AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 29, Number 2 NEWSLETTER March–April 1999

PRESIDENT'S REPORT

Hello all AWM members! It is my great pleasure to greet you as the new AWM president.

AWM is and has always been a passionate organization, as Sylvia Wiegand and I reported in our article "AWM in the 1990's." * I personally share this passion, about both mathematics and the status of women. I believe that this organization has a critically important mission, and I hope that we are able to be in the right places with the right programs to make a significant difference for women in mathematics.

When I first was asked whether I would be President of AWM, it was at a difficult time for me. My husband had a serious illness, which within months resulted in his death. It was with a real effort to look forward rather than backward that I accepted the nomination. I began to think about what AWM might accomplish.

However, as President-Elect I was faced with the realities of running an organization, and I rapidly rearranged my priorities. To function well, we must ensure that the finances, office structure, and governance of AWM be in reasonable shape. Working with Past President Sylvia Wiegand, I believe that we have now made further major progress toward these three goals. Following in the footsteps of recent Treasurers Judy Green and Kay Smith, our new staffer Douglas Farquhar (Financial and Grants Administrator) and our new Treasurer Amy Cohen are doing an excellent job of managing the finances of our organization. Our overworked Dawn Wheeler (Director of Membership, Meetings, and Marketing) has been able to return to her primary functions and carry them out with her usual professional aplomb and attention to detail. And the wonders of electronic communication make it ever easier for the Executive Committee to play its rightful role in directing the policies of the organization.

I also regarded the establishment of a web presence as being of primary importance in this electronic age. I'm delighted at the way Tamara Kolda, initially assisted by Barbara Ling, has created and built up this site. Visit it if you haven't yet (or if you haven't recently); the part of it dealing with resources for women in mathematics has been a major magnet for the site. And we are pleased to

IN THIS ISSUE

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MATHEMATICS

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.
The *Newsletter* is published bi-monthly.
The Editor welcomes articles, letters, and announcements.
Circulation: 4,500.

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announce that Ruth Pfeiffer has been appointed to the position of Associate Web Editor. Ruth received her Ph.D. in Mathematical Statistics from the University of Maryland, College Park, in August 1998. While at Maryland, she was quite active in their Women in Mathematics (WIM) group, organizing a biweekly female graduate student colloquium series. Ruth now holds a Cancer Research Training Postdoctoral Fellowship with the National Cancer Institute (NCI), a division of the National Institutes of Health (NIH). Also, we now have an on-line forum, available by clicking on "join the discussion," and I encourage everyone to contribute to it.

We have several new programs in place. First, our Travel Grants program has been renewed and expanded. Not only do we continue our usual program of providing grants to women to attend meetings in their fields, but also we have a new pilot program of "mentoring grants," where women can receive up to $4000 to spend a month working with a senior person in their field. Details for applying for these two types of travel grants appear elsewhere in this newsletter.

Secondly, AWM will run a three-day meeting this summer, the Olga Taussky Todd Celebration of Careers in Mathematics for Women, and will provide travel support for selected graduate students and recent Ph.D.'s. The meeting will be held at the Mathematical Sciences Research Institute July 16–18; again, details appear elsewhere. The previous such meeting, the Julia Robinson Celebration (also held at MSRI), was inspiring to many.

Third, we, together with European Women in Mathematics (EWM) and SIAM, will sponsor mini-symposia for women postdocs and for more established researchers at the International Congress on Industrial and Applied Mathematics (ICIAM99). We will also sponsor our usual Workshops at the Joint Mathematics Meetings and the SIAM Annual Meeting. The Workshop at San Antonio was the best attended ever and was outstanding in the quality of the talks, posters, and panel discussion.

Fourth, we have a new Corporate Task Force, which will consider the structure and benefits of corporate membership in AWM, among other issues. The initial members of this outstanding committee are Victoria Hamilton (former Chief Operating Officer of General American Investors Company), Jill Mesirov (former AWM President, now Associate Director of the Whitehead Institute), Fan Chung (UCSD, formerly AT&T), Jennifer Chayes (director of Theory Division, Microsoft Research, formerly UCLA), Anna Rappaport (recent president of the Society of Actuaries), Tamara Kolda (Oak Ridge National Lab; AWM web editor), and Barbara Tongue Ling (entrepreneur; one of *New Jersey Monthly*'s "40 under 40").

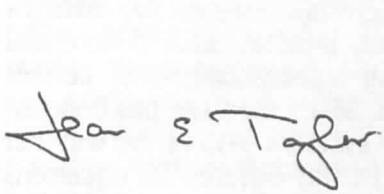
In addition, our other programs are going strong: the Sonia Kovalevsky Days for high school students, the AWM panel discussion, the Emmy Noether Lecture (this year by Krystyna Kuperberg, next year by Margaret Wright), the AWM-MAA Invited Lecture at the Mathfest (this year to be given by Chuu-Lian Terng), the AWM awards (congratulations to Martha K. Smith,

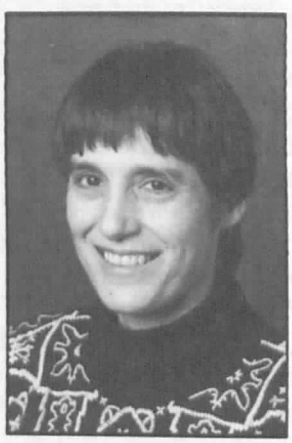
winner of the Hay Award, and to Caroline (Carly) Klivans, winner of the Schafer Prize!), and so forth. All are reported on elsewhere in the *Newsletter* and are described in general in the article mentioned above.

These programs all depend on volunteers, to serve on the selection committees as well as to participate. We are able to have so many good programs not only because of the marvelous people out front on the platform but also because of those working hard behind the scenes. I mention in particular Bettye Anne Case, our Meetings Coordinator! And most of the programs are partially supported by grants from a variety of sources: Exxon, NSF, NSA, and ONR in particular; AWM is grateful to them for their support and their vote of confidence in our organization.

Finally, we have a major incentive for each of us to try to enroll new members and thereby improve our finances: an anonymous donor will give AWM $24 for each new member before March 1, $22 for each new member joining in March, $20 for each new member joining in April, and so forth. Encourage your colleagues to join, or give a membership (only $15) to the most promising student you know.

Knowing how many people value AWM makes it a somewhat daunting prospect to take over the Presidency. But knowing I can count on members to volunteer, I look forward to the next two years.





Jean E. Taylor
Berkeley, CA
January 19, 1999

* This article appears in the January 1999 issue of the *Notices* of the American Mathematical Society and online at www.awm-math.org and is appearing in the 1999 AWM *Newsletter* in serial form.

MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues

Individual: $50
Family (no newsletter): $30
Retired, part-time: $25
Student, unemployed, developing nations: $15
Contributing: $100
All foreign memberships: $8 additional for postage
Dues in excess of $15 and all contributions are deductible from federal taxable income.

Institutional:
Level 1 (one free basic job ad and up to ten student memberships): $150 ($230 foreign)
additional student memberships: $15 ($23 foreign) for next 15; $11 ($19 foreign) for remainder
Level 2 (one free basic job ad and up to three student memberships): $95 ($120 foreign)
Corporate: $150 Affiliate: $250
Friend: $1000 Benefactor: $2500

Subscriptions and back orders

All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $50/year ($58 foreign). Back orders are $6/issue plus shipping/handling ($5 minimum).

Payment

Payment is by check (drawn on a check with a U.S. branch), U.S. money order, or international postal order. Cash payment will be accepted if necessary, but only in U.S. currency.

Ad information

AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Director of Marketing, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the newsletter must be Affirmative Action/Equal Opportunity designated.* A basic ad is four lines of type. Institutional members receive one free basic job ad as a privilege of membership. For non-members, the rate is $60 for a basic ad. Additional lines are $6 each.

Deadlines

Editorial: 24th of January, March, May, July, September, November
Ad: 1st of February, April, June, August, October, December

Addresses

Send all **Newsletter** material **except ads and material for book review and education columns** to Anne Leggett, Department of Mathematical and Computer Sciences, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; email: leggett@math.luc.edu; phone: 773-508-3554; fax: 773-508-2123. Send all **book review** material to Marge Murray, Department of Mathematics, 460 McBryde Hall, Virginia Tech, Blacksburg, VA 24061-0123; email: murray@calvin.math.vt.edu and all **education column** material to Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195; email: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

AWM CHALLENGE GRANT

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AWM DEADLINES

NSF-AWM Travel Grant: April 1 and October 1, 1999

NSF-AWM Mentoring Travel Grant: April 1, 1999

AWM Workshop, Washington, DC: September 1, 1999

Alice T. Schafer Prize: October 1, 1999

Louise Hay Award: October 1, 1999

AWM CALENDAR

AWM Workshop, SIAM meetings, Atlanta, May 14–15, 1999

AWM-EWM-SIAM Minisymposium at ICIAM 99, July 5–9, 1999, Edinburgh

Olga Taussky Todd Celebration, July 16–18, 1999, Mathematical Sciences Research Institute, Berkeley

AWM IN SAN ANTONIO

Past President's Impressions at San Antonio

Once again AWM had an impressive program at the Joint Mathematics Meetings. The overall details were ably handled by Director of Membership, Meetings and Marketing Dawn Wheeler and Meetings Coordinator Bettye Anne Case, so that all went smoothly. Unfortunately, Dawn could not be with us in San Antonio due to the death of her mother, but we thank Doug Farquhar, Bettye Anne Case, Catherine Roberts, the AMS Meetings Staff and many others for helping us cover our events. Carolyn Gordon, Gail Ratcliff, and Catherine Roberts did a super job of coordinating the workshop. Many thanks to all the AWM organizers, speakers and volunteers at the meeting.

The AWM/Mathematics and Education Reform special session "What Can We Do to Smooth the Road of Women in Mathematics?" organized by Naomi Fisher and Ginger Warfield, began with a lively panel discussion including several people involved in the Park City mentoring program followed by an informative description of the Bryn Mawr/Spellman joint program for minorities. [See page 18 for a full report.]

Chuu-Lian Terng, 1995–97 AWM President, gave the first AMS invited address, "Geometry of Soliton Equations," at the Meetings. Chuu-Lian has been a wonderful role model for many mathematicians. Along with her service to women in mathematics and her other substantial professional service, such as former AMS Council member, editor of three journals and member of several advisory boards to mathematics centers, Chuu-Lian has established an outstanding research program in differential geometry with consistent NSF support since 1976.

In her early work in this area, Chuu-Lian reduced the difficult problem of classifying natural vector bundles and differential operators between them to classifying representations of certain Lie groups and finding operators there. Since then she has concentrated on soliton theory and integrable systems. Along the way her discovery of an important system of partial differential equations which were integrable was a major contribution to the field. Her treatment of isoparametric hypersurfaces in collaboration with Karen Uhlenbeck has developed an enlightened general approach to integrable PDEs.

Chuu-Lian, whose talk included beautiful computer simulations of waves interacting in two and three dimensions, promises more of these pictures at her AWM/MAA invited address at the Providence Mathfest (July 30 to August 2, 1999).

The AWM panel discussion, "The education of women in mathematics: An international perspective," was organized with the assistance of Bettye Anne Case (Florida State University) and featured Claire Baribaud (ETH, Zürich), Ingrid Daubechies

Sylvia Wiegand, University of Nebraska

(Princeton University); Anna Guerrieri, (University of L'Aquila, Italy), Gloria C. Hewitt (University of Montana), Gail Ratcliff (University of Missouri at St. Louis), Hema Srinivasan (University of Missouri at Columbia), and Chuu-Lian Terng (Northeastern University). They gave fascinating descriptions of how their own experiences and their individual backgrounds affected their choices; also more generally they discussed the effects of various education systems on the participation of women in mathematics and gave their views about what factors are the most beneficial for women. Some of the points mentioned were: family support, the importance of mentors, benefits from participation in sports, underlying attitudes and expectations of teachers (such as whether girls and minorities could be expected to achieve), peer pressure (advantages of all-girl schools), and the effect of the timing of career and further education decisions in different systems. A more detailed report will appear in the next issue. An hour was too short to do justice to all the questions raised. However we hope that the panelists might add to their remarks in the upcoming report and that we can continue this discussion in the AWM *Newsletter* and on the web.

Panel discussion: Chuu-Lian Terng, Bettye Anne Case, Hema Srinivasan, Gail Ratcliff, Claire Baribaud, Sylvia Wiegand, Gloria C. Hewitt, Anna Guerrieri, Ingrid Daubechies

Following the panel discussion, Alice Schafer herself assisted with the presentation of books, certificates, and AWM tote bags to the five Schafer prize honorees. One of the founders of AWM, Alice Schafer served as President from 1973–75. Schafer prize winner Caroline J. Klivans, a senior mathematics major at Cornell University, is expected by her professors to become a "leader at a national level" in the mathematics community. Honorable mention went to four outstanding students: Laura Ciobanu, a senior mathematics major at Franklin & Marshall College; Catherine Siena Grasso, a senior mathematics major at the University of Michigan; Amanda Mueller, a senior mathematics major at the University of Notre Dame; and Suzanne Shontz, a senior who is a double major in mathematics and chemistry at the University of Northern Iowa.

On receiving her awards Catherine asked if anyone could tell her how a career in mathematics could be combined with a family; later several people talked with her about their ways of coping with family and career.

At the business meeting, we discussed what AWM could do to celebrate the millennium; possibly we'll want to focus on the year 2001 as it is also the 30th anniversary of AWM. An exuberant Jean Taylor was presented with "the bowl" to care for during her presidency. The State of AWM is very good as can be seen from Treasurer's report [page 17]. We're pleased that membership is up and hope it continues to grow, particularly in view of the wonderful AWM challenge grant [see page 3 of Jean Taylor's report].

The AWM dinner in honor of 1999 AWM Emmy Noether Lecturer Krystyna Kuperberg was well attended, as was the AWM party that evening. The spread-out nature of the atrium where the party was held meant some of us were able to have good conversations at one end and actually hear each other, but we realized later that we missed seeing the people in the other parts of the atrium! Sorry about that!

Nancy Kopell of Boston University gave the Josiah Willard Gibbs lecture on "We got rhythm: Dynamic systems of the nervous system." This field of study started with questions from Wiener's work on cybernetics; current technology includes single-cell recordings, experimental perturbations, and powerful computers. Kopell discussed the rhythms associated with motor behavior, sensory processing, and cognitive states. From the abstract: "There are rhythms in many different frequency ranges, associated with different behavioral states.... [M]athematics helps to unravel these and other mysteries and uncover dynamical structure that suggests

functional implications of the rhythmic patterns."

Thursday morning there was a double introduction for the Twentieth Annual AWM Emmy Noether Lecture: first Bettye Anne Case introduced Krystyna Kuperberg's son and co-author Greg Kuperberg of the University of California, Davis. Next Greg introduced Krystyna, "a geometer best known for her counterexamples," particularly for a certain counterexample to a knot theory question. (A student once asked Greg if any mathematical results had been named after him; Greg told the student, "No, but there is one named for my mom.") Greg's parents successfully raised children while pursuing careers in mathematics; now Greg and his wife are doing the same. Krystyna began her talk by commenting that Greg was involved in her most famous counterexample (he checked it), then she defined dynamic systems and moved on to those of her title: "Aperiodic dynamical systems." [See abstract page 7.]

At the Joint Prize Session AWM officially gave the Ninth Annual Schafer Prize to Caroline Klivans and presented the Ninth Annual Louise Hay Award. Louise Hay, Head of the Department of Mathematics, Statistics and Computer Science at the University of Illinois at Chicago, was a logician and a strong leader. She was devoted to students and committed her life to nurturing the talent of young women and men. Following in Hay's footsteps, 1999 Hay Award winner Martha Smith has led and guided mathematics education in the mathematics department at the University of Texas at Austin. She has zealously pursued excellence in teaching, experimenting with many of the new teaching methods long before they became fashionable. She has also played an active role in encouraging the participation of women in mathematics.

Jean Taylor with "the bowl"

Thursday evening a dinner/mentoring program was held for the workshop participants. Discussions were held on family issues, how to get jobs, and how to do research without an advisor.

