AWM

ASSOCIATION
FOR WOMEN IN
MATHEMATICS

PRESIDENT'S REPORT

Alice T. Schafer Prize

The seventh annual Alice T. Schafer prize will go to Ioana Dumitriu, a freshmen at New York University. Karen Ball, a senior at Grinnell College, and Wungkum Fong, a senior at UC Berkeley, are the runners-up; Tara Holm from Dartmouth College received honorable mention. The prize presentation will be held at the SIAM Annual Meeting in Kansas, July 22–26.

I would like to thank Ruth Charney (Ohio State University), Emma Previato (Boston University), and Janet Talvacchia (Swarthmore College) for serving on the Schafer Prize selection committee.

Conferences

In the last issue I reported on the Julia Robinson Celebration of Women in Mathematics Conference to be held July 1–3 at MSRI and the AWM-ONR workshop at the SIAM Annual meeting to be held July 22–26 in Kansas City. I am pleased to report that the planning for these two events has gone smoothly. The meeting programs can be found on pages 25 and 28–29. Full reports on these conferences will be given in a later issue of this *Newsletter*.

Seattle Mathfest

Karen Smith (MIT and University of Michigan) will give the AWM invited address at the Seattle Mathfest. The title of Karen's talk is "Calculus mod p." Karen received her Ph.D. degree from the University of Michigan in 1993. She is currently an assistant professor at MIT and has also accepted a tenured position at the University of Michigan starting in the fall of 1996 [for more info, see page 9.]

A special session, "Preparing Ourselves and Our Students for Careers in Mathematics," will be held the Friday before MathFest [for more info, see pages 26–27].

Sylvia Wiegand (President-elect of AWM) will organize an AWM breakfast at the Seattle meeting.

IN THIS ISSUE

Mathematics Education Column Editor

For the past several years Sally Lipsey has been editing the Education Committee column. Not only has she solicited many articles for the column, but she has also contributed interesting articles of her own, including biographical pieces on Florence Nightingale [July–August 1993, pp. 11–12] and Catherine Beecher [July–August 1994, pp. 11–12]. In recognition of this contribution, I am happy to report that Sally has now accepted the title of Mathematics Education Column Editor.

Conclusion

To end my report, I would like to wish you all a happy summer and to remind you about the AWM 25th Anniversary Fund Drive. Please see the May–June 1996 issue for the appeal articles by Sylvia and myself. A shorter version of the appeal letter by Sylvia is immediately below my report.

Chuu-Lian Terng
May 18, 1996
Boston, MA

REMINDER: AWM 25th ANNIVERSARY CAMPAIGN

AWM, 25 years old this year, needs your help to build an endowment for the future. Women in mathematics are infinitely better off than they were 25 years ago, thanks to AWM and the pioneers in the organization. Yet AWM has such limited financial support that its day-to-day operations are threatened. Please help ensure that AWM projects continue to encourage younger women in mathematics, to help recent Ph.D.'s get established, and to support our profession. If you have not already sent a donation to the 25th anniversary fund, please do contribute generously. This fund drive is a chance for all of us to give something back to AWM for all it has done for the profession and for women in mathematics. The past presidents and Chuu-Lian Terng (present president) are making a separate generous monetary contribution to the fund drive. Their challenge remains to the membership at

large: Can you give or raise five times what the past presidents give or raise as a group??

Please send your contributions to:

The Endowment Fund
Association for Women in Mathematics
4114 Computer and Space Sciences Building
College Park, MD 20742-2461.

Thanks very much in advance for whatever help you can give!

Best wishes,

Sylvia Wiegand, President-Elect of AWM

BIRTHDAY WISHES

The following resolution was passed by the Board of Governors of the Mathematical Association of America at their meeting on January 8, 1996:

RESOLVED, that the Mathematical Association of America, recognizing the outstanding contributions of the Association for Women in Mathematics, extends warm congratulations to the Association on the occasion of its twenty-fifth anniversary and looks forward to many years of continuing cooperation between our two organizations in promoting the full participation of women in mathematics at all levels.

The American Mathematical Society also congratulated us:

The Association for Women in Mathematics, founded in 1971 "to encourage women to study and to have active careers in the mathematical sciences" is celebrating the Twenty-Fifth Anniversary of its founding at this meeting in Orlando.

The American Mathematical Society extends to AWM its warmest congratulations on this very happy occasion. The Society looks forward to continued cooperation with the AWM to encourage equal opportunity to all within the mathematical sciences.

The National Association of Mathematicians presented a resolution to us at our 25th Anniversary Luncheon. The text of that resolution appeared on page five of the March–April issue.

NADINE KOWALSKY: IN MEMORIAM

Nadine Kowalsky has died of leukemia on March 14, 1996, at age 29. An exceptional scholar, she will be remembered for her efforts to bring together lesbian and gay mathematicians as well as for her outstanding research accomplishments.

A native New Yorker, Nadine graduated from the Bronx High School of Science, where she was valedictorian, in 1984. During high school, Nadine twice attended the Hampshire College Summer Studies in Mathematics program for high school students, which she appreciated for its emphasis on noncompetitive teamwork and exploration. Nadine's Hampshire summers influenced her decision to major in math at Harvard, where she graduated with honors in 1988.

At the University of Chicago, Nadine specialized in differential geometry — specifically, studying the automorphism group and conformal automorphism group of Lorentz manifolds — under the supervision of Robert Zimmer. For a Lorentz manifold which admits a non-compact simple Lie group of automorphisms, she obtained fundamental results relating the topology of the manifold to the algebraic properties of the Lie group, using ideas based on dynamical properties of the group action and its relation to the algebraic structure of the group. This beautiful and highly original work will appear in the *Annals of Mathematics*.

Nadine's involvement in gay and lesbian organizations began at Harvard, where she served briefly as president of the Gay and Lesbian Students Association. While at the University of Chicago, she organized an email list for lesbian mathematicians and helped to plan the first-ever reception for gays, lesbians and bisexuals at the Joint Mathematics Meetings in San Francisco. Sadly, when this event took place in January 1995, Nadine was too ill to attend.

After receiving her Ph.D. from Chicago in 1994, Nadine held a visiting position at the Institute for Advanced Study in Princeton, New Jersey. It had been arranged that she would move on to Stanford after her year at IAS. Instead, however, Nadine returned to Chicago as a visiting scholar, so that she could be with her partner for what proved to be the final year of her life.

Judy Miller, Simon Fraser University

Nadine was not just a talented and energetic mathematician — she brought great intensity and originality to everything she did. She had a huge range of intellectual interests; the breadth of her reading and filmgoing was extraordinary. Nadine's habit of long, daily runs, the cross-country bicycle trip she completed in 1987, and her gleeful graffiti corrections of sexist and homophobic advertisements spoke to her determination and flair.

Those who knew Nadine will especially remember her devotion to family and friends. She will be greatly missed. Nadine is survived by her partner, Diane Bundy, and her parents, Walter and Yvonne Kowalsky.
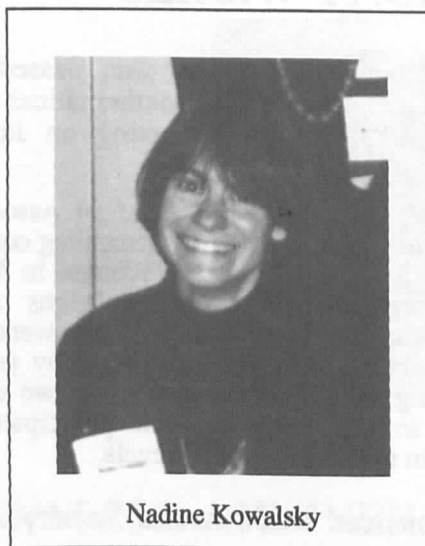
Nadine Kowalsky

COLORADO'S AMENDMENT 2

Nadine would no doubt have been pleased to hear that the U.S. Supreme Court has voted 6–3 to overturn Amendment 2 to Colorado's state constitution. Justice Kennedy wrote the majority opinion; Justice Scalia, the minority opinion (Chief Justice Rehnquist and Justice Thomas were the other dissenters). The 1995 Annual Joint Meetings were held in San Francisco when the societies cancelled plans to hold the Meetings in Denver after the amendment's passage.

AWARDS AND HONORS

CONGRATULATIONS to the women listed below for their meritorious achievements.

NANCY KOPELL of Boston University, our Noether Lecturer in 1992, has been elected to the National Academy of Sciences.

The AAUW Educational Foundation Board of Directors selected SHANDELLE MARIE HENSON as an American Fellow for the 1996–97 year. The 1996–97 class of American Fellows included 50 predoctoral, five summer faculty, and nine one-year postdoctoral scholars, who work in various fields such as philosophy, mathematics, education, and archaeology.

Henson received the Sarah Berliner Fellowship, a one-year award for postdoctoral research. The host institution will be the Department of Mathematics at the University of Arizona. Henson will be constructing a partial differential equations model of flour beetle dynamics, studying the solutions and bifurcation behaviors, and designing testable laboratory hypotheses regarding transitions of the populations between various attractors (including chaos). This work will be a continuous version of the landmark discrete work done by Costantino et al. [*Nature*, 1995, 375:227-230].

Henson is currently the Hanno Rund Visiting Research Assistant Professor of Mathematics at the University of Arizona.

CORA SADOSKY of Howard University and ZHANG-SUN HONG of Clemson University received 1995–96 Visiting Professorships for Women (VPW) from NSF. Sadosky visited the University of California, Berkeley and the Mathematical Sciences Research Institute; her area of research is harmonic analysis and operator theory in product spaces. Hong visited Louisiana State University; her area of research is the waveform relaxation method.

JILL P. MESIROV of Boston University and RUTH J. WILLIAMS of University of California, San Diego have been elected Fellows of the American Association for the Advancement of Science (AAAS) by the Mathematics Section.

ANITA MORENO received a 1995 Ford Foundation minority fellowship to study applied mathematics at Cornell University.

Sloan Fellowships have been awarded to MARY G. BAKER, computer science, Stanford University; DIANE HENDERSON, mathematics, Pennsylvania State University; SVETLANA JITOMIRSKAYA, mathematics, University of California, Irvine; DAPHNE KOLLER, computer science, Stanford University; and TATIANA TORO, mathematics, University of Chicago.

The Faculty Early Career Development (CAREER) program was designed by NSF to encourage scientists and engineers to integrate their research and education efforts earlier in their careers. This year's awardees include CLARA CHAN, Virginia Polytechnic Institute & State University, Combinatorics of convex polytopes and teaching with technology; BIRGIT GRUND, University of Minnesota, Smoothed non-parametric hazard regression; ELIZABETH HOUSWORTH, University of Oregon, Eugene, Isoperimetric-type inequalities arising from the study of Brownian motion in domains normalized by their inradius; CAROLYN JOHNSTON, Florida Atlantic University, Wavelets, frames and discrete group representations; and MARY SILBER, Northwestern University, Dynamical systems with symmetry.

