 undergraduate majors, and over 165 graduate students. Interviews have begun and will continue until all positions are filled. Send detailed C.V. and three letters of recommendation to: **the Chair of the appropriate Hiring Committee [either Mathematics, Computer Science or Statistics], Department of Mathematical and Computer Sciences, Loyola University Chicago, 6525 N. Sheridan Rd., Chicago, IL 60626.** More information is available at http://www.math.luc.edu. Applications from women and minorities are encouraged. Loyola University of Chicago is an Equal Opportunity/Affirmative Action Employer.

NORTH CAROLINA STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics expects to make an appointment in the general area of Applied Probability, subject to budgetary approval. The appointment is expected to be at the tenure-track assistant professor level (although a higher level appointment might be possible for an exceptionally well-qualified applicant). Applicants should have a Ph.D. as well as a tangible record of significant research contributions and an outstanding teaching record. The department has an active group of applied mathematicians with interests including stochastic processes, control, filtering, optimization and probability. The most serious consideration will be given to candidates who have demonstrated experience in both applications and theory, and whose interests complement those listed above. The successful candidate will have the opportunity to become a member of the Center for Research in Scientific Computation, which facilitates interdisciplinary graduate education and research collaboration among applied mathematicians, scientists and engineers from academia, industry and government labs. Qualified applicants should send a detailed curriculum vitae, a one-page statement of their specific teaching and research objectives, and 3 letters of recommendation to: **Prof. K. Ito, Dept. of Mathematics, NC State University, Raleigh, NC 27695-8205,** kito@eos.ncsu.edu. Full consideration will be given to completed applications received by March 15, 1997. NCSU is an AA/EOE. In its commitment to diversity and equity, NCSU seeks applications from women, minorities, and the disabled.

PURDUE UNIVERSITY - DEPARTMENT OF STATISTICS - Faculty Position(s) in Statistics - The Department of Statistics at Purdue University has one or more openings for faculty positions. Screening will begin December 1, 1997, and continue until the position(s) is (are) filled. Essential Duties: Conduct advanced research in statistics and teach undergraduate and graduate level courses in the Statistics Department. Essential Qualifications: A Ph.D. and strong interest in research and teaching are required. Salary and benefits are competitive and commensurate with qualifications. Women and minorities are encouraged to apply. Rank and Salary are open. Affirmative Action/Equal Opportunity Employer. Candidates for assistant professor should send a curriculum vitae and arrange for three letters of reference to be sent. For senior positions, send a letter of interest or nominations, curriculum vitae and the names of three references. Send applications to: **Mary Ellen Bock, Head, Department of Statistics, Purdue University, 1399 Mathematical Sciences Building, West Lafayette, IN 47907-1399, USA.**

SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE - DEPARTMENT OF MATHEMATICS - Temporary Positions 1998-1999 - Temporary positions as Lecturer are anticipated starting on August 16, 1998. Master's Degree in mathematics or admission to candidacy required; Ph.D. preferred. Applicants must provide evidence of excellence in teaching and evidence of ability to teach in English effectively. Preference given to applicants with research interests compatible with those of the faculty. The duties will consist of 12 hours of undergraduate mathematics instruction each semester. Closing date April 15, 1998, or until positions are filled. Send applications (including transcripts) to: **Temporary Positions, Department of Mathematics, Mailcode 4408, Southern Illinois University, Carbondale, IL 62901.** SIUC is an Equal Opportunity/Affirmative Action Employer.

ADVERTISING DEADLINE for the May/June 1998 issue is: APRIL 1, 1998

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SYRACUSE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications are invited for the following positions: **1.)** A one-year temporary term position at the Assistant Professor level beginning August 1998. Candidates should have a Ph.D. in mathematics, a strong research record and potential, and a strong teaching record and potential. Preference given to candidates whose research interests mesh well with current faculty. See our homepage (http://math.syr.edu) for more information. **2.)** Positions to replace faculty on leave during the 1998-99 academic year. These part-time positions have negotiable teaching loads and lengths and should be attractive to faculty on leave from other institutions. Applications should include a cover letter, CV, and one letter of recommendation about the applicant's teaching. Applications for the one-year position should also include three letters of recommendation about the applicant's research. Address applications to: **Chair, Department of Mathematics, Syracuse University, Syracuse, NY 13244.** Syracuse University is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF CALIFORNIA, SANTA BARBARA - COLLEGE OF ENGINEERING - Computational Science and Engineering - Faculty Positions - The College of Engineering at the University of California, Santa Barbara is in the process of developing a multidisciplinary college-wide program in Computational Science and Engineering (CSE). An objective of the CSE program is to build strengths in the core areas of numerical methods, algorithms and software tools for scientific computation, high performance computing and communications, and scientific visualization, as well as to establish collaborative linkages in the applied areas of CSE such as computational fluid dynamics, quantum computation, nanoelectronics, control systems, computational materials, etc. Applications are invited from outstanding candidates at all levels. The College of Engineering is recruiting for a senior-level position in the CSE program. In addition, an assistant professor position in Computer Science is targeted at the core areas of CSE, and a senior-level position Mechanical and Environmental Engineering is directed at the applied area of computational fluid dynamics. Multidepartmental appointments within the College of Engineering are possible, in both the core and applied areas. Senior candidates should have established an international reputation in an area within the broad framework of the program, and a track record of interdisciplinary collaboration. Junior candidates should have outstanding research potential. Please send a complete application consisting of a curriculum vita and the names and addresses of at least four professional references to: **Search Committee in Computational Science and Engineering Dean's Office, College of Engineering, Engineering I Bldg., Room 1016, University of California, Santa Barbara, CA 93106.** Applications and nominations will be received until the position is filled. UCSB is an equal opportunity, affirmative action employer.