The AMS held a special reception in honor of Cathleen Synge Morawetz to celebrate her being awarded the 1998 National Medal of Science for Mathematics. The President in 1995–96 of the American Mathematical Society (the second woman President), a past AWM Noether Lecturer and the Emmy Noether Lecturer at the 1998 Berlin International Congress, Morawetz is the first woman and one of few mathematicians to receive the medal for work in mathematics. Her remarks at the reception were shaped by the alphabet; strongly feminist, her final thanks were to v and w for "valiant women" (leaving x, y, z for those not specifically named).

Many of us were thrilled to see a feature story in *USA Today* Cathleen's winning the medal. With her usual grace she suggested that the article might mention AWM. [See the article on AWM's web page.]

The workshop was held all day Saturday in a great location near the main area of the meeting. There appeared to be at least seventy people in attendance much of the time. The list of workshop participants and their titles appears below.

The workshop panel discussion on "Launching a career in mathematics," a topic that has become traditional for the workshop, was as usual extremely insightful and useful for young (and older) mathematicians. The moderator was Catherine A. Roberts (Northern Arizona State University); Sue Geller (Texas A & M), Deborah Lockhart (National Science Foundation), Dawn A. Lott-Crumpler (New Jersey Institute of Technology), and Elizabeth W. McMahon (Lafayette College) served as panelists. They offered tips on many topics: choosing and getting jobs, expectations at their institutions, fitting in childbearing, tenure (even how some activities not helpful for tenure might be important), making contacts, finding mentors, getting grants, record-keeping, writing books, and "how to have a life."

The AMS/MAA Mathchats Tuesday evening offered a great opportunity to meet people and have good Mexican food, as well as to see card tricks; grad students should be sure to sign up for this event next year. At the NSA reception we saw many wonderful supporters of women in mathematics. AWM is grateful to NSA for three grants this year: Olga Taussky Todd, Infrastructure, and Sonia Kovalevsky Days.

At the AMS banquet, we were delighted that our own Alice T. Schafer received the prize which goes to the individual attending the banquet who has been a member the longest among those attendees who have not been so honored before. Alice has been an AMS member since 1941 (when, she explained, "it didn't cost me anything because the University of Chicago paid my dues"). In Alice's honor there was a special AWM table.

Noether Lecturer Krystyna Kuperberg and Greg Kuperberg

AWM is grateful to the AMS and the MAA for their efforts on behalf of all AWM activities. We wish to thank all the AWM members who volunteered their time and expertise for the meeting and the staffs of the Henry B. Gonzalez Convention and the Marriott Rivercenter for all their assistance. We also express gratitude to ONR and NSF for their support of the Workshop and to the Exxon Educational Foundation for their generosity and support over the years.

1999 Noether Lecture

"Aperiodic dynamical systems" was presented by Krystyna M. Kuperberg, Auburn University.

Abstract

There are two groups of examples of aperiodic dynamical systems on S^3, i.e., topological group actions of the additive group of the reals possessing no compact orbits. The first one is chiefly represented by Schweitzer's C^1 vector field and it contains two modifications of his example: a $C^{2+\delta}$ vector field by J. Harrison and a C^1 volume preserving flow by G. Kuperberg. The second group of aperiodic dynamical systems on S^3 is characterized by a certain flexibility that brings forth examples ranging from piece-wise linear to real analytic. The latter dynamical systems have only one non-isolated minimal set whose properties can be explored by tracing an approximating orbit. Substantial parts of this research result from joint work with G. Kuperberg.

Biographical Information

Krystyna Kuperberg was born in 1944 in Poland as Krystyna Trybulec, and she grew up in a small town near the city of Kraków. Her parents, educated in pharmacy, managed the town drugstore. When she was 15, the family moved to Gdansk, a port city on the Baltic Sea. In 1962, Krystyna went to the University of Warsaw to study mathematics and entered the wonderful world of abstraction. The first lecture was in algebra — A. Mostowski gave an axiomatic definition of the determinant. This was so much different than high school. Krystyna's brother, who had just switched majors from philosophy to mathematics, asserted that the only classes worth attending were Borsuk's lectures in topology. There she met her future husband Wlodzimierz Kuperberg. They have two children; their son Greg is a mathematician and daughter Anna is a photojournalist. They also have two grandchildren.

Schafer Awardees and Alice T. Schafer: Back: Suzanne Shontz, Amanda Mueller, Caroline Klivans, Catherine Grasso; Front: Laura Ciobanu, Alice T. Schafer

Krystyna Kuperberg started her graduate work in topology in 1966 under the supervision of Karol Borsuk. She obtained a master's degree at Warsaw University and left Poland in 1969 to live in Sweden. In 1972 she moved to Houston and continued the graduate work that she started in Warsaw. She obtained a Ph.D. degree in 1974 at Rice University studying with W.H. Jaco. That year, she and her husband took tenure-track positions at Auburn University. Kuperberg was promoted to Full Professor in 1984 and was awarded an Alumni Professorship at Auburn in 1994. During the 24 years of her tenure at Auburn she visited Oklahoma State University in 1982–83, the Courant Institute in 1987, MSRI in 1994–95, and briefly, the University of Paris at Orsay in the summer of 1995.

For many years Kuperberg worked primarily in topology, with some interest in discrete geometry. In 1987 she solved an old problem of Knaster concerning bi-homogeneity of continua. In the late 1980's she became interested in fixed points and topological aspects of dynamical systems. In 1993, she constructed a smooth counterexample to the Seifert conjecture, a smooth vector field on the three dimensional sphere without compact orbits. She continued the work on aperiodic flows jointly with her son, and she still works on related problems. Since 1993, she has given over 50 lectures on the subject, including an AMS Plenary Lecture in March 1995, an MAA Plenary Lecture in January 1996, and an ICM 1998 invited talk.

In 1995, Kuperberg received the prestigious Alfred Jurzykowski Award administered by the Kosciuszko Foundation. In 1996, she received a Research Excellence Award from the College of Sciences and Mathematics of Auburn University. She served on several AMS Committees: AMS Council, Committee on the Profession, Southeastern Section Program Committee, the Editorial Board of the Electronic Research Announcement. She was recently nominated to serve on the Committee on Summer Institutes and Special Symposia.

Alice T. Schafer Prize

In 1990, the Executive Committee of AWM established the annual Alice T. Schafer Prize for excellence in mathematics by an undergraduate woman. The prize is named for former AWM president and founding member Alice T. Schafer (Professor Emerita from Wellesley College), who has contributed greatly 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 Ninth Annual Alice T. Schafer Prize to an outstanding young women mathematician: Caroline J. Klivans of Cornell University. Additionally, four remarkable young women were given an honorable mention: Laura Ciobanu, Franklin & Marshall College; Catherine S. Grasso, University of Michigan; Amanda Mueller, University of Notre Dame; and Suzanne Shontz, University of Northern Iowa.

Citation: Caroline J. Klivans

Caroline J. Klivans is a senior at Cornell University. After distinguishing herself in her sophomore and junior year in classes mostly populated by upper-division students and graduate students, Ms. Klivans was accepted in the National Science Foundation summer program Research Experiences for Undergraduates (REU) at Rutgers University. There, she "astounded" the faculty by "her ability to assimilate new material and then take it one step further." Her paper on visual navigation for autonomous mobile robots consists of an "outstanding" theoretical proof and algorithms which will be the first to be ported to the vehicle just acquired by Rutgers. Just as exceptional as her mathematical development, Carly's enthusiasm surpasses any that her professors "ever [saw in] an undergraduate [over the course of] thirty years." She was president of the undergraduate Math Club during her junior year, invigorated the colloquium and dinner series, with attendance doubling, and organized trips to attend American Mathematical Society meetings and the Spring Bourbaki Seminar in Paris. With the central student governing body financing mostly airfares, she arranged for her charges to be housed by Parisian mathematicians, who followed up with "very positive feedback." Not only do predictions converge on Ms. Klivans' future as a mathematical "leader at a national level," they also acknowledge her uniqueness as a "wonderful role model for young women in mathematics."

Response from Klivans

I am honored to be recognized by the Association for Women in Mathematics with the Alice T. Schafer Prize. I would like to thank the AWM for all of their efforts to promote women in mathematics. It is encouragements such as these which will bring more women into the field. I thank Sven Dickinson and Diane Souvaine for guiding me in new directions. Also, I am indebted to the entire Cornell math department, but would like to thank Graeme Bailey, Bob Connelly, David Henderson, and especially Lou Billera for teaching and believing in me.

Citation: Laura Ciobanu

Laura Ciobanu is a senior mathematics major at Franklin & Marshall College. She has excelled academically, both at her institution and at ETH in Zürich, where she spent her junior year. She developed a special interest in combinatorics and performed summer research under an Franklin & Marshall grant. In her report she produced equivalent forms of a standing conjecture. Her nominations speak of "extraordinary talent, independence, and enthusiasm."

Response from Ciobanu

I would like to thank the Association for Women in Mathematics for awarding me an Honorable Mention in this year's Alice T. Schafer Prize competition. I am honored to receive this prize and I hope that my development as a mathematician will prove me a worthy recipient. I would particularly like to thank Professor Arnold Feldman, a great teacher and mentor.

Citation: Catherine S. Grasso

Catherine S. Grasso is a senior mathematics major at the University of Michigan, the winner of several awards and scholarships. She participated in two REU programs, at the University of Michigan Artificial Intelligence Laboratory and at the Santa Fe Institute researching the Bacterial Genetic Algorithm. Now in her fifth year at the University of Michigan, Catie Grasso struck her mentors by taking a "[non-]linear [path]." She spent a semester abroad in Florence, Italy, concentrating in art history; directed and produced a play; played competitive ice hockey and served in numerous associations. She is commended for an original and "truly searching" attitude, as well as intellectual courage, at the interface of science and humanity.

Response from Grasso

I am thrilled about having received an Honorable Mention for the Alice T. Schafer Prize. More than that I am thrilled about the existence of the prize and the AWM. I often feel like I am the only female mathematician in the world. It is reassuring to receive convincing and wonderful evidence to the contrary. Thank you!

I would also like to extend my gratitude to Peter Hinman, Elleanor Crown, Fred Bookstein, Richard Palmer, Berit Stensones, Igor Dolgachev, and George Piranian. Thank you for being amazing teachers, advisors, and most importantly friends.

Citation: Amanda Mueller

Amanda Mueller is a senior mathematics major at the University of Notre Dame, who impressed her professors by precociously excelling in undergraduate and graduate courses, including graduate topology which she took during her semester in London. Her results from the REU summer program at the University of Washington, on a graph-theoretic approximation to the Dirichlet Problem, are so good that she is urged to submit them for publication, as well as apply "to the best graduate schools."

Response from Mueller

I would like to thank the Association for Women in Mathematics for granting me an Honorable Mention in the Alice T. Schafer Prize competition. I would also like to thank my family for cultivating my affinity for math, Dr. Jim Morrow for nurturing my interest in research, Dr. Nancy Stanton for encouraging me, and Dr. Frank Connolly for nominating me.

Citation: Suzanne Shontz

Suzanne Shontz is a double major in mathematics and chemistry at the University of Northern Iowa, where she is a fifth-year senior student. She participated in three summer REUs (National Geometry Center, University of Minnesota; University of Kentucky; and Cornell University). Out of each project, as well as a Kappa Mu Epsilon research project, she produced a paper in subjects as diverse as curves in projective planes, medical imaging, homoclinic bifurcations, and symmetry of molecules. She gave over twenty presentations at meetings of student or professional societies. Her list of awards and scholarships is over thirty items long. She participated in numerous problem-solving contests, including COMAP, where her team earned an honorable mention.

Response from Shontz

I would like to thank the Association for Women in Mathematics for awarding me with an Honorable Mention for the Alice T. Schafer Prize. I would also like to thank the Mathematics Department at the University of Northern Iowa for nominating me for this award. In addition, I'd like to thank Jesus DeLoera, Rick Wicklin, Peter Perry, and John Hubbard for supervising my mathematical research projects.

Louise Hay Award for Contributions to Mathematics Education

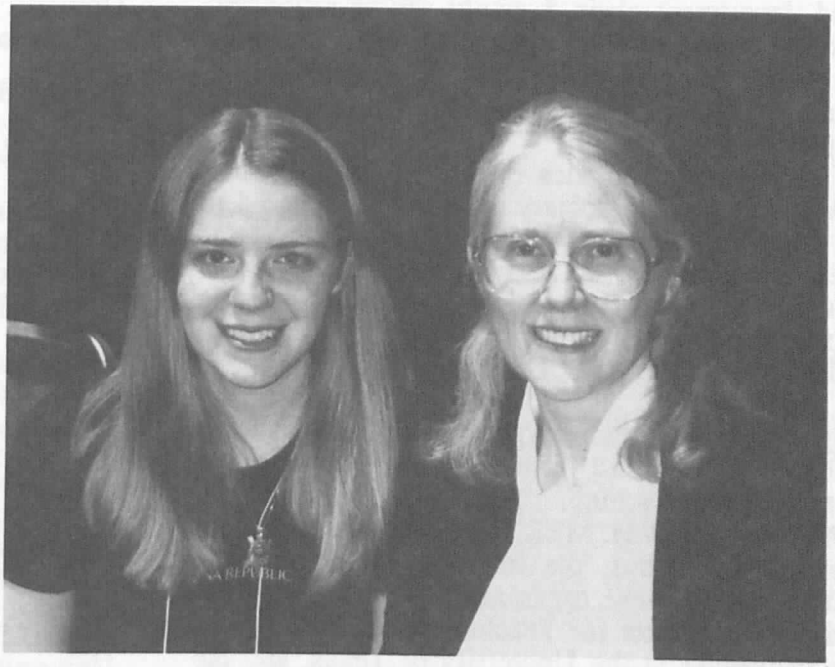
In 1990, the Executive Committee of the Association for Women in Mathematics (AWM) established the annual Louise Hay Award for Contributions to Mathematics Education. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest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

In recognition of her very significant contributions to mathematics education and her outstanding achievements as a teacher and scholar, the AWM is pleased to present the Ninth Annual Louise Hay Award to Martha K. Smith of the University of Texas at Austin.

For the last ten years, she has led and guided mathematics education in the mathematics department at the University of Texas at Austin. Ten years ago, when the Texas legislature abolished mathematics education degrees, the responsibility for preparing Texas mathematics teachers was given to

mathematics departments across the state — at Austin, Martha Smith assumed this responsibility. She was very well-suited for the task. Throughout her career, Professor Smith has zealously pursued excellence in teaching, experimenting with different teaching methods and incorporating technology, group work, and significant writing projects into her undergraduate teaching long before these became fashionable. In honor of her accomplishments as a teacher, she has been the recipient of several awards, including her Department's Mathematics Teaching Excellence Award in 1993. Martha Smith firmly believes that even the weakest student can learn, and she has thought deeply about the root problems underlying students' problems in learning math. Building on her philosophy and insights, she has developed teacher preparation courses on geometry, problem-solving, and statistical thinking and taught them regularly. She helped organize and run two summer institutes where "master teachers" taught other secondary teachers and has worked at developing communication networks for preservice teachers and practicing teachers. From the recognition she has earned from her work with teachers, she is now the certification advisor for the University's mathematics majors in secondary education.



Schafer Prize winner Caroline Klivans and Hay Award winner Martha K. Smith

Martha Smith's dedication and excellence as a teacher may also be seen in the active role she has played in encouraging the participation of women in mathematics. She regularly serves as a mentor for women graduate students at Austin, advising them and participating in various formal and informal programs for students. She also co-organized a major University program for women, a Symposium on Encouraging and Supporting Women in Mathematics and Science.

Professor Smith has a solid record as a mathematical scholar. "In her dissertation on group algebras," writes one colleague, "she broke new ground in the study of prime group algebras and demonstrated a beautiful interplay between algebraic and analytic techniques. [Her publications] have established Martha's reputation as an innovative and influential non-commutative algebraist." She has been recognized for her scholarly contributions through invitations to give presentations at international symposia and seminars. She has also served on various selection and advisory committees at the national level, including the Fulbright Program on International Exchange of Scholars, NSF Advisory Committee for the Mathematical Sciences, the Emmy Noether Centennial Symposium in Bryn Mawr, the MAA Ford Prize selection committee, and the Book Review Editor for the AWM *Newsletter*.