The Tensor Foundation, a newly formed charitable foundation, seeks to increase the participation of women in mathematics and science. A grant program administered by MAA will make foundation funds available for ten grants per year through 2000. Nine grants of $5000 were awarded for the 1995–96 academic year to: JUDY ACKERMAN, Montgomery College, MD; MARCELLA ALKALAY and NANCY HARRISON, Mercy College, NY; HELENE BARCELO, Arizona State University; JANE FRIEDMAN, University of San Diego; CHERYL GREGERSON-MALM and MYRNA MAIN, Northwest Missouri State University; JUDITH JOHNSON, Central State University, OH; VIRGINIA KNIGHT and PAULA STONE, Meredith College, NC; ANITA SALEM, Rockhurst College, MO; and VIJI SUNDAR, California State University, Stanislaus. The institutions include three state universities, a historically Black university, a private university, three small colleges, and a two-year college.

GIOVANNA VARDARA received a Bernhard H. Neumann Award for Excellence in Mathematics Enrichment from the Australian Mathematics Trust at a special dinner in Adelaide, February 1996.

NSF Graduate Fellowships were awarded to (the list gives name, undergraduate institution, and fellowship institution): NANCY ELIZABETH HEINSCHEL, University of California, Davis, Stanford University; PATRICIA LYNN HERSH, Harvard University, Massachusetts Institute of Technology; MARY BEATRIX JONES, Johns Hopkins University, Cornell University; JING REBECCA LI, University of Michigan, University of Chicago; STACY MEGAN MADDOX, University of Oklahoma, Massachusetts Institute of Technology; AMY LEE MCDONALD, Tulane University, Duke University; ASHLEY MELIA REITER, Rice University, University of Michigan; and RACHEL RUE, Swarthmore College, Carnegie-Mellon University.

NSF Minority Graduate Fellowships were awarded to: TANYA AMY HENNEMAN, Spelman College, University of Maryland; TRACHETTE LEVON JACKSON, Arizona State University, University of Washington; STEPHANIE ANN MONKS, Northeastern State University, North Carolina State University; REBECCA ELAINE PABLO, Loyola Marymount University, University of California, Berkeley; and CARA SUZANNE TABER, Brown University, Massachusetts Institute of Technology.

LOUISE RAPHAEL of Howard University has been elected first vice-president of the Mathematical Association of America for a two-year term that began in January. Raphael, a member of the Association for twenty-five years, chaired the MAA Task Force on Minorities in Mathematics, the report of which led to the forming of the SUMMA office at MAA Headquarters. She has done research in the area of wavelets and multivariate splines, in addition to being involved at NSF as the first program director of the Calculus Curriculum Initiative.

KATHERINE P. LAYTON of Beverly Hills High School was chosen Governor-at-Large to represent High School Teachers by the MAA Board of Governors.

MARJORIE CARSS was elected an Honorary Member of the Australian Association of Mathematics Teachers, January 1996.

KATHERINE HEINRICH was awarded the 1995 Vancouver YWCA Woman of Distinction Award in Education, Training and Development and, jointly with Graeme Halford, the 1995 Convocation Gold Medal of the University of Newcastle, New South Wales.

SHARON MERRYMAN of Austin, TX was awarded the first National Trigstar prize by the National Society of Professional Surveyors. The Trigstar program is intended to encourage the study of geometry and trigonometry and to inform both high school students and their guidance counselors about careers in surveying and mapping science. A senior at the Science Academy of Austin at the time she participated in the local, regional, and state competitions, Merryman is currently a math major at Rice University.

Note: Three of these items, as have many entries in past issues, came from the *IMU Canberra Circular*. B.H. Neumann has been editing and producing the *Circular* for almost 25 years. He is looking for a volunteer to take over: B.H. Neumann, School of Mathematical Sciences, Australian National University, ACT 0200, Australia; fax: +61-6-249-5549; email: bhn102@phys.anu.edu.au; www: http://wwwmaths.anu.edu.au.imu.html.

WEEA CATALOG

The WEEA Equity Resource Center's 1996 catalog of gender-fair materials is now available. Field-tested and proven effective, the materials are designed for PreK–12 teachers, administrators, and counselors; school districts and school boards; parents and students; community-based programs; school-to-work initiatives and business/school partnerships; and postsecondary institutions. Until recently, the catalog included only items developed by WEEA grant recipients. Now materials from other publishers expand the range of resources available through the Center.

Subjects cover math and science education, technology education, classroom practice, students with disabilities, school-to-work, violence prevention, teacher preparation/professional development, and training resources. This year's catalog also includes special sections on postsecondary education and elementary, middle and high school.

WEEA is the only federal program dedicated to reducing educational disparity for women and girls. For a catalog or more information, contact: WEEA/Education Development Center, 55 Chapel Street, Newton, MA 02158; phone: 800-225-3088; email: weeapub@edc.org; www: http://www.edc.org/CEEC/WEEA.

FRESHMAN NAMED 1996 ALICE T. SCHAFER PRIZE WINNER

IOANA DUMITRIU, a freshman at New York University's Courant Institute of Mathematical Sciences, is the winner of the seventh annual Alice T. Schafer Mathematics Prize. The Schafer Prize is awarded to an undergraduate woman in recognition of excellence in mathematics and is sponsored by AWM. Dumitriu will receive a cash prize of $1,000.

The Schafer Prize was established in 1990 by the Executive Committee of 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 criteria for selection include, but are 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.

In addition to the winner, KAREN BALL, a senior at Grinnell College, and WUNGKUM FONG, a senior at the University of California, Berkeley, were declared runners-up and will each receive $150. Also, AWM awarded an honorable mention citation to TARA S. HOLM from Dartmouth College. The prize presentation will be held on the evening of July 22, 1996 at the AWM Banquet (held in conjunction with the AWM Workshop) in Kansas City, Missouri. The AWM Workshop and Schafer Prize Session are held in conjunction with the SIAM Annual Meeting, July 22–26, 1996 at the Hyatt Regency Crown Center, Kansas City.

"There were many outstanding nominees this year, each with her own style and her own strengths. It was very difficult to choose a winner. We are pleased to be able to recognize these four exceptional young women," stated Ruth Charney (Ohio State University), Chair of the 1996 Schafer Prize Committee. Serving on the committee with Professor Charney were Emma Previato (Boston University) and Janet C. Talvacchia (Swarthmore College).

The Alice T. Schafer Mathematics Prize is funded by an endowment with continuing contributions coming from AWM members and others. Additional contributions will help to ensure the long-term viability of the prize. Checks made payable to "ATS Prize Fund" may be sent to AWM, 4114 Computer and Space Sciences Building, University of Maryland, College Park, MD 20742.

Ioana Dumitriu is a 19-year-old freshman at New York University's Courant Institute of Mathematical Sciences (NYU/CIMS). She came to CIMS from Romania for her undergraduate studies and immediately began taking graduate level courses. Her professors uniformly describe her as "truly exceptional," "extremely impressive," "absolutely brilliant," a student "whose mathematical instincts, talent, and knowledge are apparent almost from the beginning." They also remark on her exceptional problem solving abilities and "great independence of thought and originality." This was confirmed (apparently to no one's surprise) when she won this year's Elizabeth Lowell Putnam Prize for her performance in the Putnam Competition. As one letter

Ioana Dumitriu, Courant Institute

Karen Ball, Grinnell College

Wungkum Fong, UC Berkeley

Tara S. Holm, Dartmouth College

states, "There is no doubt that Ioana will become a mathematician, the only question is whether she will be a world class mathematician.... I can't think of anyone whose chances are better."

Karen Ball is a senior at Grinnell College in Iowa, where she is consistently at the top of her advanced mathematics classes. As a junior, she participated in the Budapest Semester in Mathematics program, where she audited Complex Analysis in addition to earning all A's in her regular courses. The summer after her sophomore year, she worked on a research project under Professor Charles Jepsen and obtained "with almost no guidance" results which will appear in a paper entitled "Packing Unequal Squares" in the *Journal of Combinatorial Theory, Series A*. She is described as "a remarkable student who is destined to have a great career in mathematics." In the fall, Ball will begin graduate studies in mathematics at the University of California at Berkeley.

Wungkum Fong is a senior at the University of California at Berkeley. During her junior and senior years, she has been taking graduate level courses and seminars in advanced topics. She has ranked among the best students in these classes. She is described as an "exceptional student," "stronger than many graduate students" at Berkeley. One of her instructors characterized her as "one of the brightest undergraduates I've ever met." In addition to her course work, Wungkum participated in the 1994 Mills College/Mathematical Sciences Research Institute Summer Program. In the fall, Fong will begin graduate studies in mathematics at the Massachusetts Institute of Technology.

Tara S. Holm is a junior at Dartmouth College. In addition to performing well in advanced math courses, she has been involved in research projects since the summer following her freshman year. She has written a paper on sphere-of-influence graphs with Professor Kenneth Bogart who states, "In doing this work, Tara was not just solving a problem, she was developing a theory, discovering a problem, and then solving it." Tara is currently participating in the Budapest Semester in Mathematics and plans to attend the Research Experiences for Undergraduates (REU) program at the University of Minnesota-Duluth this summer.

SLOAN RESEARCH FELLOWSHIPS

Nominations for candidates for Sloan Research Fellowships are due by **September 15, 1996**. Candidates must be members of the regular faculty at a college or university in the United States or Canada and must be at an early stage of their research careers. For information write: Sloan Research Fellowships, Alfred P. Sloan Foundation, Suite 2550, 630 Fifth Avenue, New York, NY 10111; email: gassman@sloan.org.

AWM LECTURE IN SEATTLE

Karen Smith of MIT and the University of Michigan will deliver the AWM Invited Address at the MathFest in Seattle. Her subject will be "Calculus mod p":

Usually, derivatives are defined using "deltas and epsilons." However, there is a purely algebraic approach to differential operators due to Grothendieck that allows us to differentiate in the abstract setting of commutative algebra or, say, functions on algebraic varieties defined over the field F_p of p elements.

This ring is especially interesting in characteristic p. In this talk I will explain this purely algebraic approach to differential operators, with special emphasis on the case of differential operators on varieties defined over finite fields. The structure of the ring of differential operators is quite complicated in general, but in joint work with Michel Van den Bergh, we showed that if the singularities of the variety are not "too bad" the ring will be a simple ring. In this talk, I will try to explain how it is that the ring structure of differential operators may be related to singularities in algebraic geometry.

Professor Smith was born in Red Bank, NJ in 1965. She received her B.A. from Princeton in 1987. After teaching high school in Bound Brook, NJ during 1987–88, she entered graduate school at the University of Michigan. She received her Ph.D. there in 1993; her advisor was Mel Hochster.

Smith has received numerous fellowships, including an Alfred P. Sloan Pre-doctoral Fellowship, 1992–1993 and an NSF Postdoctoral Fellowship, 1993–1996. She has also received an Outstanding Teaching Assistant Award, University of Michigan, 1993; the Sumner Myers Prize, 1994 (University of Michigan mathematics department award for best 1993 thesis); and the University of Michigan Distinguished Dissertation Award, 1994. Also, she has been nominated for the Baker Foundation Award for Excellence in Undergraduate Teaching, MIT 1995.