UNIVERSITY OF PITTSBURGH AT JOHNSTOWN - DEPARTMENT OF MATHEMATICS - Assistant Professor tenure track position teaching 12 credits per term starting August 1998. Candidates must have commitment to all levels of undergraduate instruction, capability of using computer and graphics calculator technologies in the classroom, interest in guiding undergraduate research, and active professional development agenda. Specialization in real analysis, differential equations, or applied mathematics desirable. Ph.D. in Mathematics and teaching experience required. Non-academic mathematical work experience preferred. Applicants should send resume, graduate transcripts and three letters of recommendation to: **Ildefonso Cruz, Department of Mathematics, University of Pittsburgh at Johnstown, Johnstown, PA 15904** by March 15, 1998 to receive full consideration. UPJ is an EO/AA Employer and encourages applications from women and minority candidates.

UNIVERSITY OF WISCONSIN, PLATTEVILLE - DEPARTMENT OF MATHEMATICS - Mathematics education, tenure-track position to teach integrated content and methodology courses in mathematics to prospective elementary and middle school teachers. Active service in mathematics education is expected. Apply to: **Fredic Tufte, Chair, Department of Mathematics, University of Wisconsin, Platteville, One University Plaza, Platteville, WI 53818.** Additional information and complete ad is available on the WWW at http://www.uwplatt.edu/math. UW-Platteville is an affirmative action, equal opportunity employer.

AWM GIFT MEMBERSHIPS: If you would like to give a gift membership to a <u>friend</u> or <u>colleague</u>, please fill out the membership form on page 39 (➔) with the pertinent information and indicate that it is a gift membership. AWM will send a notice to the individual informing of their membership and that it is a gift from you.

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31 Potential theory
32 Several complex variables and analytical spaces
33 Special functions
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35 Partial differential equations
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40 Sequences, series, summability
41 Approximations and expansions
42 Fourier analysis
43 Abstract harmonic analysis
44 Integral transforms, operational calculus
45 Integral equations
46 Functional analysis
47 Operator Theory
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52 Convex and discrete geometry
53 Differential geometry
54 General topology
55 Algebraic topology
57 Manifolds and cell complexes
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60 Probability theory and stochastic processes
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65 Numerical analysis
68 Computer Science
70 Mechanics of particles and systems
73 Mechanics of solids
76 Fluid mechanics

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80 Classic thermodynamics, heat transfer
81 Quantum Theory
82 Statistical mechanics, structure of matter
83 Relativity and gravitational theory
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86 Geophysics
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93 Systems theory, control
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001 Education: K-8
002 Education: 9-12
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_____

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ASSOCIATION FOR WOMEN IN MATHEMATICS

1997/1998 MEMBERSHIP FORM

AWM's membership year is from October 1st to September 30th. Please fill-in this information and return it along with your DUES to:

AWM Membership
4114 Computer & Space Sciences Building
University of Maryland
College Park, MD 20742-2461

The AWM Newsletter is published six times a year and is part of your membership. Questions? (301) 405-7892, or awm@math.umd.edu

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Please include this information in: (1) the next **AWM Speaker's Bureau** (Yes/No) _____ (2) the next **AWM Membership Directory** (Yes/No) _____

PROFESSIONAL INFORMATION: If student, GRADUATE or UNDERGRADUATE? (circle one)

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INDIVIDUAL DUES SCHEDULE

Please check the appropriate membership category below. Make checks or money order payable to: **Association for Women in Mathematics.** NOTE: All checks must be drawn on U.S. Banks and be in U.S. Funds. AWM Membership year is **October 1st to September 30th.**

REGULAR INDIVIDUAL MEMBERSHIP.. $ 40 _____

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☐ I am also enclosing a DONATION to the **"AWM ANNIVERSARY ENDOWMENT FUND"** $ _____

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INSTITUTIONAL MEMBERS WILL RECEIVE <u>ONE</u> FREE JOB ADVERTISEMENTS **(up to four lines)** IN OUR NEWSLETTER PER YEAR. Advertising deadlines are the 1st of every EVEN month. All institutions advertising in the AWM Newsletter are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD $10 ($18 for foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

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