For her exemplary educational and scholarly contributions and her sustained efforts over twenty years on behalf of students, Professor Martha K. Smith is awarded the Ninth Annual Louise Hay Award for Contributions to Mathematics Education.

Response from Professor Smith

I am honored and very surprised to receive the Louise Hay Award. Certainly part of the honor is that the award is in memory of Louise, who impressed me as a very intelligent, capable, kind, and thoughtful human being when we served together on NSF graduate fellowship selection committees many years ago. On the other hand, I was not surprised to learn that it was my department chair, Efraim Armendariz, who nominated me for

the award. If anyone asked me for advice on being a good department chair, I would say to follow his model: be alert to what your faculty members are interested in doing professionally, facilitate their doing it, then nominate them for awards when they've done it.

Teaching mathematics effectively is a difficult task which we as a society have not yet learned to do well. There are two difficult parts to the task: figuring out what to do, and then learning the skills of doing it. The first is not something any single person can hope to do on their own. It is a puzzle which needs to be put together by the contributions of many people. I am grateful for the many individuals and organizations who have contributed insights to my still primitive understanding of mathematics teaching. These include NCTM, MAA, AMS, AWM, MER, the Stats workshops, the Prestats workshops, the many people who have contributed to these organizations and their publications, the Center for Teaching Effectiveness and my colleagues at the University of Texas, and the many students (especially those in my problem solving classes for prospective teachers) who have given me feedback and insights into how and why they learn or don't learn. To paraphrase Newton, we must stand on the shoulders of many dedicated people (few, if any, of them giants) who have provided pieces of the puzzle. I hope I can add an additional pair of shoulders for others to stand on.

As incompletely as I have put together the puzzle of what to do, my understanding of that always seems to be far ahead of my ability to do it. Learning to be patient, to see just where students are having difficulty, to say the right thing at the right time, to hold back when students need to figure things out for themselves or when criticism is not helpful, and to come up with appropriate hints are skills I have made progress on, but still need to continue developing. I hope, though, that if I practice them as best I can, I will accomplish two goals: my students will learn mathematics better, and my students who intend to become or are already teachers can learn these important teaching skills a little more easily than if I hadn't tried.

Recent Ph.D. Talks

Elizabeth S. Allman
University of North Carolina, Asheville
"Subgroup Separability: A Blending of Number Theory, Geometry, & Topology"

Bina Bhattacharyya
University of Ottawa/University of Rome
"Subfactors and an Algebra of Paths on Trees"

Sharon M. Frechette
Wellesley College
"Hecke Structure of Spaces of Modular Forms"

Kristin Lauter
University of Michigan
"Curves over Finite Fields and Applications in Modern Technology"

Moira McDermott
Gustavus Adolphus College
"Test Ideals and Computations in Tight Closure"

Helen Moore
Stanford University/Bowdoin College
"Gauss Maps of Minimal Hypersurfaces with Finite Total Scalar Curvature"

Ilene H. Morgan
University of Missouri-Rolla
"Complete Sets of Orthogonal Frequency Hypercubes and Their Connections to Affine Resolvable Designs"

Evelyn Sander
George Mason University
"Unexpectedly Linear Behavior for the Cahn-Hilliard Equation"

Graduate Student Posters

Julie L. Benson
Brown University
"The Gain of Regularity for the KP-II Equation"

Holly E. Bernstein
Washington University in St. Louis
"Isothermic Tori with Planar Lines of Curvature"

Maria G. Fung
Cornell University
"Twisted Torsion on Compact Hyperbolic Spaces"

Theresa Girardi
Rutgers University
"On Artin's Conjecture for Icosahedral Representations"

Rachel W. Hall
Pennsylvania State University
"Hecke C*-Algebras"

Natalia A. Humphreys
Ohio State University
"Norms of Powers and a Central Limit Theorem for Complex-valued Probabilities"

Edna W. James
Iowa State University
"Stochastic Models of Physical Systems"

(Miriam) Ruth Kantoravitz
University of Illinois at Urbana-Champaign
"Adams Operations and the Dennis Trace Map"

Colleen Margarita Kirk
Northwestern University
"The Influence of Two Moving Heat Sources on Blow-up in a Reactive-Diffusive Medium"

Elena Kosygina
Courant Institute of Mathematical Sciences
"The Behavior of Relative Entropy in the Hydrodynamic Scaling Limit"

Amy E. Ksir
University of Pennsylvania
"Another Reason Why Exceptional Weyl Groups Are Exceptional"

Regan E. Murray
University of Arizona
"The Relaxation Limit in a Biodegradation Model"

Guergana Petrova
University of South Carolina
"Transport Equations and Velocity Averages"

Liya Zhornitskaya
Duke University
"Positivity-preserving Numerical Schemes for Lubrication Type Equations"

AWARDS AND HONORS

Congratulations

ANNA NAGURNEY of the Department of Finance and Operations Management of the Isenberg School of Management at the University of Massachusetts at Amherst was appointed the John F. Smith Memorial Professor. This endowed professorship was established by John Smith, Jr., the CEO of General Motors and Chairman of the Board, to honor the memory of his father. Anna received her PhD in Applied Mathematics from Brown University.

SHARON ANGELA NEWMAN-GOMEZ received a 1998 Ford Foundation Pre-Doctoral Fellowship for graduate study in mathematics at the University of California, Riverside. The program seeks to increase the presence of underrepresented minority groups on the nation's college and university faculties. Information on the next competition may be obtained via email at infofell@nas.edu, on the web at http://fellowships.nas.edu, or by writing the National Research Council at 2101 Constitution Avenue, NW, Washington, DC 20418.

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. The deadline for receipt of the nomination is **October 1, 1999.**

If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

1998 Maria Mitchell Women in Science Award

The Maria Mitchell Women in Science Award honors an individual or organization that encourages girls and women to pursue studies and careers in science and technology. The 1998 recipient was the Women in Engineering Program at Purdue University. This juried award is funded by the William R. Kenan, Jr. Fund for Engineering, Technology and Science.

Maria Mitchell (1818–1889) was the first professional woman astronomer in the U.S. and the first woman professor of astronomy (Vassar College). In 1847 she discovered a comet that made her internationally famous. 150 years ago, she became the first woman admitted to the American Academy of Arts & Sciences.

Morawetz Awarded National Medal of Science

Former American Mathematical Society President Cathleen Synge Morawetz has been awarded the 1998 National Medal of Science to be presented by President Clinton. She is the first woman to receive the medal for work in mathematics, specifically her pioneering developments in partial differential equations and wave propagation applications for aerodynamics, acoustics and optics. Professor emerita at New York University's Courant Institute, she has served the Society in many different elected and volunteer positions. She was elected the AMS' second woman President and served from 1995–96. She currently serves as Chair of the AMS Committee on Science Policy.

Morawetz's work has been particularly influential on engineers' efforts to design airplane wings that minimize the impact of shock waves in the transonic range. In the late 1950's, she demonstrated that shock waves are inevitable if a plane moves close to the speed of sound, no matter how the wings are designed. As a result of this work, engineers now focus on minimizing — rather than eliminating — shock waves.

Her work has also contributed fundamentally to the mathematical theory of scattering. This subject describes how waves interact with obstacles or changes in the medium. It provides the framework for analyzing many techniques for remote sensing, including ultrasound and radar.

In commenting on her award, Professor Morawetz said, "This is an occasion of great moment for me. I am filled with gratitude to all those, and there were a great many, who helped me over many years, and I am proud to be the first woman mathematician to receive the medal. My biggest wish would be that it could help move more women forward in mathematics, be it in grade school or graduate school."

Press release, AMS. Morawetz's retiring AMS Presidential Address is available on the web at http://www.ams.org/notices/199901/1999011-toc.html. The White House announcement is available at http://www.pub.whitehouse.gov/uri-res/I2R?urn:pdi://oma.eop.gov.us/1998/12/8/13.text.1

AWM ACTIVITIES: FEBRUARY 1997–JANUARY 1999

Alice T. Schafer Undergraduate Prize in Mathematics (awarded annually since 1990). 1998: Winners: Sharon Ann Lozano and Jessica A. Shepherd. Runner-up: Jie Li. Honorable mentions: Patience Moreno and Vera Peshchansky. 1999: Winner: Caroline J. Klivans. Honorable Mentions: Laura Ciobanu, Catherine S. Grasso, Amanda Mueller, Suzanne Shontz.

Louise Hay Award for Contributions to Mathematics Education (awarded annually since 1991). 1998: Deborah Hughes Hallett. 1999: Martha K. Smith.

Noether Lectures (annually since 1980). 1998: Dusa McDuff, "Symplectic structures: A new approach to geometry." 1999: Krystyna M. Kuperburg, "Aperiodic dynamical systems."

Workshops for Women Graduate Students and Recent Ph.D. Mathematicians (supported through grants from NSF and ONR). July 1997, Stanford, CA, SIAM Annual meeting: Organizer: Suzanne Lenhart. Minisymposia and panels were organized by Joyce McLaughlin, Linda R. Petzold, Margaret Wright, and Lenhart. Mentors, speakers, discussion group leaders and panelists included, in addition to the organizers: Marsha Berger, Rosemary Chang, Margaret Cheney, Deborah Lockhart, Dianne O'Leary, Fadil Santosa, John Tague, Lloyd Trefethen. Nine graduate student poster presentations, twelve recent Ph.D. talks. Keynote address: Pamela Cook. January 1998 Joint Meetings, Baltimore MD: Organizers: Carolyn S. Gordon. Co-organizers: Gail Ratcliff and Catherine Roberts. Panel on "Launching a Career in Mathematics" with Catherine Roberts, Patty Anthony Ashford, Jill Dietz, Ruth Gornet and Rachel Kuske. Twelve graduate student poster presentations, eight recent Ph.D. talks. July 1998 SIAM Annual meeting, Toronto: Organizer: Suzanne Lenhart. Co-

organizer: K. Renee Fister. Speakers, discussion group leaders and panelists: Peter Castro, Joan Feigenbaum, Maria Klawe, Tamara Kolda, Marilyn Lightstone, and Karin Remington. Keynote address: Rosemary Chang. Eight graduate student poster presentations, eleven recent Ph.D. talks. January 1999 Joint Meetings, San Antonio: Organizers: Carolyn Gordon. Co-organizers: Gail Ratcliff and Catherine Roberts. Panel on "Launching a Career in Mathematics" with Catherine Roberts, Susan Geller, Deborah Lockhart, Dawn A. Lott-Crumpler, and Elizabeth W. McMahon. Fourteen graduate student poster presentations, eight recent Ph.D. talks. Much credit for *all* meetings activities should go to Dawn Wheeler and Bettye Anne Case.

AWM/NSF Travel Grants for Women Mathematicians (supported through grants from NSF). 1997: February, 12 grants. May, 7 grants. October, 9 grants. 1998: February, 6 grants. May, 5 grants.

Sonia Kovalevsky HS Days (supported by NSA). 1997: American University, Washington, DC; Cleveland State University, Cleveland, OH; Elizabeth City State University, Elizabeth City, NC; Emporia State University (supported by outside funding), Emporia, KS; Indiana University/Purdue University, Fort Wayne IN; Messiah College, Grantham, PA; Miami University (supported by NSF), Oxford, OH; National University, San Diego, CA; Norfolk State University, Norfolk, VA; North Carolina A & T State University, Greensboro, NC; North Dakota State University, Fargo, ND; Rivier College, Nashua, NH; St. John's University, Jamaica NY; University of Alaska-Fairbanks, Fairbanks, AK; University of Michigan, Ann Arbor, MI; University of Minnesota, Minneapolis, MN; University of Tulsa, Tulsa, OK; Valdosta State University, Valdosta, GA. 1998: Clarion University of Pennsylvania, Clarion, PA; Elizabeth City State University, Elizabeth City, NC; Emporia State University (sponsored by Wolf Creek Nuclear Operating Corporation), Emporia, KS; Indiana University/Purdue University, Fort Wayne, IN; Messiah College, Grantham, PA; Michigan Technological University, Houghton, MI; Mississippi University for Women, Columbus, MS; National University, San Diego, CA; Norfolk State University, Norfolk, VA; North Carolina A & T State University, Greensboro, NC; North Dakota State University, Fargo, ND; Rivier College, Nashua, NH; St. John's University, Jamaica, NY; St. Joseph's University, Philadelphia, PA; Syracuse University, Syracuse, NY; University of Alaska-Fairbanks, Fairbanks, AK; University of Minnesota, Minneapolis, MN; University of Mississippi, University, MS; University of Tulsa, Tulsa, OK; Valdosta State University, Valdosta GA; Wright State University, Dayton OH.

Participation in National and International events. Atlanta Mathfest July 1997: MAA/AWM lecture by Suzanne Lenhart, breakfast organized by Teresa Edwards. Toronto Mathfest July 1998: MAA/AWM lecture by Margaret Wright, party. International Congress of Mathematicians, ICM August 1998: Emmy Noether lecture given by Cathleen Morawetz, panel co-organized by AWM and European Women in Mathematics (EWM).

Forthcoming events. AWM workshop at SIAM Annual Meeting, May 1999. International Congress of Industrial and Applied Mathematicians (ICIAM), July 1999: two AWM/EWM/SIAM minisymposia. Olga Taussky Todd Celebration of Women in Mathematics, July 1999. Providence Mathfest, July/August 1999: AWM/MAA lecture.

Presentations, participation at scientific societies and committee meetings. Conference Board of Mathematical Sciences. Board of Mathematical Sciences. Joint Committee on Women. US and Canadian Chairs of Mathematics and Statistics meetings. Olympiad 2001 committee.

AWM Panels at the Joint Mathematics Meetings. January 1998: "Mathematicians and Families." Moderator: Sylvia Wiegand. Panelists: Leslie Gruis, Craig L. Huneke, Rhonda J. Hughes, Stephen F. Kennedy, Suzanne M. Lenhart, Catherine A. Roberts. January 1999: "The education of women in mathematics: An international perspective." Moderators: Bettye Anne Case and Sylvia Wiegand. Panelists: Claire Baribaud, Ingrid Daubechies, Anna Guerrieri, Gloria C. Hewitt, Gail Ratcliff, Hema Srinivasan, Chuu-Lian Terng.

Archive Committee: Bettye Anne Case, Alice T. Schafer.

AWM Executive Committee. 1997 Past-President: Chuu-Lian Terng. 1997–1999 President: Sylvia Wiegand. 1998 President-Elect: Jean Taylor. Treasurer: 1/1997–6/1998: Kay Smith, 6/1998–present: Amy Cohen. Newsletter Editor: Anne Leggett. Meetings Coordinator: Bettye Anne Case. Clerk: Jenny Baglivo. Members-at-large: 2/1994 to 1/1998: Rosemary Chang, Naomi D. Fisher, Carolyn S. Gordon. 2/1996 to 1/2000: Lynne Butler, Teresa Edwards. 2/1998–1/2002: Gail Ratcliff, Paula Russo, Tilla Weinstein.

AAAS Representatives. 1996–1999, Judith Arms (Education); 1999–2002, Deborah Tepper Haimo (Education); 1996–2002, Mary Gray (Statistics); 1996–2002, Jill Mesirov (Information; Computing & Communication); 1996–2002, Mary Beth Ruskai (History and Philosophy of Science); 1996–1999, Alice Schafer (Mathematics); 1999–2002, Cora Sadosky (Mathematics).

AWM Representatives for Joint Committee on Women. Diane Herrmann, Tara Smith, Marie Vitulli.

AWM Representative for CBMS Education Partnership Planning Committee. Judy Green.

AWM Representative to the MAA Olympiad Coalition. Lynne Butler.

AWM Representatives to 2001 Olympiad Committee. Jean Taylor; outreach representative: Cheryl Grood.

AWM Education committee. Virginia Warfield (chair), Joan Ferrini-Mundy, Naomi Fisher, Judy Green, Pao-sheng Hsu, Glenda Lappan, Judy Roitman, Kay Smith.