Smith was an Assistant Professor at Purdue University, 1993–94 and a Moore Instructor at MIT, 1994–1996. An Assistant Professor at MIT beginning in 1996, she will go to Michigan in Fall 1996 as an Associate Professor.

Professor Smith has an impressive list of publications for someone only three years past the doctoral degree; to name just two of them, "Tight closure and graded integral extensions" appears in the *Journal of Algebra* **175**, 1995, pp. 568–574, and "Test ideals in local rings" appears in the *Transactions of the American Mathematical Society* **347**, 1995, pp. 3453–3472.

Smith says, "I am very grateful to my husband, Juha Heinonen, who is very supportive of my mathematical ambitions. He is an associate professor at the University of Michigan in analysis."

TEMPORARY JOBS

At the Joint Mathematics Meetings in Cincinnati in January 1994, both the AMS Council and the AWM Executive Committee unanimously passed a resolution about recent doctorates and temporary jobs, a slightly modified version of the statement of Supportive Practices and Ethics in the Employment of Young Mathematicians proposed to the AMS Council by the AMS Committee on the Profession. At the Joint Mathematics Meetings in San Francisco in January 1995 the Board of Governors of the MAA unanimously passed a similar resolution. That resolution contains three recommendations to departments and institutions. [Note that the texts of these resolutions may be found on page 202 of the March 1994 issue of the AMS *Notices*, on page 8 of the March–April issue of the AWM *Newsletter*, and on page 12 of the February 1995 issue of *Focus*, the Newsletter of the MAA.]

It was last year that the AWM Executive Committee first decided to send the letter that appears below to chairs of those departments which advertised temporary positions in the AWM *Newsletter* that were not clearly identified as postdoctoral positions. That letter was sent to 31 mathematics departments. In early 1996 the Executive Committee of the AWM voted to send this letter again to the chairs of such departments. The letter has been sent to 33 mathematics departments. The Executive Committee has also passed the following motion: "As long as the current job crisis continues, we should continue to send out our letter on temporary jobs to department chairs."

Harriet Lord, CalState Polytechnic University at Pomona

Dear Department Chair:

AWM has long recognized the importance of the early post-Ph.D. years in the development of a career in Mathematics. It is because of this importance that we are concerned about the practice of offering temporary faculty positions to new and recent Ph.D. mathematicians. (By temporary positions, we mean temporary faculty positions that are not postdoctoral fellowships or postdoctoral assistant professorships.) Thus we are writing to all department chairs whose departments advertised temporary positions that are not clearly identified as actual postdoctoral positions.

We know that the occasional use of temporary positions is sometimes unavoidable. Our concern is with the repeated hiring of young mathematicians in temporary positions, often for a period of one year or less.

The Executive Committee of AWM expressed its concern at its January 1994 meeting in Cincinnati by endorsing the recommendations contained in the statement "Supportive Practices and Ethics in the Employment of Young Mathematicians." This statement of the AMS Committee on the Profession (CoProf) has also been endorsed by the AMS Council. The MAA Board of Governors has endorsed its own version of this statement. (A copy of each of these statements is enclosed with this letter.)

We are asking departments that will be hiring temporary faculty in one-year positions for the next few years to consider converting these to multi-year positions. In addition, those departments that will be hiring temporary faculty for the next 5–10 years are requested to work with their administration in order to convert these temporary positions to tenure-track positions.

It is our belief that the repeated hiring of temporary faculty not only impedes the career development of the young mathematicians holding these positions, but also increases the work load of the permanent faculty in the department concerned. An individual in a one-year position must begin searching for a new job in October. He or she will not have the time and energy, and indeed can hardly be expected, to contribute to the life of the department and of the institution.

It is our hope that those departments that have been forced to hire temporary faculty on a regular basis will be able to work with their administrators in order to reduce or eliminate this practice.

Sincerely yours,

Chuu-Lian Terng, President

Sylvia Wiegand, President-elect

NSF-AWM TRAVEL GRANTS FOR WOMEN

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

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

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

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

CONE CONFERENCE SERIES

This article describes the genesis of a conference series called CoNE, short for Combinatorists of New England. The conferences are advertised by email, and anyone interested in receiving announcements should write to me at my email address below. You may also check our website address http://math.smith.edu/~rhaas/coneweb.html, which contains the schedule from each of the previous conferences.

As I was preparing for my tenure decision in 92–93, I thought about my interactions with other mathematicians. These research interactions occurred most often at conferences; however, at conferences I generally felt diffident, and it was hard for me to make easy contact with other people. I'd certainly seen people for whom this was easy to do, but it seems to me that every mathematician has to do the best she can with the talents that she possesses. So instead of concentrating on how to change me to fit the conferences, I thought about whether it would be possible to change some conferences to suit me. At the time this seemed like a radical idea.

I talked the whole thing over with my friend Ruth Haas, and we decided that the things we liked about conferences were: hour talks, informal atmosphere, and especially other women mathematicians. We also liked the idea of trying to develop a community of mathematicians that we might be seeing again and again. We went ahead and organized a one-day conference with four hour speakers, three women and one man, which we advertised locally and held at Smith College, where Ruth is a professor.

I was on leave from Wesleyan in 92–93. While I was gone, Ruth ran four more conferences, enlisting another combinatorist and friend of mine, Mike Albertson, as an organizer. She also applied for grant money to support the meetings. I thought this was wonderful. When I came back in 93–94, Ruth was on sabbatical, so I eagerly volunteered to take on the duties of co-organizing with Mike some conferences that I could really enjoy, this time with money to spend on the speakers and on the participants. The three of us have worked together on this project since then.

We used our funding to give each participant a modest travel allowance to the conference. This overcame the budget problems of having five one-day meetings instead of one five-day meeting, and also made it possible for undergraduate and graduate students to attend. The other

Vera Pless, University of Illinois at Chicago

use we made of the funding was travel money for speakers. So with the funding, we could have some speakers from reasonably far away, while most of the participants were within two or three hours drive from Northampton. This is all perfect from my point of view; without doing much driving I can hear a broad range of different speakers, while at the

Linda Lesniak, Drew University

Karen L. Collins, Wesleyan University, Middletown CT 06459-0128, kcollins@wesleyan.edu

same time having people to talk to that are conveniently located to work with during the year.

We followed our other goal, too, and have attempted to make half of the speakers in our conference women and half men. We selected this ratio because it is the ratio we would like to see in the ideal world, throughout our undergraduate, graduate and professorial careers. In 20 conferences, our total number of women speakers is 40, and our total number of men is 39. Of course it has sometimes been a bit of a challenge to find these women speakers. I think also Ruth and I sometimes felt a little uneasy about being challenged by our local male mathematicians on our being too partisan to women speakers, but it has never happened. Mostly we hear that people enjoy the conferences and think the talks are good. Mike, as far as I can tell, has never worried about this point.

The three women speakers at our most recent meeting, April 27, 1996 were: Brenda Latka, Lafayette College and DIMACS, "Forbidden Subtournaments and Antichains"; Linda Lesniak, Drew University, "Tough Graph Theory"; and Vera Pless, University of Illinois at Chicago, "Constraints on Weight in Binary Codes."

Brenda Latka, Lafayette College and DIMACS

I wanted to write this article to encourage anyone who feels she (or he) has a talent for conference organization. I think it can make a difference. The students who come to our conferences and to our AMS sessions see (we hope) the equal participation of women and men in our profession and come to look for and expect that in their future careers.

THE SIAM MATHEMATICS IN INDUSTRY REPORT

Industry today is being forced by global competition to analyze and solve staggeringly complex problems as efficiently and reliably as possible. This situation is creating new opportunities to bring the analytical, computational, and modeling skills of mathematical training to bear on industrial problems. But what do mathematicians do in industry? Why is mathematical training important? What skills are most needed and why?

A recent report from the Society for Industrial and Applied Mathematics, *Mathematics in Industry*, presents, for the first time, factual data to help answer these questions. In 1993, SIAM began a study of the roles mathematical scientists play in nonacademic settings. The report, supported in part by the National Security Agency and the National Science Foundation, summarizes the first phase of the study.

The study provides information, suggestions, and resources for creating stronger connections between industry and the mathematical sciences. In particular, it offers:

- information about nonacademic applications of mathematics and a
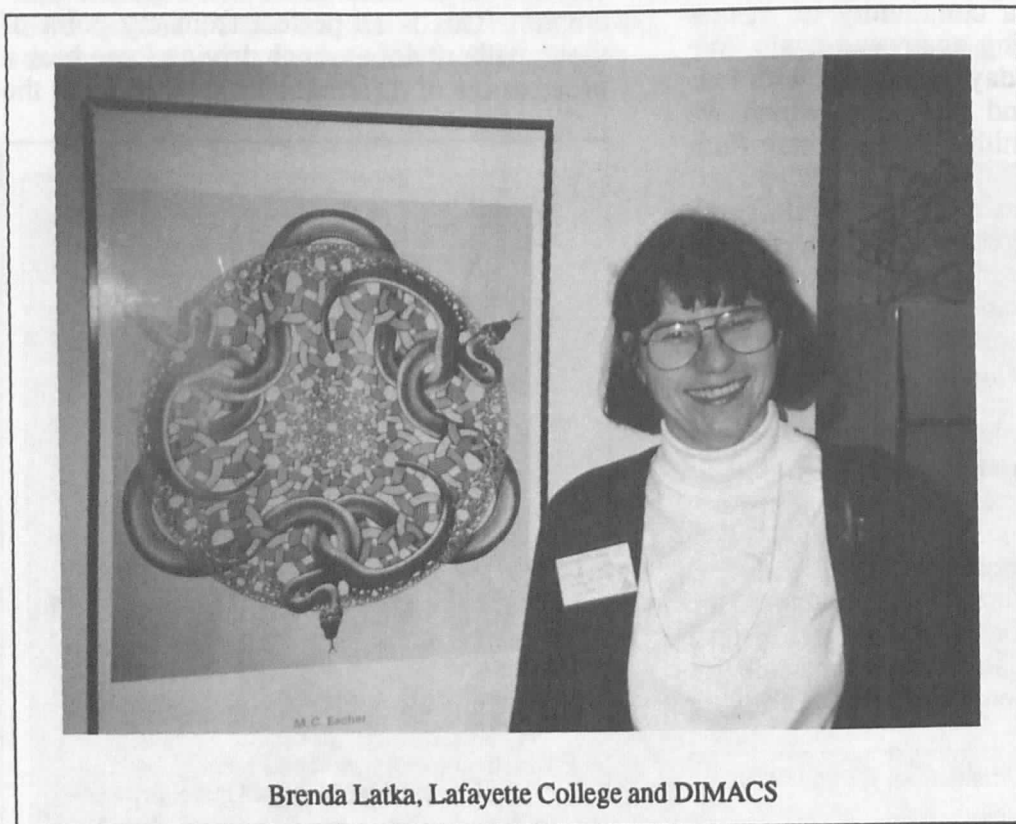
range of future opportunities for mathematics in nonacademic settings;

- a careful study of traits valued in nonacademic mathematicians; an analysis of how well graduate mathematics education programs prepare students for nonacademic careers;

- ideas for broadening the graduate mathematics curriculum to provide students with greater flexibility in career choices as well as a deeper understanding of the applications of mathematics;

- suggestions for students, faculty, departments, and industry to build closer ties between academic mathematical sciences and real-world problems.