NCTM standards committee (ARG). Deborah Hughes Hallett (chair since 6/1997), Judy Roitman (chair till 6/1997), Susan Addington, Sylvia Bozeman, Doris Fischer-Colbie, Deborah Tepper Haimo, Genevieve Knight, Carole Lacampagne, Virginia Warfield.

Selection Committee participants. Estelle Basor, Patricia Bauman, Leticia Barchini, Margaret Bayer, Isabel Beichl, Andrea Bertozzi, Mary Ellen Bock, Donna Beers, Susanne Brenner, Fan Chung, Jill Dietz, Joan Feigenbaum, Susan Geller, Carolyn Gordon, Mary Gray, Yvonne Greenleaf, Jenny Harrison, Rebecca Herb, Nancy Hingston, Rhonda Hughes, Linda Keen, Paula Kemp, Catherine Kessel, V. Lakshmibai, Suzanne Lenhart, Joyce McLaughlin, Cathleen Morawetz, Margaret Murray, Dianne O'Leary, Jill Pipher, Eileen Poiani, Emma Previato, Gail Ratcliff, Catherine Roberts, Jean Rubin, Cora Sadosky, Judith Sally, Stephanie Frank Singer, Hema Srinivasan, Janet Talvacchia, Chuu-Lian Terng, Abigail Thompson, Karen Vogtmann, Janice Walker, Carol Wood, Margaret Wright, Maureen Yarnevich.

Project Directors. Travel Grants: Chuu-Lian Terng, Jean Taylor, Tilla Weinstein. Infrastructure: Jean Taylor, Sylvia Wiegand. Olga Taussky Todd Conference: Bettye Anne Case, Gail Ratcliff, Jean Taylor, Sylvia Wiegand. SK Days Grants: 1997: Sylvia Wiegand, Yvonne Greenleaf. 1998: Genevieve Knight, Sylvia Wiegand. 1997 Workshop Grant: Joan Feigenbaum, Carolyn Gordon, Suzanne Lenhart, Gail Ratcliff.

Granting agencies. Coppin State University, Exxon Educational Foundation, Office of Naval Research (ONR), National Science Foundation (NSF), National Security Agency (NSA).

Resources. Newsletter Editor: Anne Leggett. Book Review Editor: Margaret Murray. Education Column Editor: 1997: Sally Lipsey. 1998: Virginia Warfield. AWM Homepage: Created and maintained by Tamara Kolda, www.awm-math.org, assistance from Barbara Ling. AWM-Net Editor: Dianne O'Leary, awm-net@cs.umd.edu. *Careers that Count* (support from NSA). Report on SIAM 1997 (support from ONR). *Notices* article by Jean Taylor and Sylvia Wiegand, "AWM in the 1990s," January 1999.

NSF-AWM MENTORING TRAVEL GRANTS FOR WOMEN

The Association for Women in Mathematics announces a new Mentoring Travel Grant program supported by the National Science Foundation. The objective of this program is to help junior women to develop a long term working and mentoring relationship with a senior mathematician. This relationship should help the junior mathematician to establish her research program and eventually receive tenure. In 1999, AWM expects to award as many as three grants, in amounts of up to $4000 each. Each grant would fund travel, subsistence, and other required expenses for an untenured woman mathematician to travel to an institute or a department to do research with a specified individual for one month. Any unexpended funds could be used for further travel to work with the same individual during the following year. (Applicants for mentoring travel grants may in exceptional cases receive up to three such grants throughout their careers, possibly in successive years; each such grant would require a new proposal and would go through the usual competition.)

Applicants must be women holding a doctorate or equivalent experience and with a work address in the USA (or home address if unemployed). The applicant's research may be in any field which is funded by the Division of Mathematical Sciences of the National Science Foundation.

Each applicant should submit **five** copies of each of the following: a cover letter; a curriculum vita; a research proposal, approximately five pages in length, which specifies why the proposed travel would be particularly beneficial; a supporting letter from the proposed mentor (who must promise to be available at the time of the proposed travel and may be either a man or a woman), together with the curriculum vita of the proposed mentor; an approximate budget; and information about other sources of funding available to the applicant. Send these materials to: **Mentoring** Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer and Space Sciences Building, University of Maryland, College Park, MD 20742-2461.

A final report will be required from each awardee. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM.

If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Applications via email or fax will not be accepted. The deadline for receipt of applications is **April 1, 1999**.

TREASURER'S REPORT

for the fiscal year July 1, 1997 through June 30, 1998

The financial affairs of the AWM are sufficient to maintain current activities and even to expand them — provided (as always) that members are willing to do the work required to implement their ideas.

The working budget for '98–99 (that is the allocation of expected revenues to expected expenses by major category) is based on the actual expenditures for '97–98, with an adjustment to reflect the filling of our second staff position.

Despite the increase in dues, there in no evidence of decreasing membership.

The Association is working to secure greater expense recovery from grants and to pursue more systematic fund-raising in the private sector.

The following definitions are helpful for understanding the balance sheet for Fiscal Year '97–98. "Operating funds" come primarily from dues, unrestricted gifts, and transfers from grants. These funds pay staff salary and general operating expenses. There was an unusual increase in the balance in operating funds during FY'97–98 because of a vacancy in one staff position. "Temporarily restricted funds" and "permanently restricted funds" come from restricted gifts and are used in accord with the donors' wishes. "Grant funds" must be used in accord with the terms of the grants. During FY'97–98, the AWM administered the following grant funds: A. National Science Foundation Travel Grant ($26,610); B. Office of Naval Research Workshop Grant ($30,014); C. National Security Agency, Julia Robinson Conference, ($8,161); D. National Security Agency, Sonia Kovalevsky Days ($65,961); E. National Science Foundation Workshop Grant ($25,872); F. Office of Naval Research Workshop Grant ($5,779); G. Exxon Educational Foundation Infrastructure Grant ($5000).

submitted by Treasurer Amy Cohen

STATEMENT OF ACTIVITIES: year ended 30 June 1998

Revenues	Operating Funds and Grants	Temporarily Restricted	Permanently Restricted
Grants	167,397		
Gifts	17,907		1,332
Dues	96,281		
Publication income	19,751		
Interest income	1,755	1,569	
Other	890		
TOTAL	303,981	1,569	1,332
Expenses			
Salaries, benefits	51,184	1,194	
Participant support	97,570		
Advertising	708		
Newsletter	43,353		
Publications	10,907		
Rent	13,410		
Office expenses	12,840	1,089	
Postage, shipping	6,026		
Conferences	13,358	287	
Travel	3,428		
Professional fees	8,953		
Telephone	5,267		
Honoraria	2,400	1,650	
Insurance	569		
Dues and fees	1,550		
Depreciation	3,026		
TOTAL	274,759	4,211	

Changes in Net Assets

Operating Funds	Temporarily Restricted	Permanently Restricted	Grant Funds
Assets on 1 July 1997			
43,981	6,607	66,318	116,904
Assets on 30 June 1998			
73,203	3,965	67,648	144,816

EDUCATION COMMITTEE

It is not always true that if something is good, then more of it is better. Sometimes it is, though. The MER/AWM sessions at the Joint Meetings are a case in point. Last year we had two, this year four, and a very excellent four they were. Their general theme was "What can we do to smooth the way for women in mathematics?" and three of them discussed specific things that are being done. The fourth gave a fascinating view of some of the bumps in the way that need smoothing.

Chuu-Lian Terng got us off to a lively start with a description of a program she and Karen Uhlenbeck have put together. It was initiated with the idea of encouraging women to take part in the IAS-Park City Math Institute (PCMI.) PCMI runs for three weeks in the summer and includes mathematicians at every level from undergraduate to research professor. Women participants in the early sessions tended to be few and somewhat overwhelmed. Chuu-Lian and Karen set out to change this state of affairs. Supported initially by MSRI, and later by the Institute for Advanced Study (IAS), they set up a program of mathematical preparation and mentoring. Women who plan to attend the PCMI (plus a few others who share the pertinent mathematical interest) attend a ten day workshop a few weeks before the summer session, with heavy mathematical focus on that summer's PCMI topic and with a lot of community-building components — notably establishing a mentoring relationship between new participants and more experienced ones. The mini-panel of past participants who added their descriptions to Chuu-Lian's were so enthusiastic about the resulting sense of community that audience members expressed concern about whether it had turned them into a closed clique. Apparently, though, they happily drew in others as well in the course of the institute, thus contributing to the community strength of the whole works.

The next program described focuses on a very specific level of women mathematicians. Some years ago Sylvia Bozeman and Rhonda Hughes, chairs of their respective math departments at Spelman and Bryn Mawr Colleges, found themselves sharing a worry about how many of their students, especially minority women, after a promising departure for graduate school, wound up dropping out short of a doctorate. So they designed a program entitled The EDGE for Women (Enhancing Diversity in Graduate Education) to build up the intellectual toughness and social hardihood of young women on the brink of graduate school. Like the one described above, it has as its centerpiece an intensive residential workshop in early summer. This one, however, features the core mathematical areas of analysis and algebra and also spends some time directly addressing issues of the culture of graduate school. It is very much of a work in progress — only one institute has been run so far, and the process of finding mentors *in situ* for the young women at the schools themselves is a current challenge — but the signs are encouraging.

Yet another summer program was lovingly described by Carolyn Mahoney of California State University at San Marcos. This one starts with sixth graders and takes them through summer after summer, with a program centered around math, but with all sorts of other activities to fill up a quite long daily schedule. It is aimed at children whose circumstances and socio-economic bracket make them likely to miss the college track altogether. It's far too soon to evaluate it, but the fact of a very low attrition rate year to year is impressive testimony. And for Carolyn the beginning of the reward has emphatically arrived: this fall, members of the first of the batches of children began turning up as freshmen. Carolyn was ecstatic!

The fourth of our talks had a very different flavor. Jere Confrey and her colleague Catherine Good, both of whom are in educational psychology at the University of Texas, talked about their research on gender bias. Jere gave an overview of trends for women and racial minorities over the years which was on the whole encouraging — much has been improving. Then Catherine talked about some research she is in the midst of, and you could see jaws dropping all over the room. Her subject is stereotype threat: not the impact of being stereotyped, but the impact of feeling as if you are. And it is considerable. In the study she described, she started by surveying a lot of calculus students on their beliefs and determined that both the men and the women believed that women are just as good at calculus as men. But the women's view of the world at large is that people don't think women are as good. This means, as Catherine pointed out, that on every test, women feel that they have the

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

reputation of their gender on their shoulders. So she tested the impact of that: she gave the same test to two groups of students, with men and women in both groups. To one group, the test was presented as diagnostic of ability, with no further comment. To the other, it was presented as diagnostic of ability, with the added comment that it had been set up in such a way as to avoid gender differences. Outcome: on the former, the men marginally outscored the women. On the latter, the women far outscored the men. I call that a dramatic result!

As I said, the more-is-better principle definitely paid off this year. One can therefore safely conclude that next year we will have as many speakers as the MER session can find us room for. Don't get too carried away on the expectations, though. Two last year and four this doesn't actually imply an increase to an exponential eight next year!

BOOKS OF INTEREST

The two volumes in the Studies in Mathematical Thinking and Learning Series described below will appear in May and April, respectively.

Knowing and Teaching Elementary Mathematics: Teachers' Understanding of Fundamental Mathematics in China and the United States is by Liping Ma. Chinese students typically outperform U.S. students on international measures of mathematics competency. Paradoxically, Chinese teachers receive far less mathematical education than U.S. teachers — 11 to 12 years of schooling versus 16 to 18 years of schooling.

The studies described in this volume suggest that Chinese teachers begin their teaching careers with a better understanding of elementary mathematics than their U.S. counterparts. Their understanding of the mathematics they teach and of the ways this mathematics can be presented to students continues to grow throughout their professional lives.

This book gives detailed and specific documentation of the "profound understanding of fundamental mathematics" attained by some Chinese teachers and rarely found in the United States. Such teachers can explain computational algorithms, of course. But they are also aware of the conceptual structure of elementary mathematics and of productive ways to engage with it, and of ways to teach these deep ideas to students.

Teaching conditions in the United States, unlike those in China, militate against the development of elementary teachers' mathematical knowledge and its organization for teaching. The concluding chapter of the book suggests changes in teacher preparation, teacher support, and mathematics education research that might allow teachers in the United States to attain profound understanding of fundamental mathematics.

No matter how mathematics achievement and persistence are measured, African Americans seem to lag behind their peers. This state of affairs is typically explained in terms of student ability, family background, differential treatment by teachers, and biased curricula. But what can explain the disproportionate showings among African American students who clearly possess the ability to do well, who come from varied family and socioeconomic backgrounds, who are taught by caring and concerned teachers, and who learn mathematics in the context of a reform-oriented mathematics curriculum? And why do some African American students succeed in mathematics when underachievement is the norm among their fellow students? Danny Martin addresses these questions in *Mathematics Success and Failure Among African American Youth*, the result of a year-long ethnographic and observational study of African American students and their parents and teachers.

Mathematics Success and Failure Among African American Youth goes beyond the conventional explanations of ability, socioeconomic status, differential treatment, and biased curricula to consider the effects of history, community, and peers — and the individual agency that allows some students to succeed despite these influences. Martin's analysis suggests that prior studies have failed to link sociohistorical, community, school, and intrapersonal forces in sufficiently meaningful ways and that they suffer from theoretical and methodological limitations that hinder the ability of mathematics educators to reverse the negative achievement and persistence trends that continue to affect African American students.

The analyses and findings offered in Martin's book lead to exciting implications for future research and intervention efforts concerning African American students — and other students for whom history and context play an important role. This

book will be useful and informative to many groups: mathematics education researchers, education researchers interested in the social context of learning and teaching, policy makers, preservice and inservice teachers, students, parents, and community advocates. Martin's work will also be of interest to readers concerned with multicultural education, cross-cultural studies of mathematics learning, sociology of education, Black Studies, and issues of underrepresentation in science and mathematics.

Women, Art and Geometry in Southern Africa by Paulus Gerdes is published by Africa World Press, (11-D Princess Road, Lawrenceville N.J. 08648, tel. 609-844-9583, fax: 609-844-0198, email: awprsp@africanworld.com). Originally published in 1995 by the Universidade Pedago'gica in Mozambique, it received the Special Commendation in the 1996 NOMA Award for Publishing in Africa Competition. The book was praised by the jury as "combining in an ingenious way the study of geometry with that of the visual arts, presenting an important challenge and stimulant to the future of mathematics education in Africa. It demystifies mathematics in relation to gender and race and erases the borders between mathematics and popular culture as experienced in the work and crafts of women in southern Africa. The book's importance lies in its prospective impact on the education of African women in mathematics."

African peoples in general, and those in Southern Africa in the post-apartheid era in particular, are facing the urgent need to awaken and nurture their magnificent creative potential for the benefit of all. Women, constituting half of the population, are still strongly underrepresented in scientific and technological careers where mathematical ideas play an important role.

Outside the school context, Southern African women have been involved in cultural activities — ceramics, beading, mural decoration, mat and basket weaving, hair braiding, tattooing, string figures — which bear a strong artistic and mathematical character. Mathematics is the science of patterns. Southern African women have created and continue to create imaginative beautiful patterns. Some of these patterns are presented in the book.

The main objective of the book is to call attention to some mathematical aspects and ideas incorporated in the patterns invented by women in Southern Africa (Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe). It is the author's wish to contribute to the valuing, revival and development of these traditions and their incorporation into (school) education. As an example of the educational use of female decorations, the book presents the reinvention of the Theorem of Pythagoras.

The author Paulus Gerdes is a Mozambican scientist and artist who is professor of mathematics at Mozambique's Universidade Pedago'gica. Dr. Gerdes was the Rector of this university from 1989 to 1996. From 1996 to 1998 he was visiting professor at the University of Georgia. Within the African Mathematical Union, he has been the chairman of the Commission for the History of Mathematics in Africa (AMUCHMA) since 1986. He was from 1991 to 1995 the Secretary of the Southern African Mathematical Sciences Association (SAMSA).

Nobel Prize Women in Science: Their Lives, Struggles, and Momentous Discoveries by Sharon Bertsch McGrayne has been published in paperback with a new chapter about the latest woman to win a science Nobel. (Carol Publishing, $19.95). When the AWM *Newsletter* reviewed the hardcover edition in 1993, Book Editor Cathy Kessel wrote: "Nonscientists seem at times inclined to make generalizations about scientists that are unwarranted and to be concerned with issues that we might consider stereotypically feminine; this book provides a wealth of counterexamples.... McGrayne deftly balances accounts of scientific and personal life.... [This] is an enjoyable and inspiring book ... and should inspire future generations of scientists."

The paperback's new chapter is about Christiane Nuesslein-Volhard, a developmental biologist who won the Nobel Prize in Physiology or Medicine in 1995 for her discovery of the genes that govern the embryo's early development. Her work in fruit flies helps explain the genetic origin of human health problems from spontaneous abortions and birth defects to cancerous tumors.

Nobel Prize Women in Science includes biographies of 15 women who either won science Nobels or played crucial roles in a Nobel Prize-winning project. McGrayne personally interviewed all the featured women who were alive at the time and approximately 250 of their colleagues, associates, and family members. The geneticist Barbara McClintock, for example, granted personal interviews to only two writers in her lifetime, and McGrayne was one of them.

MENTORING PROGRAM FOR WOMEN IN MATHEMATICS

The Mentoring Program for Women in Mathematics organized by Karen Uhlenbeck of University of Texas at Austin and Chuu-Lian Terng of Northeastern University will be held May 17–27, 1999 at the Institute for Advanced Study, Princeton, New Jersey. The topic for the 1999 Mentoring Program for Women in Mathematics and for the PCMI 1999 Summer Session is Arithmetic Algebraic Geometry

The 1999 Graduate Course organizers are Wen-Ching Winnie Li, Pennsylvania State University and Lisa Fastenberg, University of Massachusetts at Amherst; the 1999 Undergraduate Course organizer is Judy Walker, University of Nebraska at Lincoln. The undergraduate course is Codes and Curves; the graduate course title will be announced at a later date.

The emphasis of the Women's Program is on mathematics learning and research (specifically with regard to the PCMI Summer Session), mentoring and peer relations, and the introduction of career opportunities in research mathematics.

Women undergraduate and graduate students who have been accepted into the IAS/Park City Mathematics Institute (PCMI) Summer Session are invited to take part in the Mentoring Program for Women in Mathematics. Independent applications are welcome, also, although priority is given to those who have been accepted into the Summer Program. Each year the area of focus at the Women's Program corresponds to the PCMI Summer Session's topic. The two-week workshop provides a combination of lectures, seminars, working problem groups, mentoring, and networking sessions in addition to the opportunity to meet and converse with mathematicians in residence at the Institute for Advanced Study.

Most women mathematicians work and study in an environment with few female co-workers. The Women's Program provides an opportunity for a different experience by offering varied activities, both formal and informal, designed to encourage interaction as well as to provide strong mathematics at all levels: lectures for the undergraduate students and the graduate students; working problem sessions; a daily Women in Science seminar; panel discussions with senior women mathematicians.

The Mentoring Program for Women in Mathematics is funded by the National Science Foundation with additional support from the Institute for Advanced Study. The travel and living expenses of all participants are paid in full.

Applications are due **March 15, 1999**; late applications are accepted at the discretion of the organizers. The application form is available online at http://www.ias.edu/park.htm, or you may contact Catherine Jordan, IAS, Olden Lane, Princeton, NJ 08540; phone: 609-734-8290; fax: 609-951-4481; email: jordance@ias.edu.

CALL FOR NOMINATIONS: ALICE T. SCHAFER 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 tenth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Washington, D.C. January 19–22, 2000.

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.

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendations letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award 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. Nominations must be received by **October 1, 1999**. If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

PROJECT NEXT

Project NExT (New Experiences in Teaching) is a program for new or recent Ph.D.s in the mathematical sciences that addresses a broad range of professional issues, focusing on the teaching and learning of undergraduate mathematics. 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 1999–2000 Fellows will be a Workshop, July 28–30, 1999, just prior to the summer MAA MathFest in Providence, RI. 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, pre-calculus, and more advanced courses; 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 meet and interact with Fellows who began the program in previous years.

Invited speakers include: Thomas Banchoff, Brown University, MAA President; Martha Siegel, Towson University, MAA Secretary; Lloyd Douglas, National Science Foundation; Joseph Gallian, University of Minnesota-Duluth; Amy Cohen, Rutgers University; Alan Schoenfeld, University of California at Berkeley; Aparna Higgins, University of Dayton; and Janet Andersen, Hope College.

Following the Workshop, Project NExT Fellows will attend the summer MAA MathFest, July 31 through August 2, and choose among special short courses organized by Project NExT. 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 Washington, DC, January 19–22, 2000; and a second workshop just before the MAA Mathfest in Los Angeles, August 3–5, 2000.

Funding for room and board at the Workshop in Providence will be provided for participants. Fellows also do not have to pay for the special short courses at the summer MathFest that are organized by Project NExT. Institutions employing the Project NExT Fellows are expected to provide financial assistance for all other expenses associated with the meetings. Limited funds are available to assist those institutions that are unable to afford full or partial support.

Application materials can be obtained from the project director or from the Project NExT web page (http://archives.math.utk.edu/projnext/). The application deadline is **April 16, 1999**. For more information, contact one of the following: T. Christine Stevens, Director of Project NExT, Dept. of Mathematics and Computer Science, Saint Louis University, 221 North Grand Blvd., St. Louis, MO 63103 (314-977-2444; stevensc@slu.edu) Joseph Gallian, Co-director, Dept. of Mathematics and Statistics, University of Minnesota-Duluth, Duluth, MN 55812 (218-726-7576; jgallian@d.umn.edu) Aparna Higgins, Co-Director, Dept. of Mathematics, University of Dayton, Dayton, OH 45469 (937-229-2103; higgins@saber.udayton.edu.

AWM CONFLICT OF INTEREST POLICY

A conflict of interest may exist when the interest (financial or other) or concerns of any member of AWM, or the member's immediate family, or any group or organization to which the member has an allegiance or duty, may be seen as competing or conflicting with the interests or concerns of AWM.

When any such potential conflict of interest is relevant to a matter requiring participation by the member in any action by AWM or any of its committees to which the member belongs, the interested party shall call it to the attention of AWM or the committee and such person shall not vote on the matter. Moreover, the person having a conflict shall retire from the room in which the organization or its committee is meeting (or from a conference call) and shall not participate in the final deliberation or decision regarding the matter under consideration.

The foregoing requirements shall not be construed as preventing the member from briefly stating her position in the matter, nor from answering pertinent questions of other members, as her knowledge may be of great assistance.

The minutes of the meeting of the organization or committee shall reflect when the conflict of interest was disclosed and when the interested

person did not vote. When there is a doubt as to whether a conflict of interest exists, and/or whether a member should refrain from voting, the matter shall be resolved by a vote of the organization (or its committee), excluding the person concerning whose situation the doubt has arisen.

A copy of this conflict of interest statement passed by the AWM Executive Committee, Vancouver, 8/16/93, shall be published once a year in the AWM *Newsletter*, and any member serving as an officer or on a committee shall be advised of the policy upon undertaking her duties.

NARROWING THE GENDER GAP AT MATHCAMP

Canada/USA Mathcamp, founded in 1993 by Dr. George R. Thomas, is an exciting annual five-week summer program for talented high-school students interested in mathematics. An all-volunteer planning committee drawn from past years' faculty and alumni assists Dr. Thomas with the yearly organization of the camp. This year's planning committee has made narrowing the camp's gender gap one of its top priorities. The gap is dramatic – at last year's camp there were 86 students, 13 of whom were girls. This article outlines our efforts to reach out to girls and to bring them into the Mathcamp community and the general mathematical community.

Each passing year has brought major changes to Mathcamp. Last year's camp took place in Toronto, Ontario. The academic program was very flexible; there were four professors who stayed for the duration of the camp, as well as visiting professors who gave special lectures and graduate student mentors who taught classes and served as references-in-residence in the dorms. Campers had considerable freedom of choice, with often as many as four options for a given period — which could range from classes and special lectures to discussions on math-related topics and working independently in a designated study space.

We both spent our first year as mentors at the camp last summer; upon learning of the skewed gender ratio among the students, we were disappointed but unsurprised. Despite the ratio imbalance, the girls who came enjoyed themselves. One young woman said later that she didn't mind the fact that there were few girls at the camp because "I got to find out a little more about guys and how they handle things when they're away from home. (I won't go into details, but things like laundry and cleaning their rooms.) Besides that it was pretty fun and enjoyable because I usually don't hang out with guys ... but I found out that they are not so different from us." Another young woman said, "There were a lot more boys, but I don't feel that this negatively impacted the experience. But, I think that this was the very minimum amount of girls that I'd like. I think it was easier for me to relate to the girls at first, and I was glad that there were as many as there were." Luckily, we had a great group of kids and for the most part, the women were treated with respect.

We did notice, though, that the girls very rarely participated in certain activities, like team math contests, math relays and the informal soccer and ultimate games that were organized every week. They also seemed to speak up less in class and during the problem-solving sessions. Since the girls who came had such great experiences, this year's planning committee decided to focus on working to get more girls at the camp in future years. We firmly believe that the addition of more girls to the camp community will enrich our lives and theirs. We tried to look critically at all aspects of the camp and to make changes both to encourage more girls to apply and to make them comfortable and happy while at camp.

We looked at last year's application statistics. Out of a total of 180 applications, 24 were from girls. Of the 95 students accepted, 17 were girls. Additionally, 46 of the 86 students attending needed financial assistance, including all but one of the 13 girls. From this evidence, we drew two conclusions. First, it is important to make financial assistance available to all students, but especially to women. This will hopefully encourage some women to apply who otherwise would not. To that end, we are setting up a scholarship fund especially for young women. Second, we noticed that a large proportion of the women who applied were accepted, but it seems that girls either weren't hearing about the camp or they weren't being encouraged to apply by teachers or parents or society in general. We resolved to find new ways to reach out to girls.

One first step is to try to reach teachers and let

by Jody Esmonde and Jessica Sidman

them know of our efforts to bring more girls to the camp. We've posted a letter on the CMS Women in Math mailing list and we plan to put notices in newsletters of science and math teacher associations, in the hope that teachers can encourage their bright female students to look into summer math and science programs like ours.

We also took a look at our advertising brochure and application form. In this year's brochure there is a section about girls at Mathcamp which includes some feedback from female campers of previous years. There is a similar section on our website, with links to sites about women and girls in math. Our application form includes a quiz, which last year consisted mainly of contest-type math problems. We realized that this didn't accurately reflect all the types of math that we do at camp. Certainly, we do spend some time at camp doing problem-solving sessions and working on contest-type math. But that is not our focus; we offer many week-long courses on different subjects, ranging from Introductory Group Theory to Hyperbolic Geometry to p-adic Numbers. We changed the quiz to include fewer contest-type problems and more exploratory problems. We encourage the students to take the problems as far as they can, to make conjectures and try to prove them. There are also some project options, and again, applicants are encouraged to take the projects as far as they would like. We hope that this new type of application quiz will encourage a more diverse group of students to apply and will give them a more accurate picture of what we aim to do at camp.

Of course, once we get the girls to the camp, we need to continue to be supportive of them and to ensure that their needs are met. We are thinking of organizing special athletic activities just for the girls, if enough girls are interested. Last year almost half of the members of the staff at camp were women. We hope to achieve the same next year, and as we plan which professors we bring in as guest speakers, we are of course keeping an eye on the gender ratio. We definitely don't want the campers to think that women can be math undergraduates and math grad students, but not math professors!

The problems we face in trying to attract a more diverse group of people to camp are quite complicated, and it's hard to know exactly which course of action to choose. We've done our best to make changes to the camp to try to make it more welcoming of girls and more attentive to their needs but we'd very much appreciate any suggestions anyone has for us. Please contact us at esmonde@math.mcgill.ca or jsidman@math.lsa.umich.edu if you have any suggestions or comments. In addition, we strongly encourage all of you to find out about all the math programs out there for high school students, and to encourage the girls you know to try them out!

For more information about Canada/USA Mathcamp, see our website: www.mathcamp.org.

HRUMC

The sixth annual Hudson River Undergraduate Mathematics Conference will be held at Siena College in Loudonville, New York on Saturday, April 17, 1999. 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 pleased to announce that the keynote speaker will be John Koch. 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 1999 conference from the Student Loan Marketing Association. In previous years, the following organizations have contributed financial support: the New York Cluster of the Pew Science Program in Undergraduate Education, New England Consortium for Undergraduate Science Education, Howard Hughes Medical Institute, the Sloan Foundation, NSF, the GE 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: Emelie Kenney, Siena College (emelie@ares.cs.siena.edu), Scott Vandenberg, Siena College (vandenberg@siena.edu), Christopher Carner '01, Siena College (scc1078@siena.edu), Mary Beth Decasperis, '99, Siena College (smd2942@siena.edu), Brenda Johnson, Union College (johnsonb@union.edu), David Vella, Skidmore College (dvella@scott.skidmore.edu), Ben Lotto, Vassar College (belotto@vassar.edu) or Susan Loepp, Williams College (sloepp@williams.edu).

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PH.D.'S

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

Over the past eleven years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings.

WHEN: The next AWM Workshop to be held in conjunction with the annual Joint Mathematics Meetings will be in Washington, DC, January 19–22, 2000. The Workshop is scheduled to be held on Saturday, January 22, 2000 with an introductory dinner on Thursday evening, January 20, 2000.

WORKSHOP: Twenty women will be selected in advance of the workshop to present their work; the selected graduate students will present posters and the recent Ph.D.'s will give twenty-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. The workshop will also include a panel discussion on issues of career development, a luncheon and a dinner with a discussion period. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and recent Ph.D.'s 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: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years, whether or not they currently hold an academic position. Women with grants or other sources of support are welcome to apply. 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 WWW: www.awm-math.org

(Applications via email or fax will not be accepted.)

APPLICATION DEADLINE: Applications must be received by **September 1, 1999.**

COBASE GRANTS

With funding from the National Science Foundation (NSF), the NRC's Office of Central Europe and Eurasia offers grants to individual American specialists who plan to establish new research partnerships with their colleagues from Central/Eastern Europe (CEE) and the Newly Independent States (NIS). This grants program, entitled Collaboration in Basic Science and Engineering (COBASE), offers short-term Project Development Grants which support American specialists who wish to host or visit their CEE or NIS colleagues for up to two weeks in order to prepare collaborative research proposals and long-term grants which provide similar support for American specialists for periods of one to six months. This program is designed primarily to prepare these new partnerships for competition in NSF programs.

Applications from American specialists who possess or will possess Ph.D. degrees or equivalent research at least six months prior to the requested beginning dates of their programs will be considered. U.S. citizens and permanent residents are eligible. Visiting specialists must possess CEE or NIS citizenship and must hold Ph.D. (kandidat) degrees or equivalent research training and experience at least six months prior to the requested beginning dates of their programs. U.S. Government employees generally are not supported under the program. As the program is designed to support new collaborative efforts, no more than two grants will be awarded per applicant in a four-year period. Applicants who have received their doctoral degrees within the past six years will receive special consideration, as will applicants wishing to work with colleagues in less frequently represented countries and regions. Scientists and engineers who hold a current NSF grant and are eligible for an NSF international supplement should not apply to this program. NSF's Eastern Program staff (703-306-1703) can advise regarding international supplements.

Grant levels are $2,200–2,500 for Short-Term Project Development and $3,000–15,300 for Long-Term. Postmarking deadlines are **July 30, 1999** for Long-Term and **April 5, 1999** and **August 16, 1999** for Project Development only.

Christina Maiers, Program Assistant, NRC, would like to encourage more women to apply for these grants. Please contact her directly for application materials (202-334-2644; Office for Central Europe and Eurasia, NRC, 2101 Constitution Avenue, Washington, DC 20418), or see the website http://www2.nas.edu/oia/22da.html for all information and forms.