The complete report may be accessed electronically at http://www.siam.org/mii/miihome.htm. Additional information is available via the Internet from SIAM's home page (http://www.siam.org) and following the links to Mathematics in Industry, or by sending email to mii@siam.org.

AFFIRMATIVE ACTION

These remarks are based on observations of my own department, as well as those told to me of other departments with a similar profile.

Here at Wannabe University, hiring is taken very seriously. We have a strong research program, involving Ph.D.'s and postdocs, and good interactions with other science and engineering departments. For some time now we have been well ensconced in the second tier of mathematics departments: twenty years ago we were "most improved," and — despite ups and downs — we are even stronger now. But status in the second tier is precarious, and we must be ever vigilant to attract top candidates to our program and to keep the ones we have. In the second tier, you can make few mistakes. We have worked to bring women to our faculty, sometimes at the insistent urging of the administration, and we have never failed to make offers to the strongest candidates: at the highest level we are gender blind.

Hugo Rossi, Professor of Mathematics, University of Utah

However, when we have come to a field of candidates of comparable research competence, secondary characteristics must come into consideration. Then a strange dynamics unfolds. In my department we have several members who have the reputation of standing for only the very strongest of appointments: the defenders of standards, so to speak. They are enthusiastic about going after the top candidates, whether they are men or women. However, at the next level, differences appear. We can go after someone whose work shows good promise, but is not yet established, on the grounds that we need new blood in field X, or that it is good to establish contacts with department Y; but if the candidate is a woman, or from some other minority, the question of standards comes up. No one tries to argue that we should hire a woman with lesser credentials than viable male candidates, but if it is clear that the candidates in question are balanced (in the collective opinions of my colleagues), and then one tries to argue that by selecting the woman (or the African-American or Latino) we can meet additional needs of the department, that argument is rejected. The interpretation of the credentials of the female, or minority, candidate starts to go down. Standards cannot be lowered to meet social needs! Who said anything about lowering standards? — but that is not the point. Just the bringing up of matters of importance to the department, other than research, is vigorously attacked.

Our standing in the mathematical community is precious and very delicate: one false move, and we fall. Arguments based on educational needs (our search for a mathematics educator meets the same fate), to demographic needs (even though almost half of our graduate students are women; in fact, among U.S. born people, women are in the majority), to institutional needs (competence in applied statistics, for example) are a sign of softness, a weakening of will. Most of my colleagues have a gut reaction: maintain standards! This means, don't look at criteria in parts of our mission other than research. Being a woman, minority, computer whiz, becomes a negative credential.

Often, in our searches, we have a woman candidate for a tenure position in a field which is a high priority area for us. This is not surprising; we have a strong department, and our environment is attractive. Ordinarily, the department measures the strength of support among those in the faculty in that, and allied, fields and follows their recommendation. But when consideration of secondary

criteria, other than research-related, is suspected, everyone critically reads the file. This surely can be viewed as a faculty doing its duty, but the adherence to that duty does seem selective.

Our department is used to taking risks; perhaps our success is attributable to this. We have made tenure offers to fresh candidates perceived as extraordinary; we have made tenure track offers to candidates with but one brilliant paper, and otherwise a record of low productivity. If the reasoning behind taking the risk lies in the potential for significantly advancing a research competence, it is acceptable; if other reasons, say demographic, are advanced, it is suspect.

This is the behavior of men of good will and genuine concern. My worry here, frankly, is not so much with gender issues, but with the conception of the intellectual life of the University as one-dimensional; a dimension whose measure is totally subjective. This last statement will find strong objection: yes, even granted that the criteria are one-dimensional, at least the measure of that dimension is based on objective standards. Is that so? Try to articulate those criteria and their measure so that they even seem to be objective. It is not easy; I — and everyone I know — have repeatedly failed.

ROCHESTER

President Cathleen Morawetz of the American Mathematical Society has announced that the AMS Council has adopted the following resolution:

The Council of the American Mathematical Society commends the Administration of the University of Rochester under President Thomas H. Jackson, and the Mathematics Department under the Chairmanship of Joseph Neisendorfer, for reaching an agreement about the future of the mathematics programs at Rochester.

The Council commends President Jackson and his Administration for their recognition of the importance of supporting programs in mathematics at all levels.

The Council also expresses its confidence and optimism in the plans for the future of the department as articulated by Professors Neisendorfer and Ravenel.

The Council resolution marked the successful conclusion of work of the Society's Rochester Task Force. Last November, in response to the University of Rochester's announced plans to eliminate its mathematics graduate program, the Society established the Rochester Task Force comprised of prominent representatives from mathematics, sciences, technology and business to address the role of mathematics in higher education and to underscore the importance of mathematics graduate programs at research universities.

The AMS Council also voted to continue the AMS Rochester Task Force for two more years, renaming it as the Mathematics Advocacy Task Force (MATF). Part of the role of MATF will be to expand on the work of the Rochester Task Force focusing on broader issues, while emphasizing the key role of mathematics as a major science whose research underpins all the physical sciences.

"The renamed task force provides a strong voice to articulate the intellectual importance of research and education in mathematics. The scientists and engineers in this group view mathematics as the core enabling discipline for science and technology; we want this message widely appreciated," said Arthur Jaffe, AMS President-Elect and Chair of MATF.

"The mathematics community learned many lessons from the situation at the University of Rochester: the need to make the case for mathematics both as a science and in other sciences, and the need to communicate with our colleagues at all levels, from students to administrators," said Cathleen Morawetz, President of the AMS.

APPLIED SCIENCE CAREERS

Careers for Women in the Applied Sciences is an interesting publication of the University of Maine [contact Judith Round, Office of the Dean, College of Applied Sciences and Agriculture, Winslow Hall, University of Maine, Orono, ME 04469; 207-581-3206]. It highlights women faculty, graduates, and students of the University working in areas such as applied economics; plant, soil, and water quality; aquatic entomology; integrated pest management; food science and food safety; human nutrition; plant technology; and animal technology.

WORKSHOP FOR WOMEN GRADUATE STUDENTS AND POSTDOCTORAL MATHEMATICIANS

supported by the Office of Naval Research and the Association for Women in Mathematics

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

WHEN: We are now inviting applications for the workshop to be held in conjunction with the annual Joint Mathematics Meetings in San Diego, California, January 8–11, 1997. The workshop will take place on Saturday, January 11th, with an introductory dinner on Thursday, January 9th.

WORKSHOP: We invite each participating graduate student to present a poster on her thesis problem and each postdoc to present a talk on her research. AWM will offer funding for travel and two days subsistence for up to 20 participants. Participants will have the opportunity to present and discuss their research and to meet with other women mathematicians at all stages of their careers. The workshop will also include a panel discussion on issues of career development and a luncheon. An introductory dinner and discussion period will be held on the Thursday evening prior to the workshop. All mathematicians (female and male) are invited to attend the Saturday program, whether or not they are funded. Departments are urged to help graduate students and postdocs 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 would like to volunteer, please contact the AWM office.

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

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

> Workshop Selection Committee
> Association for Women in Mathematics
> 4114 Computer & Space Sciences Building
> University of Maryland
> College Park, Maryland 20742-2461

> Phone: 301-405-7892   Email: awm@math.umd.edu

> (Applications via e-mail or fax will not be accepted.)

APPLICATION DEADLINE: **September 1, 1996**

NOTICE!! CHANGE IN APPLICATION DEADLINE!!
The deadline of **September 1** is earlier than in the past.

RECENT MATHEMATICAL EVENTS

Estelle Basor (Cal Poly), Barbara MacCluer (Virginia),
Henry Helson (Berkeley)

Gathering of Women Analysts at UC Berkeley

A group of women analysts from other institutions met at UC Berkeley, March 8–9, 1996, to talk mathematics and to highlight the presence of women in the field.

The purpose of the meeting was to showcase the vitality of women's contributions to analysis by bringing together established mathematicians and new researchers. The three programs in different areas of analysis held in 1995–96 at neighboring MSRI were a welcome source. The opportunity to host the event at UC Berkeley made it possible to make it significant and visible to students.

The Gathering was opened by Jack Wagoner, Chairman of the UCB Math Department, at Sibley Auditorium, a wood-panelled hall at the Bechtel Engineering Center where major events are held.

Colloquium-style lectures covered a variety of topics in functional, geometric, stochastic, and complex analysis in one and several variables and in partial differential equations and mathematical physics. The speakers were Estelle Basor (CalPoly), Izabella Laba (UCLA), Barbara McCluer (Virginia), Kate Okikiolu (UCSD), Jill Pipher (Brown), Linda Rothschild (UCSD & MSRI), Nancy Stanton

Cora Sadosky (Howard University & MSRI & UC Berkeley)

(Notre Dame), Nicole Tomczak-Jaegermann (Alberta & MSRI), and Elisabeth Werner (Case-Western Reserve & MSRI). M. Beth Ruskai (U Mass Lowell) was also on the schedule, but one of the largest storms that hit the East Coast this winter kept her snowbound at Logan Airport for two days!

The Gathering's scientific program ran mornings and afternoons on Friday and Saturday and was well attended (by Berkeley standards, where there are too many seminars a day to even keep count!). The contingent of women analysts was visible, and its presence was felt. Faculty members and graduate students from the Math Department and from MSRI attended the talks, as well as colleagues from UCB Engineering and Physics and from Stanford, California State Polytechnic and St. Mary's College.

Breaks at mid-morning, lunch and tea time (with wonderful food, in the California style!) provided opportunities for furthering personal contacts. There was also a very nice dinner, giving speakers, graduate students, and other participants further time for informal discussions.

The main social occasion was a big luncheon on Saturday in the room "with the best view on campus," at the top of Evans Hall, home of the Math Department. It gave the participants in the Gathering and a large contingent of Noetherian Ring members the opportunity to chat with Carol Christ, the Vice Chancellor and Provost of UC Berkeley. The presence of Christ, a professor of English and a
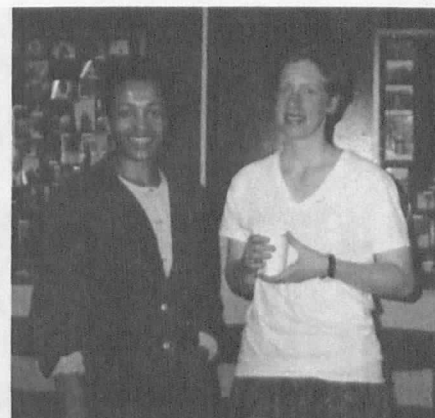

Carol Christ (Berkeley), Cora Sadosky (Howard)
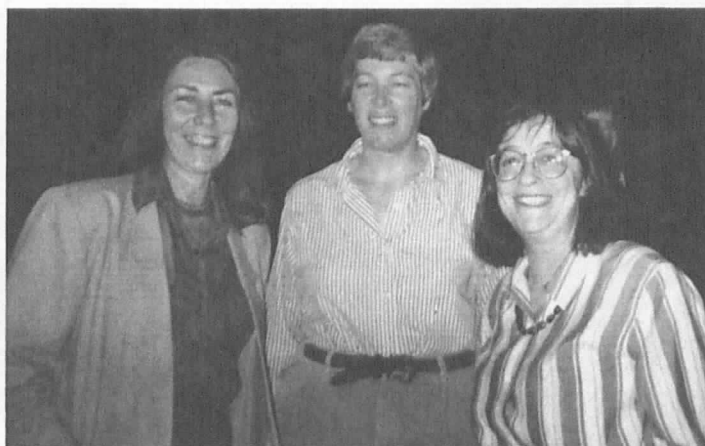
Cora Sadosky (Howard), Nancy Stanton (Notre Dame),
Linda Rothschild (UC San Diego)

Kate Okikiolu (UC San Diego),
Christine Heischt (Berkeley; new president
of the Noetherian Ring)

committed supporter of equal opportunity for all, underlined the importance the Berkeley Administration gives to women and mathematics. Her real interest in our activities made the dialogue as informal as it was interesting and provocative. Her attendance was appreciated by all.

I organized the Gathering of Women Analysts at UCB as part of the program of my 1995–96 visit to UC Berkeley, under an award from the Visiting Professorship for Women in Science Program of the National Science Foundation, which shared the financial support of the event with the UC Berkeley Math Department. The Center for Underrepresented Engineers was co-sponsor.

Once again I want to point out the good this NSF/VPW program does in highlighting women's presence in math, science and engineering at important research centers and the opportunity it gives to reach out to women colleagues.

Sonia Kovalevsky Day, Marymount University

Marymount University held its first Sonia Kovalevsky High School Mathematics Day on Tuesday, March 26, 1996. Mathematics departments in public and private high schools in Northern Virginia, Washington, DC and Montgomery College, MD were invited to send their women students in grades 9 through 12 who are interested in mathematics. Their teachers, women and men,

Alice T. Schafer, Marymount University

were invited for a program for teachers held at the same time as the program for the students. So many students wished to come that we were forced to limit the number of students from each school. The final count was approximately 200 students and 25 teachers.

Students and teachers arrived between 8 and 8:30. After they had registered, they were directed to their Workshops by members of Marymount's Student Mathematics Club. Everyone attended three one-hour Workshops in the morning, with a short break between the second and third.

One of the Workshops for students was a panel discussion, "Why Mathematics," organized by student members of the Mathematics Club and chaired by the Club President, senior Laura Taylor. The discussions centered on the increasing use of mathematics in a diversity of fields and the importance of students continuing to study mathematics.

All the other Workshops for students but one were led by members of the Marymount mathematics and science faculties. "Biology and Mathematics," organized by Professor Jacquelyn Black, centered on the use of the chi-square distribution as a way of determining whether observed results are compatible with predicted results in genetic experiments. The Workshop "Determining the Global Warming Potential of a Compound," led by Assistant Professor Laura Medhurst, dealt with the questions of what is global warming, which chemicals contribute to it, and how their relative contributions are determined.
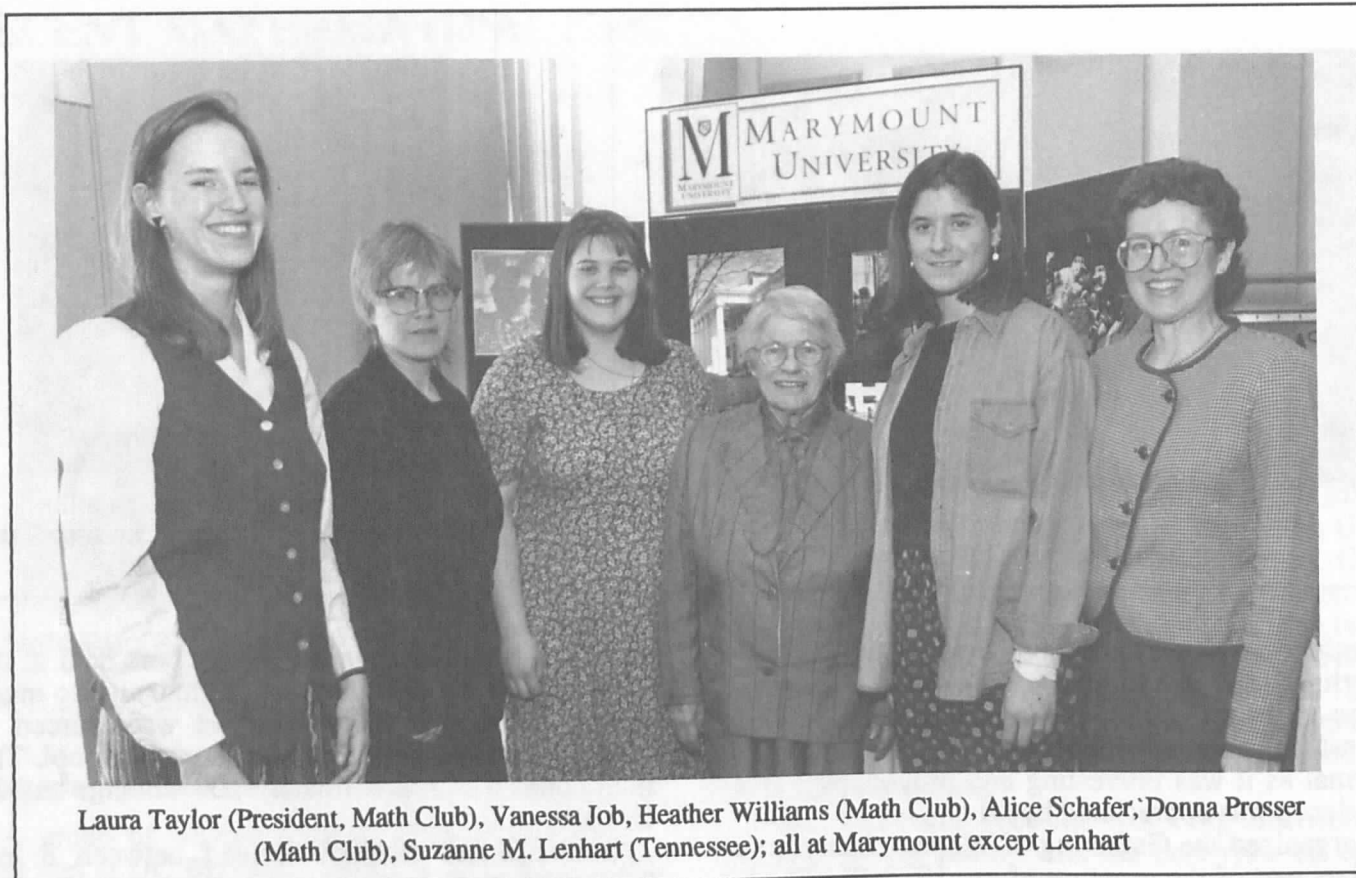
Laura Taylor (President, Math Club), Vanessa Job, Heather Williams (Math Club), Alice Schafer, Donna Prosser (Math Club), Suzanne M. Lenhart (Tennessee); all at Marymount except Lenhart

"Do You Want to Play a Game?" led by Lecturer Roy A. Beveridge, introduced the students to game theory by asking the two questions: Do you know how to play a game? Do you know the value of a game? He challenged the students with the comment, "I bet I can beat you playing a game." In "How to Make Hard Decisions (Easier)," led by Assistant Professor Robert L. Padgett, students were given a little of the history of decision analysis and some procedural details on how to use multi-attribute utility theory (MAUT), one of the structural systematic decision analysis techniques. The majority of the Workshop time was devoted to the students' application of MAUT to help determine which college to attend.

"If You Get Peanut Butter on Your CD, Will It Still Play?" led by Assistant Professor Vanessa Job, asked the questions: How does a compact disc know the right notes to play even when it has peanut butter on it? Why does satellite communication work when there is interference from a storm? "Modeling, But Not on The Runway," led by Laura Black (a high school student who has taken several

courses at Marymount University), dealt with mathematical and computer modeling. She involved the students in working on a mathematical model for the spread of last year's forest fires in the West. She used a computer model for evacuating buildings using stairs in the case of an emergency and also one using skulls to determine various characteristics of the deceased.

In the meantime the high school teachers attended two Workshops designed especially for them: "Mathematics and Art, from the Pharaohs to Matisse: An Overview," led by Associate Professor June Winter, and "What Shapes Tile the Plane," led by Professor Judy Green. The Consortium for Mathematics and its Applications (COMAP) contributed many materials for use by the teachers.

The last Workshop of the morning was attended by all the students and teachers. "Why the Fly is Dry" was conducted by chemist Rosemary Hubbard (Professor) and mathematician Kate Sheehan (Associate Professor). The Workshop dealt with a comparison of volume and surface area. Many students answered the questions asked by the leaders.
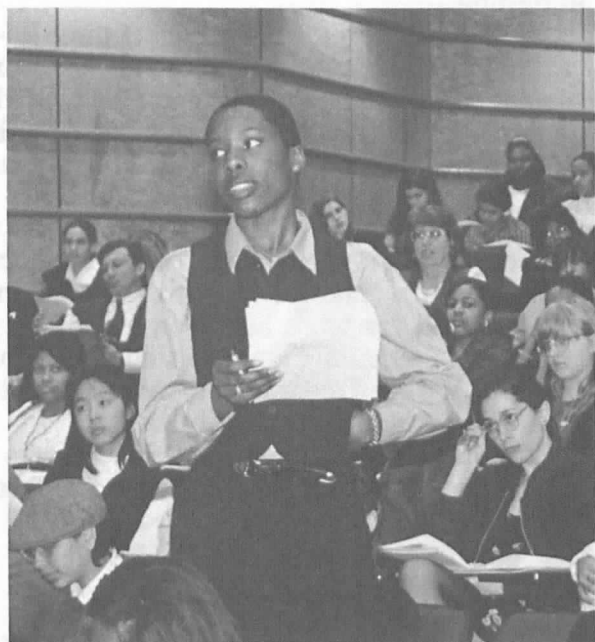
Audience at "Why the Fly is Dry," Marymount

Folding Frogs, Rivier

At lunch, Laura Taylor drew names and presented to each student whose name was called a book about women mathematicians (books listed below). After lunch, Professor Suzanne M. Lenhart of the University of Tennessee gave the invited lecture, "The Mathematical Modeling of Some Environmental Issues." Among these issues were the control of beavers in part of New York State, on which Professor Lenhart had been a consultant; *in situ* vitrification; and AIDS.