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.

Target dates. In 1999 there will be two award periods. 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.

If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The deadlines for receipt of applications are **April 1** and **October 1, 1999**.

WOMEN'S CONFERENCE

June 20–26, 1999, the 7th Interdisciplinary Congress on Women, Women's Worlds 99 (WW99), an international conference, takes place in >Tromsø, Norway. Part of the conference is dedicated to Women and Technology/Science. The woman undergraduate math student who informed us of this conference says: "At my university there are no women mathematicians, and it would be excellent to actually meet someone." More information about the conference may be found on the web at http://www.skk.uit.no/WW99/ww99.html.

NSF-CBMS REGIONAL RESEARCH CONFERENCES

The National Science Foundation has funded five NSF-CBMS regional research conferences to be held in the summer of 1999. These five will bring to 272 the total number of such conferences since the NSF-CBMS Regional Research Conference Series began in 1969.

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: Combinatorial Optimization: Packing and Covering (May 24–28; www.ms.uky.edu/~jlee/cbms.html), Generalized Linear Mixed Models and Related Topics (June 8– 12; www.stat.ufl.edu), Mathematical Analysis of Viscoelastic Flows (June 19–23; www.math.udel.edu), Statistical Inference from Generic Data on Pedigrees (July 19–23; www.math.mtu.edu/~jdong/CBMS.html), and Mathematical Control Theory of Coupled Systems of Partial Differential Equations (August 5–9; www.math.unl.edu/Dept/Conferences/CBMS/).

Proposals for 1999 conferences are requested; the closing date is **April 12, 1999**. 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 the series and guidelines for submitting proposals may be obtained from: CBMS, 1529 Eighteenth Street, NW, Washington, DC 20036; 202-293-1170; http://www.maa.org/cbms/cbms.html.

MATH/SCIENCE NETWORK

The Math/Science Network was founded in 1974 out of concern about the low participation of girls and young women in math classes. The Network still exists because: Among 5th to 11th grade public school students, half the girls say they will take math *only* as long as it is required. One third of 9th to 11th grade young women say that *no one* ever explained to them the academic consequences of their decisions regarding math and science studies. Over 30% of female high school seniors report they have been advised *not* to take senior math. Women receive over half of all bachelor's degrees, but *only 17.5%* of those in engineering. Although women have made steady gains among physics Ph.D. recipients, they still were *only 12%* of the 1994 Ph.D. class.

The Network believes that the whole community will profit when women enter, participate in, and advance in math-based scientific and technical occupations without gender-based barriers. For this to happen: The pool of qualified women must grow. To keep their options open, young women need to take the right mathematics and science classes in high school. Communities must create strategies to increase the number of girls completing high school mathematics. Successful strategies will nurture enjoyment and confidence in mathematics, connect mathematics to career opportunities, provide career role models, and actively encourage girls to persevere in mathematics.

To make this happen, the Math/Science Network created Expanding Your Horizons in Science and Mathematics™ Conferences. The Network coordinates EYH™ sites, providing planning materials, conference materials, technical assistance, and a networking link between sites. For more information or to become a member of the Network, write Math/Science Network, Mills College, 5000 MacArthur Blvd., Oakland, CA 94613 or visit www.elstad.com/msngoal.html.

AWM IN THE 1990s: A RECENT HISTORY OF THE ASSOCIATION FOR WOMEN IN MATHEMATICS: part 2

SK Days

AWM coordinates the Sonia Kovalevsky High School Days, programs held in various parts of the U.S. for high school girls and their teachers. The participants meet with college mathematics educators and women in industry for a day of interesting mathematical activities, and they learn about careers in mathematics and the importance of mathematics for many other careers. The Sonia Kovalevsky Days programs were started in 1985 by Pamela Coxon; recent funding from the National Security Agency has supported about 15 of the programs per year. High school women have remarked that the programs have changed their lives and have opened up a world of career possibilities and interests. Educational institutions find the programs benefit their recruitment efforts, and some institutions even offer their own programs which are self-sufficient. At present funding for the whole project is renewed year by year; long-term support or self-sufficiency would be desirable.

Travel Grants

Through a grant from NSF, AWM administers a grant program to fund travel by women mathematicians to research conferences.[12] This program, which was started in the mid-1980s by then-president Rhonda Hughes, has funded hundreds of travel proposals and provides a valuable opportunity to advance research activities and visibility of women in the research community. The awards are selected by committees of AWM volunteers; generally preference is given to applicants who will be presenting their research. The travel grants, awarded for both international and domestic travel, benefit women from diverse research areas. Younger women mathematicians who have received travel support are grateful for this program. As Revathi Narasimhan points out, this program is particularly useful because "small schools have fewer college-supported avenues for funding ... (it is) nice to see an organization such as AWM taking an interest in funding small grants."

An exciting new expansion of the travel grant program has been developed for "mentor grants" of up to $4000 for travel, subsistence, and some salary for a woman mathematician to spend a month working with an established mathematician (male or female). Funded by NSF, these grants should prove particularly useful to women researchers who are somewhat isolated at their current jobs. As with the other travel grants, this program would not be restricted to recent Ph.D.'s.

Special Conferences

The tradition of holding special conferences in honor of famous women in mathematics, such as Sonia Kovalevsky and Emmy Noether, began in the early days of AWM. In 1996 AWM held another special conference, in honor of Julia Robinson, and the Association is currently organizing an Olga Taussky-Todd conference to be held July 16–18, 1999 at the Mathematical Sciences Research Institute (MSRI). Described by participants as wonderful, energizing, and empowering, the Julia Robinson conference featured talks on her life and work; other mathematical talks; poster presentations; and panel discussions on job hunting, building a career, and applying for grants.[13] Sharon Frechette summarized her experience at the conference:

> A panel discussion with women from different kinds of educational institutions, NSA, and industry was informative and interesting ... a session on how to conduct a job search with a great mock interview with Q&A afterwards [was] incredibly helpful.... Overall, I was impressed with the message AWM seemed to be sending to young women mathematicians: "Things might have been difficult for many of us as we were starting out, but it needn't be that way, and we're working to ensure that things continue to improve for women making a career in this field."

Another young women said the conference had a large impact on her cohort, "both in the number of

By Jean E. Taylor, AWM President, Rutgers University and Sylvia Wiegand, AWM Past President, University of Nebraska. *This is an expanded version of the article of the same name appearing in the January 1999 AMS* Notices, *pp. 27–38; see www.ams.org/notices/199901/awm.pdf. Reprinted by permission of AMS and the authors;*

beginning mathematicians who participated and the connections formed by each of them."

Lectures

AWM sponsors and co-sponsors lectures at the January Joint Meetings and the summer Mathfests, including sponsoring the prestigious Emmy Noether lectures given in January. The Noether Lecturers have been women research mathematicians who have made fundamental and sustained contributions to the mathematical sciences. AWM, through its 1993–95 president Cora Sadosky, was instrumental in setting up similar lectures at the International Congress of Mathematicians. It also jointly sponsors lectures with other societies.

The AWM Emmy Noether lecturers in the 1990s have been Bhama Srinivasan (1990, University of Illinois-Chicago), Alexandra Bellow (1991, Northwestern), Nancy Kopell (1992, Boston College), Linda Keen (1993, CUNY), Lesley Sibner (1994, Brooklyn Polytechnic), Judith Sally (1995, Northwestern), Olga Oleinik (1996, Moscow State University), Linda Preiss Rothschild (1997, University of California, San Diego), Dusa McDuff (1998, SUNY at Stony Brook), and Krystyna Kuperberg (1999, Auburn University). The International Congress Emmy Noether Special Lecturers have been Olga Ladyzhenskaya (1994, St. Petersburg Steklov Institute) and Cathleen Morawetz (1998, Courant Institute, NYU). Other lectures have also been sponsored or co-sponsored by AWM at mathematics meetings. Christel Rotthaus gave a joint AMS/AWM/MAA lecture in January 1991; Kate Okikiolu gave a lecture in January 1996 as part of the twenty-fifth anniversary celebration for AWM. At the last several summer mathfests, there have been AWM/ MAA invited addresses: in 1996 (Seattle), Karen Smith; in 1997 (Atlanta), Suzanne Lenhart; and in 1998 (Toronto), Margaret Wright.

AWM Awards

Each year at the winter Joint Meetings prize session, AWM gives two prizes. The Alice Schafer Undergraduate Prize for Outstanding Undergraduate Work by a Female Student, first awarded in August 1990, now includes established mathematicians among past recipients. Winners of the Alice Schafer Undergraduate Prize include: January 1991: Jeanne Nielsen Clelland; July 1992: Zvezdelina E. Stankova; August 1993: Cathy O'Neil and Dana Pascovici; July 1994: Jing Rebecca Li; July 1995: Ruth Britt-Pacumio; July 1996: Iona Dumitriu; January 1998: Sharon Ann Lozano and Jessica A. Shepherd; and January 1999, Caroline J. Klivans.

Chuu-Lian Terng (AWM president 1995–97) on left and Linda P. Rothschild (1997 Emmy Noether Lecturer and AWM president 1983–85) at the Noether Lecture, San Diego, January 1997.

The Louise Hay Award for Excellence in Mathematics Education was first given in January 1991 to Shirley Frye, a former classroom teacher from Arizona. Later recipients have been Olga Beaver (1992, Williams), Naomi Fisher (1993, University of Illinois at Chicago Circle), Major Kaye A. de Ruiz (1994, United States Air Force Academy), Etta Z. Falconer (1995, Spelman), Glenda Lappan (1996, Michigan State) joint with Judith Roitman (1996, Kansas), Marilyn Burns (1997), Deborah Hughes Hallett (1998, Harvard), and Martha K. Smith (1999, University of Texas at Austin).

Panel Discussions

AWM holds panel discussions at the winter Joint Meetings, at the summer Society for Industrial and Applied Mathematics (SIAM) meetings and at other mathematics meetings (sometimes jointly organized with other groups). As is evident from two of the topics, "Affirmative Action" and "How to be a successful woman mathematician," these discussions concern issues of current interest in the profession as well as advice for young people. Sometimes controversial, always popular, they are among the

At the AWM-ONR Workshop held in conjunction with the SIAM Annual Meeting Stanford University, 1997: Row 4: Dianne O'Leary, Donna Calhoun, Pam Cook, Dawn Wheeler (AWM office), Joyce McLaughlin. Row 3: Jennifer Mueller, Elsa Newman. Row 2: Barbara Niethammer, Anna Georgieva, Suzanne Lenhart (workshop organizer), Sylvia Wiegand (1997–99 AWM president), Ruth Pfeiffer, Maeve McCarthy. Row 1. Ivonne Diaz-Rivera, Carolyn Hill Coleman.

most well-attended events at most meetings. The panel at the Joint Meetings in San Francisco in Jan uary 1995, "AWM: Why Do We Need It Now?" addressed some of the problems currently faced by women in mathematics. As summarized by Cora Sadosky, these include "disparity in the academic workplace: in tenure and promotion, in biased teaching evaluations, in extra loads of committee work, in routine assignations of work ... and dispar ity in professional activities: scarcity of women among editors of journals, principal investigators on research grants, among invited speakers at meetings and special sessions, among conference organizers (and need for childcare)." [ND94]. Ruth Williams spoke about some ways that AWM could assist women: networking through AWM would be bene ficial for the many isolated younger women; AWM programs such as workshops and travel grants have already helped these women become more visible and well-known; AWM could provide a forum for solving problems of common concern, such as through an interactive web page [MA95]. Sylvia Bozeman discussed the prob lems of minority women in mathematics and how AWM can assist — particularly how to attract more of them to study mathematics and to provide support for them to persist [MJ95].

At a panel discussion August 1995 at the Burlington Mathfest "Do Women and Men Have Different Career Trajectories?" Claudia Henrion discussed statistics showing that not only women, but also men often do better later in life; she concluded that "many current policies and practices favor youth and may inadvertently discriminate against women." Joyce McLaughlin discussed a career development tool for mathematicians outside of academia, and Carolyn Gordon explained that women were different partly because they are often not confident or clear about their career plans because their children and professional service may affect their careers more than men's [ND95].

The panel at San Diego January 1997 discussed "What it takes to have a successful career in the mathematical sciences." Audrey Terras summarized her talk with five simple rules: "1. Don't give up. 2. Keep learning and teaching. 3. Network. 4. Do useful mathematics, but do your kind. 5. Have a (good) life." Lesley Sibner described her career and her participation in the AMS; she said they have been enjoyable and she acknowledged several effective presidents of AWM for their contributions to women in mathematics [MJ97].

In August 1994 at the Minneapolis Mathfest, a panel was organized by Joan Hutchinson on "Celebrating women's achievements in algebra, analysis, combinatorial geometry, past, present and future." The panelists, Jane Gilman, Karen Saxe, Doris Schattschneider, and Marie Vitulli, discussed the work of other women in their research areas [ND94].

Other panel discussions have included "The Status of Women in Mathematics" (cosponsored) at

the Kyoto ICM in 1990, "Careers that Count" (modeled after the booklet) at the Orono Mathfest, August 1991 and a panel on affirmative action jointly organized with the Canadian Mathematical Society (CMS) Committee on Women moderated by Asia Ivic Weiss at the Vancouver joint AMS/CMS meeting in Summer 1993. (The panelists Joan Geramita, Richard Griego, Mary Gray, and Joan Wick Pelletier described their presentations in the *Newsletter*.) At the ICM in Zürich in August 1994, a panel discussion cosponsored with the CMS Committee on Women and the European Women in Mathematics focused on issues for women in various countries, such as childcare, and alleged "quotas" for women [ND94].

Some Other Meetings and Meetings Activities

Frequently AWM organizes or co-organizes no-host breakfasts and lunches at mathematics meetings for supporters of women in mathematics. At the AMS/London Mathematical Society joint meeting in Cambridge, England, in June 1992, AWM and the European Women in Mathematics (EWM) had a pleasant joint luncheon meeting.

At the 1994 winter Joint Meetings in Cincinnati, the AWM sponsored a special session on "Meetings of Mathematicians," organized by Meetings Coordinator Case, in honor of the American Math Society's 100th anniversary. The speakers included Alice Schafer, Dirk Struik, Lee Lorch and Saunders McLane.

In 1996, to celebrate AWM's twenty-fifth anniversary, an AWM/MAA 25th Anniversary Invited Address and a luncheon were held at the 1996 Joint Meetings; another AWM Invited Address was given at the 1996 Summer Meeting, and AWM sponsored the Julia Robinson Celebration of Women in Mathematics Conference.

A special AWM Symposium was held at the International Congress for Industrial and Applied Mathematics (ICIAM) in Hamburg Germany July 3–7, 1995. Four talks on various area of applied mathematics were presented by women recent Ph.D.'s [ND95]. Also a Workshop was held at the International Congress of Industrial and Applied Mathematicians (ICIAM) in July 1991.

A major goal of AWM has been to increase the participation of women in professional meetings of mathematicians, and this effort has been successful. Other organizations have arranged meetings showcasing women in the 1990s, which are particularly inspiring for new women in the field. For example, the European Women in Mathematics and the Women in Mathematics Committee of the Canadian Mathematical Society both sponsor meetings featuring mathematics talks by women mathematicians in various areas. A conference in Canada on Numerical Mathematics and Computing contained an all-women cast of speakers [SO93]. In March 1994, a Celebration of Women in Mathematics, organized by Susan Friedlander and held at MIT, featured nine outstanding lectures by prominent women mathematicians [MJ94]. In October 1994 a workshop sponsored by the Mathematical Sciences Institute and the AMS on "Women in Probability" was organized by Molly Hahn and Ruth Williams at Cornell; it included sixty attendees, eleven invited lectures, and twenty-six contributed lectures plus roundtables and panel discussions [MJ95].

Footnotes

12. The guidelines for awards are the same as those for other NSF research awards, namely, the work must be in an area of mathematical research funded by NSF, and the applicant must be a U.S. resident.
13. This conference was funded by NSA, NSF, MSRI, and the Rosenbaum Foundation.