We wish to thank the following for contributions to the Day: the Association for Women in Mathematics through a grant from the National Science Foundation; COMAP; Addison-Wesley for copies of *Math Equals* by Teri Perl; the Mathematical Association of America for copies of *Winning Women into Mathematics* by Patricia Clark Kenschaft and *She Does Math!* by Marla Parker; and Rutgers University Press for copies of *A Convergence of Lives: Sofia Kovalevskaia: Scientist, Writer, Revolutionary* by Ann Hibner Koblitz. Without their help the Day would not have been the successful event that it was.

Photo credit, Marymount photos: Eileen Colton

Sonia Kovalevsky Day, Rivier College

Rivier College's Seventh Annual Sonia Kovalevsky Day was held March 28, 1996. We hosted 35 participants — students and teachers — from two high schools in New Hampshire.

The theme, Mathematics and the Mathematics of Decision Making, was the basis for all presentations. The first four sessions served the students and their teachers. During the final two sessions, students and teachers joined for a single activity. During the first morning session, presentations were made by Barbara Brunelle, Notre Dame College, and Marjorie Ferguson, Civil Engineer. Barbara Brunelle presented "Was the Prophecy Meant to Be Done?" which discussed the theory of biorhythms. Students calculated and designed their own biorhythms. Marjorie Ferguson presented "Why Things Stand Up." She discussed the art of constructing bridges beginning with early bridge types and finishing with slides of modern bridges. She ended with the use of geometry and the comparison of two structural shapes, a beam and a truss.

The second set of morning presentations were given by Ellen Marie Douglas, Environmental Engineer, and Ms. Kathleen Langone, Software

Jeanette L. McGillicuddy, Associate Professor, Mathematics and Computer Science, Rivier College, Nashua, NH

Awarding Medals: Monica Singh, Monica St. Pierre,
Elizabeth Woelflein, Jeanette McGillicuddy (Rivier College)

Engineer. Ellen Marie Douglas presented "This Math is All Wet," which dealt with the hydrologic cycle, where water comes from. She discussed how her work as an environmental engineer helps figure out ways to clean up polluted water and how to keep water from becoming polluted in the first place. Kathleen Langone presented "Sines, Cosines, and Seismic Waves," which involved determining the epicenter of an earthquake. She presented slides on the history of New England earthquakes. Students applied the mathematics used by seismologists to determine the location of an earthquake and the type and direction of the seismic waves.

The final two sessions were given by Jeanette McGillicuddy, Rivier College, and Dr. Lucy Dechene, Fitchburg State College. Jeanette McGillicuddy presided over "Frog Olympics," the use of origami frogs to generate data. Students used the data from a "jump off" to generate visual displays of the data. Students then performed some calculations and were asked to generate answers to some what-if situations based on their data. Dr. Lucy Dechene addressed two topics, "The 10+ Chronic Fatigue Syndrome Study and the Beijing U.N. Women's Conference." She discussed the results of a medical study of patients ill with the Chronic Fatigue Syndrome for more than 10 years. She emphasized the process of determining and using the results of questions about fatigue and the analysis of patient-drawn graphs for a statistical study.

During the second half of her presentation, she shared her experiences at the U.S.-China Women's Conference and the opening of the NGO Forum on Women in Beijing.

We closed with the awarding of three TI-82 calculators which were provided by Texas Instruments courtesy of Women and Mathematics, Mathematical Association of America. "Frog Medals" were awarded based on results from the Frog Olympics.

The evaluations from the students and the teachers were very mixed with comments spread from wonderful to boring. Some indicated a need for more hands-on activities, yet each presentation involved the students in some manner. We will continue to request student involvement in the presentations.

We again wish to extend our thanks to AWM and NSF for the continued financial support.

Hudson River Conference

The third annual Hudson River Undergraduate Mathematics Conference was held on Saturday, April 20, 1996, at Skidmore College in Saratoga Springs, New York. Representatives from over thirty institutions from throughout the Northeast were on hand to give and hear presentations on a huge variety of subjects. The conference offered a unique experience for undergraduates as most of the talks were given by students themselves, and many of the faculty presentations were geared toward a level accessible to an undergraduate mathematics student. Over 330 students and faculty attended the conference. What a great way to kick off National Mathematics Awareness Week!

The day began at 8:45 with registration and serving of refreshments, which was followed by the first set of concurrent sessions, each of which featured three 15-minute presentations in subjects such as abstract algebra, analysis, chaos theory, statistics, and various applied mathematical topics.

At 11:15 the attendees gathered to hear the keynote presentation, "Juggling Permutations of the Integers," given by Ronald L. Graham of AT&T Bell Labs. Dr. Graham discussed the parallels between the physical puzzles posed by juggling and problems often encountered in mathematics or computer science. An

Tom Travison '97, Skidmore College

Amber Rosa (Skidmore College senior; her talk was "Knots and Groups") introducing Ron Graham's invited address on juggling

Elizabeth Oltmans (Williams College first-year student) speaking on "Using color and movies to visualize higher-dimensional knots"

interesting aspect of the presentation was Dr. Graham's revelation of a method for plotting the time intervals for which juggling balls are tossed into the air as discrete points on the real line, thus establishing relatively simple representations for the complex relationships and cycles inherent in the act of juggling. The audience was treated to a clear and compelling explanation of how that leads to new ideas in both juggling and mathematics.

Dr. Graham's presentation was followed by a one-hour lunch at which many of the students could be seen conversing with their counterparts from other institutions. Then came over two hours of additional 15-minute presentations by students and faculty, where the diversity of the topics discussed was again impressive. Talks were given in topology, number theory, history of mathematics, knot theory and many other areas. There were nearly one hundred talks scheduled for this year's conference, a substantial increase over past years.

One of the unique features of this conference is the participation of many first- and second-year students as well as mathematics majors. Half of the attendees this year were juniors or seniors, a quarter were first- or second-year students, and the remainder were faculty members. There was rough parity of men and women among the speakers as well as among the entire group of attendees. All in

all, the conference was very successful in achieving its goals: to bring together students and faculty as peers at a mathematics conference specifically designed for accessibility at the undergraduate level and to increase student awareness of the larger mathematics community and the great variety of subjects that are waiting to be explored.

The steering committee for the conference consisted of David Vella, chair (Skidmore College), Colin Adams (Williams College), Gove Effinger (Skidmore College), Emelie Kenney (Siena College), Frank Morgan (Williams College), and Susan Niefield (Union College). In addition, each participating institution has a local organizer.

This year the conference was funded by the National Science Foundation, with additional funding provided by Skidmore College. In past years, the conference has been funded by the Alfred P. Sloan Foundation and the GE Fund, as well as the NSF. The conference enjoys additional support from the American Mathematical Society, the American Statistical Association, the Association for Women in Mathematics, the Institute for Operations Research and the Management Sciences, the Mathematical Association of America, the Operations Research Society of America, the Society for Industrial and Applied Mathematics, the American Institute of Certified Public Accountants, and the Peace Corps.

Next year's conference will be held on April 12, 1997, at Williams College in Williamstown, Massachusetts. The invited speaker will be Dr. Benoit Mandelbrot, father of fractals.

National Association Meeting

Does gender discrimination exist in the mathematics classroom? Does the lack of gender equity in the mathematics classroom discourage girls and women from entering the field of mathematics? Unfortunately, research evidence indicates that the answer to both of these questions is "Yes."

A National Association meeting was held in Washington, DC in early May to discuss these issues. The discussion focused on the Teacher Education Equity Project [TEEP] and how national associations might become involved in disseminating the results and recommendations of the Project.

TEEP was designed to appraise the prevalence of gender discrimination in mathematics, science and technology (MST) classrooms and its effects on students and on society. Gender equity is lacking in many MST classrooms; gender discrimination is still very much in evidence in many MST classrooms. More troubling is the fact that many teachers — most with the best of intentions and with knowledge of the debilitating effects discrimination can have on their young female students — unconsciously persist in displaying discriminatory behaviors in their own classrooms and in allowing students to perpetuate classroom behaviors based on gender stereotypes.

TEEP, however, did not stop with assessing the problem. Rather, TEEP was designed to go to the root of the problem and to address gender equity from that perspective. For three years TEEP, with major funding from NSF, worked to educate teachers of pre-service teachers to the reality that gender discrimination exists in MST classrooms, that traditional methods of teaching and testing contribute to gender inequity, and that the issue of gender equity must be addressed at the pre-service level of teaching if gender discrimination and its influence are to be eradicated from MST classrooms.

Right from the Start, a book on this project by TEEP director Dr. Jo Sanders with Janice Koch and Josephine Urso, will be published later this year by Lawrence Erlbaum Associates.

Carol Tascione, AWM Executive Director

WOMEN IN MATHEMATICS:
part I

Introduction

I would like to welcome everyone here. The four of us come from different backgrounds and are in different stages of our careers. But what binds us together is our love of mathematics. We want to share with you the encouragement, the barriers and the obstacles we have encountered in pursuing our love of mathematics. We feel that in some sense we are "pioneers for women in mathematics."

In the past two weeks, there have been a number of press articles related to gender barriers and the different performance levels of male and female students in co-educational or single sex classes. There is much interest in understanding why there are so few women in mathematics and physics.

Female students are entering science courses. In fact in first year there are more females than males. But in the second and third years the figures change drastically. Females now account for only a third of the science students studying some maths. Why is there this sudden change after first year, and how can it be stopped?

It is not that women are not continuing with any science field after gaining a Bachelor of Science. If you look at the 1993 data for BSc Hons and postgraduate study at this university, the percentage of female students is high in the biological sciences and chemistry — but not in maths and physics. This is typical of data for U.S.A. and UK.

Many people think that if you study mathematics, the only profession open to you is an academic career in mathematics or as an actuary. This is a great misconception. Mathematics is a very good background for engineering and other science areas. It is valued by business and industry, and there are many opportunities for employment of maths graduates. Indeed many companies understand that people who study maths have good analytical skills. After the lecture you can pick up a brochure on employment opportunities for mathematics graduates.

I will now outline how this lecture will be run. We will concentrate on three issues and will discuss each in turn.

1. Being a female student in a minority situation: how does this relate to confidence level? are male students more confident? can female participation in class be increased? do female students underestimate their ability? sexism within the education system.

2. Encouragement: drive to go on with mathematics; recognition of student ability; family support to do mathematics; roles models and mentors — do we need women role models?

3. Career versus family: family responsibilities; postdoctoral positions and careers overseas; being a woman in a minority situation in academia/upper management; research requirements for academic positions; sexism in the work environment; do women set themselves future goals? where do we go from here?

All four of us are used to giving technical talks for teaching and research. It is actually quite difficult to talk about ourselves and our feelings in front of a large audience as we are this evening. We will be covering a number of highs and lows that we have experienced. We hope that the students will feel that they should persevere with maths in spite of any obstacles. Most importantly we have had enormous and innovative encouragement along the way, and we want to promote such behavior.

We now start with the first issue.

1. Being a female student in a minority situation

KL: We gave this issue such a name because there are usually fewer girls than boys in mixed sex classes, so that the girls feel different and stand out. A recent government study and 4 Corners program suggest that girls receive less attention than boys in the classroom, that perhaps girls feel shy and unwilling to participate in class because they lack confidence. Even when female students get good marks, they often need constant reinforcement and reassurance because they may underestimate their ability. We are going to address some of these points.

CM: As a year 7–10 student at an all girls school, I was very confident in my abilities, and I felt comfortable competing against other students. However, when I started at a co-ed school in year 11 the situation changed. I became shy and unsure of myself. I was not prepared to answer questions or

contribute to class discussion for fear of making a fool of myself. My teachers made no effort to encourage me to participate in class, so I went through most of first term being unnoticed in all my subjects. The situation changed only when I said I wanted to do pure and applied maths in year 12. I was told I would have to prove myself by taking an active part in class, answering questions and doing blackboard work. With a great deal of effort I did this, and as a result I earned some respect from my maths teacher and the male students. It took about six months to regain my confidence and to feel comfortable competing against males.

My confidence in maths wavered again when I started doing research as an honors student. Getting A's in coursework did not guarantee success in research, and I found research very difficult at first. Even though I have published several journal papers, I still need continual positive reinforcement where research is concerned. Even after working in the same area for six years, I still do not volunteer my opinions to my supervisor and coworkers. I listen to all their ideas, go away and work very carefully through their suggestions. Only when I am convinced that they are right or wrong will I tell them my opinion, whereas the males I work with are not afraid to voice their instincts immediately.

My confidence level in a subject reflects the amount of encouragement I received in the early years of studying that subject. For example, year 12 was only my second year of studying physics. During that year, my physics teacher told me that I was "just a dumb blonde" and I would never succeed in physics. This type of sexist comment and the lack of help and support available in year 12 physics made me feel that I was not capable of doing physics. As a result, I struggled with year 12 physics, and I dropped out of physics at the end of first year university, which has greatly hindered my career as an applied mathematician.

Because of my experiences in high school, I was aware that many girls do not feel comfortable participating in co-ed classes. So whilst I was teaching first year university maths tutorials, I made a conscious effort to encourage all of my female students to contribute to class. I found that female students could be encouraged to contribute to class discussions by asking males and females different types of questions. I asked shy female students easy questions to build up their confidence, and I asked male students who showed off difficult questions to bring them down a peg or two.

SI: As a student at high school and university I have never felt intimidated or overshadowed by having males in my classes, and my goal for as long as I can remember has always been to develop my mathematical talent to the best of my ability.

I noticed from a very young age that science classes and particularly maths classes tended to be directed more to the male students. I have always actively tried to address this imbalance by putting myself forward in class, willingly answering and asking questions. Remarkably this behavior almost resulted in a very quick end to my mathematical career. This "unstandard" behavior for a female student resulted in my being directed to permanently leave my year 12 maths A class within the first week of the year. Luckily the quick resolution of this problem by the principal saw me replaced in the class, but as can be expected this event severely limited my development within the class because of the tension between the teacher and myself.

Moving into the university environment I was very surprised by what was viewed as acceptable behavior, especially in physics, where little control was placed on the equal share of equipment in prac classes. The male students were allowed to monopolize the equipment without any concern from the demonstrators about the female students and their right to learn.

Most of the sexism that I have encountered to date has occurred after I entered university, and some of this has been addressed by the appropriate authority. One of the things that I dislike the most about being a female in a minority situation is the tokenism that occurs. In many instances I am aware that in being selected for an activity that I have met the first requirement of "being female." This has made me somewhat skeptical when I am asked to be a representative; I often wonder whether it is because I am the most suitable person for the job or because I am female. Currently I find the place where I feel accepted for who I am regardless of sex is with my fellow postgraduate students.

KL: At school, I was probably too sure of myself since competition was fairly non-existent. In maths and physics, we were a class of eight girls, with female teachers. There was only one other person who was also a high achiever. When I got to university things changed drastically. I met up with the top students from the state, and they became my friends. I always felt my ability was inferior to theirs, but I was competitive and worked hard so I could keep up with them. In fact, at the end of third year, when I received better marks than a male friend, his father said to me that I only beat his son because his son had given me so much help!

In my university classes, I find the women students are often quieter and are more reluctant to respond when I ask a question. They often work through all the problems — I don't know if this is done out of thoroughness or to compensate for any lack of confidence.

CALL FOR NOMINATIONS: SEVENTH ANNUAL 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 given 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. The awardee will be selected by a committee appointed by the President.

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 document(s) 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 by **October 1, 1996** to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461.

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

CONFERENCES AND MEETINGS

Julia Robinson Celebration of Women in Mathematics Conference

The celebration of the 25th anniversary of the Association for Women in Mathematics will culminate in the Julia Robinson Celebration of Women in Mathematics conference. The goals of the celebration are: to showcase the recent achievements of women in mathematics; to facilitate networking among women in various fields of mathematics; to provide role models and offer mentoring for beginning women mathematicians; and to reach out to area teachers and students.

The Celebration will be a two and a half day conference to be held July 1–3, 1996 at the Mathematical Sciences Research Institute (MSRI) in Berkeley, California. The conference is supported by the National Security Agency, MSRI and AWM. The program which follows is preliminary.
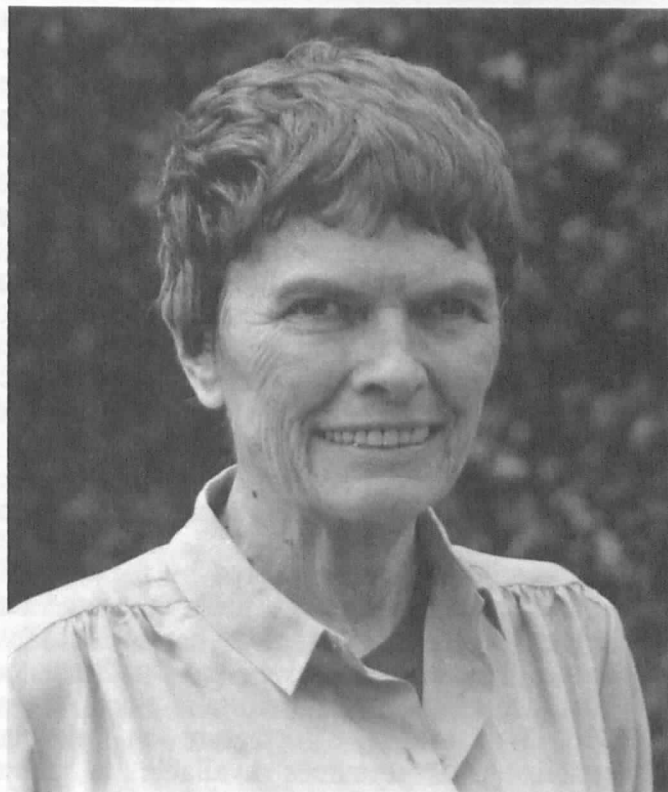
Julia Bowman Robinson

Plenary Lectures will be delivered by: Andrea Bertozzi (Duke University), Lenore Blum (Mathematical Sciences Research Institute), Joan Feigenbaum (AT&T), Joyce McLaughlin (Rensselaer Polytechnic Institute), Linda Rothschild (University of California, San Diego), Vera Serganova (University of California, Berkeley), Lesley Sibner (Polytechnic University of New York), Abby Thompson (University of California, Davis), Susan Tolman (Massachusetts Institute of Technology), Tatiana Toro (University of Chicago/University of Washington, Seattle), and Carol Wood (Wesleyan University). The Keynote Speaker at the Tuesday Banquet will be Constance Reid.

There will be two workshops. "Looking for a job" will be a series of sketches following a candidate from application to acceptance. The audience will have opportunities to give their thoughts and suggestions to the candidate. At "Grant writing," participants who receive conference funding will write sample proposals. Groups will be formed to discuss the proposals and talk about what makes a good proposal.

Two panel discussions will be held, "Non-academic careers," women working in government, finance, industry, etc. and "Academic careers," a mathematician's life in various types of colleges and universities, with and without graduate programs, state, private, urban, and small-town colleges.

Each funded participant will present a poster on her research at the poster session.

Holiday Mathematics Symposium

From 1963 to 1976, and resuming in 1988, the Department of Mathematical Sciences at New Mexico State University has held a series of annual symposia during the winter recess. The series continues immediately prior to the Joint Annual Meetings in San Diego with Edward Green and Derek Holt speaking on "Rewriting Techniques and Noncommutative Groebner Bases," January 3–7, 1997.

The Symposium will focus on certain techniques from computational algebra and theoretical computer science, with applications to the theory of associative algebras and computational group theory. The centerpiece

of the program is a series of five one-hour lectures each by Edward Green, Virginia Polytechnic Institute, and Derek Holt, University of Warwick.

The theory of Groebner bases for noncommutative rings originated in the late 1970's. Techniques and algorithms similar to those for string rewriting systems in computational group theory, a somewhat older subject, have been developed. The purpose of this lecture series is twofold: to give an exposition of the subject, accessible to graduate students and researchers from both areas alike, and to further the understanding of the connections between the theory of noncommutative Groebner bases and that of rewriting systems in group theory. Both lecturers will place special emphasis on these connections, and the conference will give researchers from both fields the opportunity to interact. The lectures will be supplemented by a computer laboratory and informal discussion sessions. In addition, a contributed paper session will focus on related issues and applications.

We hope to provide partial financial support for some participants. Graduate students, women and minorities are especially encouraged to apply.

Further information can be found at the web site http://www.math.nmsu.edu/. Direct inquiries to: Susan Hermiller or Reinhard Laubenbacher, Department of Mathematical Sciences, New Mexico State University, Las Cruces, NM 88003; email: holiday@math.nmsu.edu; phone: 505-646-3901; fax: 505-646-1064.

SIAM Conferences and Meetings

The following SIAM meetings will be held during the next year: the 1996 SIAM Annual Meeting, July 22–26, 1996, Hyatt Regency Crown Center, Kansas City, MO [see pages 28–29 for information on AWM activities there]; the second SIAM Conference on Sparse Matrices, October 9–11, 1996, The Coeur d'Alene Resort, Coeur d'Alene, ID; the Eighth Annual ACM-SIAM Symposium on Discrete Algorithms, January 5–7, 1997, Le Meridien New Orleans Hotel, New Orleans, LA; the eighth SIAM Conference on Parallel Processing for Scientific Computing, February 3–5, 1997, Hyatt Regency Hotel, Minneapolis, MN; the second SIAM Conference on Mathematical Aspects of Materials Science, May 12–14, 1997, Holiday Inn Select Center City, Philadelphia, PA; the fourth SIAM Conference on Dynamical Systems, May 19–22, 1997, Snowbird Ski and Summer Resort, Snowbird,

UT; the fourth SIAM Conference on Geosciences, June 16–18, 1997 (tentative), Albuquerque, NM; and the SIAM 45th Anniversary Meeting, July 14–18, 1997, Stanford University, Stanford, CA.