– to be continued –

San Francisco, January 1995. Teresa Edwards (left) and Sylvia Bozeman (right) accept the AWM Hay award on behalf of Etta Falconer, Cora Sadosky (AWM President 1993–95) presents the award.

SONIA KOVALEVSKY MATHEMATICS DAYS

The Sonia Kovalevsky High School Mathematics Days below were funded by a grant awarded to AWM by the National Security Agency. Thanks, NSA!

Celebration of Women in Mathematics: Elizabeth City State University

The Celebration of Women in Mathematics was held at Elizabeth City State University on Tuesday, October 16, 1998. The event was co-sponsored by the Office of Naval Research Nurturing ECSU Research Talent Program and the NASA Network Resources and Training Site. Girls and teachers from five area schools made up the 240 participants. All received registration packets including a portfolio, drink bottles, notepad and mirrors. All items were imprinted with the Women in Mathematics Logo. AWM and NSA literature was also distributed to all participants. The Celebration consisted of a series of workshops, a career panel, math sprint competition, lunch and a Math on the WWW Scavenger Hunt. Photos from the event can be viewed at http://nia.ecsu.edu/nrts/SoniaK.html.

The career panelists included Dr. Eleanor Jones, mathematics professor at Norfolk State University; Ms. Amy Roderwald, a mathematician with the National Security Agency; and Dr. Georgia Lawrence, a professor of mathematics at Elizabeth City State University. All girls and their teachers participated in the career panel. Roderwald also conducted a well-attended workshop on cryptography.

The mathematics sprint competition involved nine teams of five girls. First, Second, Third Place and three honorable mention trophies were awarded to winning teams during the awards luncheon.

This year teams of girls and their teachers were invited to conduct workshops. Two workshops resulted: "Integrating Math and Science" and "Using Graphics Calculators." Girls had the opportunity to explore mathematics sites on the Internet during the WWW Math Scavenger Hunt. Another workshop directed girls in exploring the NASA site named "The Women of NASA."

ECSU faculty members Dr. Linda Hayden, Dr. Georgia Lawrence, Dr. Barbara Johnson, and Dr. Jharna Sengupta served as program organizers and workshop leaders. Dr. Loise Sutton, professor emeritus and past chairperson of the Mathematics Department was the special guest.

Messiah College

On Thursday, November 5, 1998, Messiah College, Grantham, PA hosted its third annual Sonia Kovalevsky Day, from 4 to 8 P.M. This was the first year we invited young women to come on a weekday afternoon rather than Saturday, and the change in schedule was very successful. Our attendance increased by a factor of five, rising from 18 students last spring to 90 this fall. We were thrilled to have students and teachers from eleven area schools attend. It was particularly encouraging to have a mix of students from rural, suburban, and urban Harrisburg schools, and we had quite a culturally diverse group as well; approximately one third of the students were Asian, African American, or Hispanic, all of which are minority cultures in this area.

To start the afternoon, each student received an insulated lunch bag, carrying the slogan "Mathematics Takes You Where You Want To Go." The bag contained registration information, free brochures, pencils, and stickers. Each teacher was given a framed color image of a four-dimensional, complex-valued function to display on their desks at school. We welcomed the girls and introduced them to Sonia Kovalevsky Day by giving each of them a puzzle piece. They mingled and met each other while they found the matching pieces; each of the sixteen puzzles included a tidbit of information about Sonia's life and inspiration.

The girls were divided into two groups to attend the interactive sessions, in which they saw examples of how mathematical principles are used to answer questions and solve problems. In one session, the girls saw Messiah College's solar-powered car, *Genesis*, built and driven in competition by an undergraduate student team every two years. A female engineering student described how the car is modeled and constructed and answered the girls' questions about the competition. In the second session, two mathematics majors led the girls in an experiment with animal crackers, simulating how the "capture/recapture" method is used to predict the population size of a species in the wild.

All participants had dinner in a café on campus, and many of the girls took advantage of dorm tours offered by several Messiah students. Dinner was a

Angela Hare, Program Coordinator, Messiah College

good time for our college students to talk with the girls and for teachers and students to talk informally. After the meal, the students took part in a problem-solving contest while teachers and other adults met and discussed ideas for future programs.

The final event was a panel discussion in which four women from local industry and one from NSA described their careers and education. There were a variety of experiences represented in the panel, including computer science, engineering, statistics, and mathematics careers. The girls had many questions for the panelists, and several commented on the surprising things they learned.

I am very grateful for the support of the AWM and NSA which makes Sonia Kovalevsky Day possible and allows me to build on the educational connections these days establish. The girls and teachers have expressed a particular interest in interactive activities in physics and engineering. I plan to work with engineering and physics faculty this spring to develop ideas for a program next fall which can give the girls concrete experiences to build on their intuition in these areas.

North Carolina A&T

The North Carolina A&T Sonia Kovalevsky High School Mathematics Day took place on Thursday, September 17, 1998. About 150 participants from high schools in the Greensboro/High Point/Winston Salem area participated in the event.

After registration the morning session started with some opening remarks by Alexandra Kurepa of NCA&T about the background and the history of Sonia Kovalevsky Day which was followed by a talk, "Who was Sonia Kovalevsky?" given by Giles Warrack of NCA&T. The students were noticeably impressed by the importance of her work. Our principal speaker was former AWM President Rhonda Hughes from Bryn Mawr College, who gave the talk "How Mathematics Can Improve Your Image." Rhonda shared some of her experiences and did a superb job of exposing students to concepts such as Fourier series and wavelets in an informative and elementary way. The students enjoyed her lecture. After a short break sessions started. Students had a choice of two workshops: "Mathematics on the Web" (conducted by M. Chen and G. Gibson of NCA&T) or "Problems and Solutions" (D. Clemence and A. Issa of NCA&T). In the meantime the teachers met in a workshop given by Ellen Kirkman of Wake Forest University, "Preparing Women for Careers in Mathematics and the Sciences." The workshop was a lively exchange of ideas and experiences regarding mentoring, guiding students towards research and informing them of careers available for mathematicians. Students and teachers were given a copy of *Careers that Count*, an AWM publication featuring careers in mathematics. The booklet was well-received.

After lunch, a one-hour workshop for all participants was given by Madonna Chernesky from NSA, a mathematician who is out in the "real world" doing what the students consider "fun things." The workshop, "Be A Cryptanalyst: Solve a Cipher System," required student participation. It was very informative and entertaining so the students gave it high marks on the evaluation forms. A number of them gathered around Ms. Chernesky wanting to get more information on how one becomes a cryptanalyst. They also seemed surprised to learn of the high number of mathematicians employed by the NSA. The program ended by 2:30 to allow students to get back to their schools before the end of the school day and take the buses home.

As an organizer it was very rewarding to have been able to offer a program that has attracted so many participants and to look up in the auditorium and see a room full of young women who have an interest in and the capability to do mathematics.

North Dakota State University

The Sonia Kovalevsky High School Day was held on Saturday, October 17, 1998. The event was sponsored by AWM and the NDSU College of Science and Mathematics. Thirty-two students and three teachers from the area participated in the event. One reservation high school sent five students and two teachers to our event; these participants drove more than six hours to attend. We were able to provide lodging for one night to help with their expenses. This kind of effort underlines the need for events such as ours in a rural state. Additionally, several NDSU students, some from our classes and some from the NDSU Science Bound Project, attended the program. These students aided in the workshops and served as mentors for the high

Alexandra Kurepa, North Carolina A&T

Ken Johnson, North Dakota State University

school students.

Following a continental breakfast everyone was welcomed by Dean McCaul of the NDSU College of Science and Mathematics. Each participant received a notebook, pen and a program for the day. Dr. Rodica Simion of George Washington University presented a talk on partitions of the integers. The students enthusiastically enjoyed the talk.

After the keynote address the students and teachers participated in two workshops: one involving three famous problems from Greek geometry and the other about tiling the plane using polyominoes.

Participants were treated to a sandwich bar lunch in the Family Life Center at NDSU where students, teachers, visitors, and faculty interacted, discussing, among other things, mathematics in college and career opportunities in mathematics.

Immediately after lunch we presented a career panel for the students. The participants included Rodica Simion (George Washington University mathematics professor), Elizabeth Mossberg (NSA analyst), Deb Battles (Norwest Financial Investment Broker), Lisa Nolan (veterinarian and NDSU microbiology professor), and Linda Vik (NDSU mathematics graduate, now a graduate student in Business Administration at NDSU). This was probably the highlight of the program as the participants explained the kinds of work that they perform and how mathematics has helped them achieve their career objectives. The questions asked by the students indicated that they were both enjoying and benefiting from the presentations.

Following the career panel students took part in two of the three additional workshops we presented, Regular Solids, The Apportionment Problem and Ramsey Theory. At the end of a long but enjoyable day, each of the participants received a copy of the John Allen Paulos' book *Innumeracy* and a copy of AWM's *Careers That Count*. The MAA book *She Does Math!* is being shipped as a gift to participating schools since it arrived too late for the program.

From the organizer's point of view, we were extremely happy with the day. Participation was nearly double that of our first event, although we were somewhat disappointed in participation by teachers. We had substantially better coverage by the local media than last year. There was a TV interview, a radio interview, and an article in the local paper (which did not print the article we sent them last year). This media coverage resulted in inquiries from several girls who attended without their teachers. This year we were also able to have a web page for our event which allowed students to look into the program and get their questions answered on-line. The address for the page is http://panda.cs.ndsu.nodak.edu/~skday/.

Participants were mailed a follow-up questionnaire. Judging by the responses we have received so far the participants greatly enjoyed and profited from the event. We are hoping that the inclusion of local business people in our career panel can be expanded in the future and that their participation may ultimately result in financial contributions for future events.

Career Panel at North Dakota State SKHS Day

AWM WORKSHOP: Focus on Research and Career Experiences

held in conjunction with the 6th SIAM Conference on Optimization (May 10-12, 1999) and the 1999 SIAM Annual Meeting (May 12-15, 1999), Sheraton Spirit of Atlanta Hotel, Atlanta, Georgia

Preliminary Schedule as of February 15, 1999

The Association for Women in Mathematics (AWM) plans a workshop from Wednesday evening through mid-day Friday, May 12-14, 1999. These events are held in conjunction with the 1999 SIAM Annual Meeting and the 6th SIAM Conference on Optimization. AWM and SIAM welcomes your participation.

The sessions focus on showcasing the research of women graduate students and postdoctoral mathematicians and helping individuals to prepare for careers in mathematical sciences. Our first session is a minisymposium which focuses on career planning and opportunities. The workshop also has three research minisymposia presented by postdoctoral mathematicians and a poster session presented by graduate students. In addition, starting off our events on Wednesday evening will be a dinner.

There is NO registration fee for this AWM workshop. The minisymposia and poster session are **open to all SIAM meeting attendees.** Pre-registration for the AWM dinner is required. Tickets on-site will be very limited. Individuals can inquire about dinner ticket availability by contacting the AWM Office, 4114 Computer & Space Sciences Bldg., University of Maryland, College Park, MD 20742-2461; phone 301-405-7892 or email awm@math.umd.edu. For further information on the workshop, contact the workshop chairperson, Suzanne Lenhart (lenhart@math.utk.edu) or Dawn Wheeler at AWM Office (awm@math.umd.edu)

LOCATION: ***Sheraton Spirit of Atlanta Hotel*** **[rooms below subject to change ↓]**

Wednesday, May 12, 1999

Savannah Room

8:30 p.m. - 11:00 p.m. **AWM Dinner Banquet**

[see AWM staff on-site for ticket availability or email awm@math.umd.edu prior to the meeting]

Thursday, May 13, 1999

Capitol North

10:45 a.m. - 12:45 p.m. **AWM Minisymposium on Strategies and Opportunities for Success (MS23)**

This minisymposium will feature four mathematicians/computer scientists in a variety of careers. The speakers will discuss their career experiences and give some advice on strategies for success. A variety of opportunities will be discussed. Government, academic and industrial careers will be included.

Organizers: Suzanne M. Lenhart, University of Tennessee, Knoxville and Tamara G. Kolda, Oak Ridge National Laboratory

Speakers:

10:45 a.m.	**William E. Hart,** Sandia National Laboratory	*TBA*
11:15 a.m.	**Willard Miller**, Instit. for Math & its Applications, University of Minnesota	*"Research and Networking Opportunities at the IMA"*
11:45 a.m.	**Virginia Torczon**, College of William and Mary	*TBA*
12:15 p.m.	**Kathryn Brenan,** The Aerospace Corporation	*TBA*

Georgia 8

3:45 p.m. - 5:45 p.m. **AWM Minisymposium on Mathematical Biology (MS36)**

This minisymposium will feature four female recent Ph.D.'s speaking on applications of mathematics in biological scenarios. Most of the applications involve ordinary or partial differential equations, governing population models. Cancer, nasal passages and anticoagulant models will be included.

Organizer: Suzanne M. Lenhart, University of Tennessee, Knoxville

Speakers:

3:45 p.m.	**Carolyn R. Cho**, SmithKline Beecham Pharmaceuticals	*"What Makes a Good Anticoagulant? Stories from Mathematical Modeling"*
4:15 p.m.	**Anna Georgieva**, Chemical Industry Inst. of Toxicology	*"Comparison of Inhaled Formaldehyde Dosimetry Predictions with Regional DNA-Protein Crosslink Measurements in the Rat Nasal Passages"*
4:45 p.m.	**Trachette Jackson**, Instit. for Math & its Applications, University of Minnesota	*"Mathematical Models in Two-Step Cancer Chemotherapy"*
5:15 p.m.	**Kathleen A. Rogers**, Instit. for Math & its Applications, University of Minnesota	*"A Numerical Study of Relaxation Oscillators Coupled with Reciprocal Inhibition"*

- continued on next page -

AWM WORKSHOP: Focus on Research and Career Experiences

Thursday, May 13, 1999 (continued)

3:45 p.m. - 5:45 p.m. **AWM Minisymposium (MS35)** [THIS MINISYMPOSIUM HAS BEEN COMBINED WITH MS48]

Thursday, May 14, 1999

Georgia 7

10:30 a.m. - 12:30 p.m. **AWM Minisymposium on PDEs/Optimization and Applications (MS48)**

This minisymposium will feature four female recent Ph.D.'s speaking on partial differential equations, optimization and various applications. Application include relaxation oscillators, membrane eigenvalue problems.

Organizers: Tamara Kolda, Oak Ridge National Laboratory and Elsa Newman, Marymount University

Speakers:

10:30 a.m.	**Zhong-Hui Duan**, University of Michigan	*"A Taylor Expansion Method for Computing Potential Energy"*
11:00 a.m.	**Eun Heui Kim**, University of Connecticut	*"On Quasilinear Elliptic Boundary Value Problems"*
11:30 a.m.	**C. Maeve McCarthy**, Murray State University	*"Recovery of a Density from eigenvalues of a nonhomogeneous membrane"*
12:00 p.m.	**Pamela J. Williams**, Sandia National Laboratories	*"Optimal Face Identification Methods and Bounded Variable Linear Programs"*

Georgia 8

12:30 p.m. - 2:00 p.m. **AWM Poster Session -- poster presentations by invited female Graduate Students**

[AWM will have refreshment items available during the poster session.]

Graduate Student Presenters:

Deborah Alterman, University of Michigan	*"Diffractive Nonlinear Geometric Optics for Short Pulses"*
Orna Amir, University of Arizona	*"A New Method for Solving the Stochastic Nonlinear Unsaturated Flow Problem"*
Julie A. Byrne, Rensselaer Polytechnic Institute	*"Dynamics of Low-Amplitude Resonant Light-Matter Interaction"*
Deborah Goldman, University of California, Berkeley	*"On Protein Folding and Protein Structure Comparison"*
Katharine Gurski, University of Maryland, College Park	*"Decay Rates of Internal Waves in Viscous Near-Critical Fluids"*
Victoria E. Howle, Cornell University	*"An Iterative Method for Solving Complex-Symmetric Systems Arising in Electric Power Modeling"*
Eleanor W. Jenkins, North Carolina State University	*"Multilevel Schwarz Preconditioners in Groundwater Flow"*
Eunok Jung, Courant Inst. of Mathematical Sciences	*"2-D Simulations of Valveless Pumping Using the Immersed Boundary Method"*
Gema A. Mercado, University of Arizona	*"Modeling hotspot dynamics in microwave heating"*
Rebecca Segal, North Carolina State University	*"Mathematical Model of Airflow in a Child's Lung"*
Alexandra Smirnova, Kansas State University	*"Continuous regularization of nonlinear ill-posed problems"*
Lih-Ing Wu, Purdue University	*"Possible Codimension Three Bifurcation in an Epidemic Model"*

VOLUNTEERS NEEDED - Volunteers are needed to be **"mentors"** at the **AWM Workshop (May 12-14, 1999)** held in conjunction with the SIAM meetings at the ***Sheraton Spirit of Atlanta Hotel*** (May 12-18, 1999). Mentors are matched with a a postdoc who is giving a talk in the workshop. Mentors should attend the talk of their assigned mentee and give some constructive advice about the talk. If possible, the mentor should attend the AWM dinner to get introduced to the mentee or arrange to talk with the mentee at some other time. Volunteers are also needed **to participate in a "discussion group" session** on **Sunday evening, May 12** following the AWM Dinner. Career advice and situations will be discussed at the session. If interested, **volunteers should contact** Suzanne Lenhart (**lenhart@math.utk.edu**) or the AWM office (**awm@math.umd.edu**)

Olga Taussky Todd Celebration of Careers in Mathematics for Women

For more information on this conference to be held at the Mathematical Sciences Research Institute (MSRI), please see the **upcoming May/June 1999** issue of the *AWM Newsletter* and the AWM and MSRI websites at: **http://www.awm-math.org**; **http:\\www.msri.org**

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AGNES SCOTT COLLEGE - DEPARTMENT OF MATHEMATICS - One-year position for the 1999-2000 academic year. Candidates must have completed the Ph.D. by July 1, 1999. We seek someone to teach an upper division course in algebra or topology, and who has both an interest in and experience with innovative teaching with technology. The teaching load in the four-person department is three courses per semester. Agnes Scott College is a highly selective, independent national liberal arts college for women located in metropolitan Atlanta. For full consideration, applications should be received by March 26, 1999, but the position will remain open until filled. Send letter of application describing teaching and scholarly interests, current resume and names and phone numbers or email addresses of three references to: **Dr. Myrtle Lewin, Department of Mathematics, Agnes Scott College, 141 East College Avenue, Atlanta/Decatur, GA 30030-3797.** Fax: 404-471-5336; Email: <mail to: mlewin@agnesscott.edu> Founded in 1889 by Presbyterians, Agnes Scott College has a strong commitment to diversity and urges members of underrepresented groups to apply. An Equal Opportunity Employer. <http://www.AgnesScott.edu>

JOHNS HOPKINS UNIVERSITY - DEPARTMENT OF MATHEMATICS - Applications invited for one or more positions at the Associate or Full Professor level in the general areas of analysis, algebra and topology, beginning Fall 1999 or later. Preference will be given to candidates whose work is related to mathematical physics in a broad sense. The Johns Hopkins university actively encourages interest from minorities and women. Applicants should send a curriculum vitae to: **Chair, Hiring Committee, 3400 N. Charles Street, Kreiger 404, Baltimore, MD 21218.** First round preference will be given to applications received by April 1, 1999. AA/EOE.

NORTH CAROLINA STATE UNIVERSITY - CENTER FOR RESEARCH IN SCIENTIFIC COMPUTATION - The Center for Research in Scientific Computation at North Carolina State University in collaboration with MedAcoustics, Inc., Raleigh, NC, expects to make a University-Industry Cooperative Postdoctoral Research appointment starting August 16, 1999 (availability of the position is contingent upon funding). The appointment will be in the area of applied mathematics and scientific computation. The successful candidate for this position is expected to participate in a collaborative multidisciplinary team carrying out fundamental research investigations to provide a better understanding and predictive capability of the dynamics of wave propagation from coronary stenoses through human body tissues. The research efforts will involve the modeling of wave propagation in a viscoelastic, heterogeneous, and anisotropic medium, development of computational algorithms for both forward and inverse problem analytic studies, and the design of corresponding experiments for model validation and verification. Since the project requires physical modeling, theoretical analysis and computational skills, candidates who are outstanding in at least one of these areas and willing and able to learn quickly in the others will be given highest priority. This position offers a unique opportunity for multidisciplinary mentored post-doctoral research on a mathematical project arising in an industrial/university collaborative effort. Applicants should send a vita and brief description of research interests and have three letters of recommendation sent to: **Search Committee, Attention: Hien T. Tran, Center for Research in Scientific Computation/Department of Mathematics, Box 8205, North Carolina State University, Raleigh, NC 27695-8205**; e-mail: tran@control.math.ncsu.edu. Applications will be considered at any time after January 15, 1999, as funding becomes available. NCSU is an AA/EOE. However, if this position is funded by NSF, the successful applicant must be a U.S. citizen or lawfully admitted permanent resident alien of the U.S. by January 1, 1999. In its commitment to diversity and equity, NCSU and the CRSC seek applications from women, minorities, and persons with disabilities. Individuals with disabilities desiring accommodations in the application process should contact Rory Schnell, CRSC, Tel: 919-515-5289, Fax: 919-515-1636, e-mail: rlschnel@eos.ncsu.edu.

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, 1998, and continue until the position(s) is (are) filled. Essential Duties: Conduct advanced research in statistical sciences, teach undergraduate and graduate students and maintain service in the Statistics Department. Essential Qualifications: Require Ph.D. in Statistics or related field, in hand or expected by August 15, 1999. Candidates must demonstrate potential excellence in teaching. Salary and benefits are competitive and commensurate with qualifications. Rank and salary are open. Candidate for assistant professor should send a letter of application, curriculum vita and three letters of reference. For senior positions, send a letter of application or nominations, curriculum vita, and the names of three references. Purdue University is an AA/EEO employer and educator. Send applications to: **Mary Ellen Bock, Head, Department of Statistics, Purdue University, 1399 Mathematical Sciences Building, West Lafayette, IN 47907-1399, USA.**

SANTA CLARA UNIVERSITY - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Two tenure-track positions, Assistant Professor level, beginning September 1999. Required: recent Ph.D. or Ph.D. with evidence of recent scholarship. Fields: a variety of fields will be considered, but preference for one of the positions will be given to applicants with the background and experience needed to teach courses for computer science majors (e.g., programming, data structures, algorithms). The department and the college are most interested in receiving applications from candidates with the desire and the ability to work effectively with colleagues in other academic departments on interdisciplinary and cross-departmental projects. Undergraduate teaching only. Any successful candidate, even one with computer science capability, should expect to teach a number of lower division mathematics courses each year. Faculty are expected to be able to mentor students going on for professional work or graduate studies in mathematics, computer science or related fields. Limited funds are available to support undergraduate research participation. The Department is in the College of Arts and Sciences in a comprehensive university and emphasizes (roughly equally) both excellent teaching and continuing research. The course load is seven quarter courses per year with downward adjustments for those actively engaged in research. The University's location in "Silicon Valley" offers many opportunities for contact with high tech industry. Applications should be sent to: **Chair, Search Committee, Department of Mathematics/Computer Science, Santa Clara University, 500 El Camino Real, Santa Clara, CA 95053-0290.** Further information about the University is available at www.scu.edu. Santa Clara University, a Jesuit institution, emphasizing education in the liberal arts and sciences, is an equal opportunity/affirmative action employer-Title IX M/F/H.

SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE - DEPARTMENT OF MATHEMATICS - Temporary Positions 1999-2000 - Temporary positions as Lecturer are anticipated starting on August 16, 1999. 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 effectively in English. 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, 1999, or until positions are filled. Send applications (including transcripts) to: **Temporary Positions, Department of Mathematics, mailcode 4408, Southern Illinois University, Carbondale, IL 62901-4408.** Southern Illinois University Carbondale is an Equal Opportunity Affirmative Action Employer.

SOUTHWEST MISSOURI STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Southwest Missouri State University anticipates a tenure-track Assistant or Associate Professor position in applied mathematics or statistics, beginning August 1999. Applicants must have a Ph.D. in mathematics or statistics, evidence of excellence in teaching, potential for research, commitment to professional activities, and effective communication skills. A minimum of five years of experience equivalent to academic service to SMSU is required for the Associate Professor position. Interest in actuarial science and research interest compatible with the faculty will be considered in favor of the candidates. Salary is commensurate with experience. Further information is available over the Web at math.smsu.edu. To ensure consideration, application materials should be received by March 15, 1999. Send application (resume, letter of interest, transcripts, description of current research, email address and phone numbers of all references, and preferably the *AMS Standard Cover Sheet*) and have three letters of reference sent to: **ASA Position, Department of Mathematics, Southwest Missouri State University, Springfield, MO 65804-0094**, Fax: 417-836-6696. AA/EOE.

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SOUTHWEST STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Southwest State University invites applications for a probationary full time Assistant/Associate Professor of Mathematics to begin August 18, 1999. The faculty member will teach a full range of statistics/mathematics courses and participate in department and university activities including, but not limited to, curriculum development, program review and outreach. Responsibilities may also include developing and directing a regional polling service and/or other statistical application tasks for the university. Doctorate in Statistics preferred. Completion of doctorate required by September 1, 1999 of the tenure application year. Successful college teaching and research and a strong commitment to working with students at the undergraduate level is highly desirable. Preference will be given to an applicant able to teach a breadth of statistics and mathematics courses and to an applicant who can demonstrate the ability to contribute to other statistical tasks for the university. Experience in computer use in teaching is also desirable. Letter of application addressing position qualifications, vita, teaching evaluations, official transcripts and name, address, and phone numbers of three references should be submitted to: **Office of Human Resources, Southwest State University, 1501 State St., Marshall, MN 56258.** Review of the applications will begin on March 25, 1999 and will continue until position is filled. Southwest State University is an Equal Opportunity Educator & Employer. Applicants must be able to lawfully accept employment in the United States.

TRINITY COLLEGE, WASHINGTON, D.C. - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Tenure track positions in Mathematics Program beginning August 1999. **(1)** Tenure-track position in mathematics. Qualifications include Ph.D. in the mathematical sciences, or the equivalent in mathematics education, and a strong commitment to teaching in a liberal arts and professional studies environment. **(2)** Possible tenure-track position in computer science. Qualifications include Master's degree or higher in computer sciences and a strong commitment to teaching in a liberal arts setting. The successful candidate will develop computer science courses to serve mathematics, natural science and social science majors. Interested candidates should send a letter of application, curriculum vitae, transcripts, and a statement describing curricular ideas relating to the role of mathematics or computer science in a liberal arts college. They should also arrange to have three letters of recommendation sent to: **Mathematics/Computer Science Search Committee, Department of Human Resources, Trinity College, 125 Michigan Avenue, N.E., Washington, DC 20017.** Applications should be received by March 31, 1999. Trinity College, one of the nation's oldest Catholic Colleges for women, is an EEO employer and welcomes applications from women and minority candidates.

THE UNIVERSITY OF ALABAMA - COLLEGE OF ARTS AND SCIENCES - DEPARTMENT OF MATHEMATICS - Director of Introductory Mathematics - The Department of Mathematics invites applications for a tenure-track position as Director of Introductory Mathematics at the assistant/associate professor level to begin in June 1999. This is a 12-month position. Candidates must possess a doctorate in mathematics or a doctorate in mathematics education with a Master's degree in mathematics (or the equivalent). The Director of Introductory Mathematics has primary responsibility for curriculum development, coordinating and scheduling introductory mathematics courses, and supervision of instructors and GTAs. Candidates must have successful teaching experience at the developmental level and post-secondary level, possess excellent communication skills, demonstrate knowledge of compensatory mathematics programs, materials, and methods, and have strong organizational skills. In addition, the Director is expected to teach at least one course per semester and to engage in scholarship in mathematics or mathematics education. Send letter of application, vita, transcripts, and at least three letters of reference to: **Recruiting Committee; Department of Mathematics; The University of Alabama; Box 870350; Tuscaloosa, AL 35487-0350.** Review of applications will begin in February and continue until position is filled. The University of Alabama is an AA/EO employer. For more information about the position or institution: http://www.math.ua.edu

UNIVERSITY OF NOTRE DAME - DEPARTMENT OF MATHEMATICS - Howard J. Kenna Chair in Mathematics - The Department of Mathematics seeks applications and nominations for its Howard J. Kenna Chair in Mathematics. The successful candidate for this chair at the Full Professor level will be a nationally and internationally recognized mathematician in a central discipline of mathematics. Of special interest to the department are candidates whose research activities inform and interconnect with one or more of the department's mathematical enterprises. For an essential overview of the department, see http://www.math.nd.edu/math/ Applications should include a letter of interest, curriculum vitae, and the names, addresses, and telephone numbers of three references. Applications and nominations should be sent to: **Professor Alexander J. Hahn, Department of Mathematics, University of Notre Dame, Notre Dame, IN 46556.** The review of candidates will begin immediately and continue until the position is filled. The desired starting date is September 1, 1999.

UNIVERSITY OF PITTSBURGH AT JOHNSTOWN - DEPARTMENT OF MATHEMATICS - The University of Pittsburgh at Johnstown announces a full-time, tenure-track Assistant Professor position in Mathematics to begin Fall 1999. Ph.D. in Mathematics required; emphasis in Analysis, Probability, or Applied Mathematics preferred. Responsibilities: professional development activities, University service, and teaching load of 24 credit hours per year possibly including Introduction to Biostatistics. Additional requirement: strong commitment to excellence in teaching and professional development, ability to guide undergraduates in student research, and ability to use various teaching methods. Application deadline: February 15, 1999, or until the position is filled. Send a letter of application, current vita, transcripts of all graduate studies, 3 letters of recommendation, a statement of teaching, a statement on professional development, other supporting documents, and email address (if available) to: **Dr. Stephen J. Curran, Search Committee Chair, Department of Mathematics, University of Pittsburgh at Johnstown, Johnstown, PA 15904.** The University of Pittsburgh is an Affirmative Action Equal Opportunity Employer. Women and Minority group members are invited and encouraged to apply.

UNIVERSITY OF WISCONSIN, SUPERIOR - DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE - Assistant Professor of Mathematics - At UW-Superior diversity is a valued asset, and we strive to offer quality programs in an environment of trust and cooperation that centers on the worth of all individuals. The University is seeking candidates who will contribute to the achievement of this goal. Applications are invited for a tenure track position in the Department of Mathematics and Computer Science at the University of Wisconsin-Superior, beginning August 26, 1999. Doctorate in mathematics or related field is required. The successful applicant for this position will be expected to teach courses in probability and statistics and other undergraduate courses in the Department. Active scholarship and participation in Department and University activities, including student advisement, service on committees, and directing undergraduate research are expected. Preference may be given to candidates with preparation or experience in one or more of these areas: probability & statistics, applied mathematics, computer science. Excellence in teaching is required. Send letter of application, *AMS Standard Cover Sheet*, resume, and copies of graduate transcripts to: **John Davis, Math Search; Department of Mathematics & Computer Science; University of Wisconsin-Superior; Belknap & Catlin, P.O. Box 2000; Superior, WI 54880-4500** or email to: **search@math.uwsuper.edu; Subject: Math Search.** Information about the position and the Department is available at: <http://math.uwsuper.edu> Also have three letters of recommendation (at least one of which must address teaching ability) sent to the same address. Review of applications will begin January 12, 1999. Applications received after March 29, 1999 will not be considered. Women and minorities are encouraged to apply. Names of finalists and any applicants who do not request anonymity will be released upon request. AA/EOE.

DO YOU HAVE A NEW ADDRESS ? Please inform us of any changes, so we can keep our database up-to-date. Just fill out the changes using the **form on the BACK COVER** or drop us an **email**. THANKS. EMAIL: awm@math.umd.edu

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

1998/1999 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.**

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INSTITUTIONAL MEMBERS WILL RECEIVE ONE 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 $15 ($23 for foreign members) 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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AWM

Newsletter

Volume 29, Number 2, March–April 1999

ADDRESS CORRECTION FORM

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