Electronic versions of the calls for papers are available at http://www.siam.org/conf.htm. For more information, contact: SIAM Conference Coordinator, 3600 University City Science Center, Philadelphia, PA 19104; phone: 215-382-9800; fax: 215-386-7999; email: meetings@siam.org.

MSRI Programs

The Mathematical Sciences Research Institute is holding year-long programs in combinatorics and in low-dimensional topology in 1996–97. Workshops to be held during this year are: Joint Introductory Workshop on Combinatorics and Low-dimensional Topology, August 12–23, intro@msri.org; Knots and 3-manifolds, August 26–30, knots@msri.org; Graph Drawing, September 18–20, gd@research.att.com; Enumeration and Partially Ordered Sets, October 14–18, posets@msri.org; Extremal Combinatorics, November 11–15, extreme@msri.org; Four Dimensional Manifolds, January 13–17, 4mfd@msri.org; Combinatorial Aspects of Finite Type and Quantum Invariants, January 21–24, qtop@msri.org; Geometric Combinatorics, February 10–14, geomcomb@msri.org; Computational and Algorithmic Methods in Three Dimensional Topology, March 10–14, comb_top@msri.org; Representation Theory and Symmetric Functions, April 14–18, symfns@msri.org.

In addition to the email addresses given above, communications may be sent to: Name of Workshop, Mathematical Sciences Research Institute, 1000 Centennial Drive, Berkeley, CA 94720. Each workshop has a world wide web page accessible from http://www.msri.org.

Special Session at MathFest

A special session sponsored by the Committee on the Profession of the American Mathematical Society will be held the Friday before MathFest in Seattle. "Preparing Ourselves and Our Students for Careers in Mathematics" will take place August 9, 1996, 3–6 P.M. It will feature an information session, AMS resources available to potential applicants, and panel discussions on Preparing for an Academic Career, Preparing for a Career in Industry, Departmental Practices That Have Helped

Graduate Students, and Preparing for a Successful Job Search. Each panel will discuss the job market as it applies to the early graduate student, the graduate advisor, and the applicant who has already held short-term jobs. For more information, contact Annalisa Crannell at a_crannell@acad.fandm.edu or see the AMS Web site http://www.ams.org/amsmtgs/2017_program_friday.html.

MATHEMATICS EDUCATION

Do Basic Skills Pay Off?

Basic cognitive skills such as the ability to follow directions, manipulate fractions and decimals, and interpret line graphs are becoming increasingly important determinants of wages. To illustrate, among 24-year-old female high school graduates who did not go on to college, those who had graduated in 1972 with strong basic math skills earned 39 cents more per hour (adjusted for inflation) than those with weaker skills. Among 1980 high school graduates, the wage differential had risen to 74 cents. The differential is greater for 24 year olds than for 20 year olds, indicating that it takes several years after graduation for the math skills to affect wages. The same general pattern is present for males. These results are based on a test of skills which are taught in American schools no later than eighth grade, but which many students fail to master. [Murnane, et al.]

Is College Graduate Becoming More Important?

For 24-year-old female high school graduates, the average wage (adjusted for inflation) was four percent lower in 1986 than in 1978, but for college graduates the average wage was one percent higher in 1986 than in 1978. In comparison, for 24-year-old male high school graduates, the average wage was 16.5 percent lower in 1986 than in 1978, and for college graduates, one percent lower in 1986 than in 1978. Scores on the math test used for the research turned out to be a strong predictor of future educational attainment. [Murnane, et al.]

by Column Editor Sally I. Lipsey, 70 E. 10th Street, #3A, New York, NY 10003-5106

Can a Female College Graduate Be Successful in Combining Career and Family?

A study of several generations of female college graduates shows that no generation "had a high success rate in combining family and career" [Goldin 1995]. "Family" implies having at least one child. Success is defined as "exceeding the income of the male college graduate at the top of the bottom 25 percent of male graduates in two or three consecutive years." More than 50 percent of those graduating in 1910 (the first generation studied) either did not marry or, if they did so, did not have children. Of the generation born around 1910, many more married, had children and dropped out of the work force despite having had career aspirations. Those born about 1933 tended to have family first, career later — often teaching. Members of the generation graduating from 1966 to 1979 often delayed marriage and children while pursuing a career. As these women "reach mid-life perhaps one-sixth have achieved the elusive goal of 'family and career.' Is it no wonder that today's college women assert that they have few role models?" [Goldin, p. 34]

References

Goldin, Claudia. "Career and Family: College Women Look to the Past." Working Paper No. 5188. Cambridge, MA: National Bureau of Economic Research, July 1995.

Murnane, Richard J., John B. Willett, Frank Levy. "The Growing Importance of Cognitive Skills in Wage Determination." Working Paper No. 5076. Cambridge, MA: National Bureau of Economic Research, March 1995.

National Bureau of Economic Research. *NBER Digest*. Cambridge, MA: The Bureau, October and December 1995.

MAA INFORMATION

The MAA Board of Governors passed the following motion at its meeting in Orlando in January:

The MAA shall annually assemble and publish on a regular basis information on the relative numbers of women and minorities in at least the following categories: MAA membership, elected officials, committee members and chairs, members of editorial boards, invited hour speakers, speakers at special sessions and organizers of panels, and nominees and winners of awards/prizes.

AWM WORKSHOP: Focus on Reporting Research Results

held in conjunction with the SIAM Annual Meeting Kansas City, Missouri, July 22-26, 1996

Preliminary Schedule as of June 1, 1996

The Association for Women in Mathematics (AWM) will have a two-day event for the first two days of the 1996 Annual Meeting for the Society for Industrial and Applied Mathematics (SIAM). AWM and SIAM welcome your participation. The SIAM Annual Meeting and the AWM Workshop will be held at the Hyatt Regency Crown Center, Kansas City, Missouri the week of July 22-26, 1996.

The event focuses on the reporting of research results and mentoring of graduate students and postdocs. It includes a minisymposium which specifically addresses the topic of how to give an oral presentation, four research-focused minisymposia on control theory, inverse problems, dynamical systems, and stochastic processes, and one poster session. Participants will have an opportunity to meet one on one with established researchers and to receive feedback on the presentation of their own talks. Those attending the workshop events can interact with outstanding applied mathematicians from industry, government labs and universities over two informal lunches and a dinner where there will be panels on careers, on government funding and a Keynote speaker.

An important event at the dinner on Monday evening, July 22, will be the awarding of the **Alice T. Schafer Prize**. This prize is awarded annually to outstanding undergraduate women for their accomplishments and promise in the field of mathematics.

AWM is grateful to SIAM's Meetings Department their efforts on behalf of the workshop and all AWM activities. AWM also wishes to thank all the AWM members who volunteered their time and expertise for these activities. AWM also expresses gratitude to the Office of Naval Research (ONR) for support of the AWM workshop.

Monday, July 22, 1996

CHICAGO "C", Ballroom Level, Hyatt Regency

8:00 a.m.	**Coffee and Registration**
8:20 a.m.	**Opening Remarks: Joyce McLaughlin,** Rensselaer Polytechnic Institute, AWM Workshop Organizer
8:30 a.m. - 10:30 a.m.	**AWM Minisymposium on Presenting Your Work and Yourself to the World: A Focus** **MS3** **on Oral Communications**

One key to success in academe and industry is a person's ability to communicate with those around her. The relevance of excellent technical work must be actively revealed and not left to others. A mathematician enhances her technical achievement by developing additional organizational talents such as public speaking. A successful mathematician must be able to communicate in both informal and formal settings. This workshop will focus on how to develop the speaking skills and prepare for technical presentations that can be given comfortably and with confidence. The intended audience are graduate students or recent graduates who are at the beginning of their careers. The technical content will be assumed and will not be discussed. Speakers will discuss the construction of a presentation, preparation of the slides, as well as practical tips.

Organizer: Rosemary E. Chang, Silicon Graphics Computer Systems

8:30 a.m.	"Elements of Public Speaking"	Rosemary E. Chang, Silicon Graphics
9:00 a.m.	"Giving a Technical Presentation at a Technical Conference"	Margaret H. Wright, Bell Laboratories
9:30 a.m.	"Preparing the Slides"	David Lane, NASA Ames Research Center
10:00 a.m.	"The Art of Persuasive Speaking"	Robert E. Barnhill, Arizona State University

12:00 p.m. - 12:45 p.m.	**Lunch** *[see pre-registration information below for more details]*
12:45 p.m. - 1:30 p.m.	**Panel: Balancing Career and Family Life**

PANELISTS: Kathy Alligood, George Mason Univ.   Margaret Cheney, Rensselaer Polytechnic Institute
                    Suzanne Lenhart, Univ. of Tennessee, Knoxville

1:30 p.m. - 2:30 p.m.   **Poster Session for Graduate Students**

Natalia Berloff, Florida State University	"Solitary waves and Periodic Pulse Trains in Nonintegrable Equations"
Monica L. Brodzik, University of Pittsburgh	"Numerical Approximation of Manifolds, and Applications"
Maria do Carmo Carbinatto, Georgia Institute of Technology	"Chaos in Discrete Dynamical Systems"
Tamara L. Gibson, University of Maryland, College Park	"BFGS with Update Skipping and Varying Memory"
R. Clarissa Howison, University of Cincinnati	"Equilibria of spherical charge distributions"
Lianfang Liu, University of Rochester	"Stability Estimates for the Two-Dimensional Inverse Conductivity Problem"
Laura Lochhead Rock, University of Texas, Austin	"A Parabolic System of Partial Differential Equations with Hysteresis"
Maia Martcheva, Purdue University	"An Age Structured Two-sex Population Model"
C. Maeve McCarthy, Rice University	"The optimal design of tall columns"
Cindy S. Miller, University of Pittsburgh	"Hidden Symmetries and $D_4 + T^2$ Mode Interactions"
Dorina Mitrea, University of Minnesota	"On a problem of Kelvin for domains with rough boundaries"
Sharon Moulden, George Mason University	"Parameter Estimation and Noise Smoothing of the Lorenz System"
Kathleen A. Rogers, University of Maryland, College Park	"Stability of Twisted Rods"
Yanping Wang, New Jersey Institute of Technology	"Theoretical Study of Sufactant Effects on Rising Gas Bubbles"
Katherine Wyatt, City University of New York	"Portfolio Selection for Tracking a Fixed-Income Index"

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AWM WORKSHOP at the SIAM Annual Meeting

Monday, July 22, 1996 (continued)

CHICAGO "C", Ballroom Level, Hyatt Regency

3:15 p.m. - 5:15 p.m.   **AWM Minisymposium on Inverse Problems**   MS10

Inverse problems arise in many areas of applications, such as electric impedance tomography, elastic impedance tomography, material science, seismology, radar, sonar and medical imaging. These problems are broadly divided into various classes, for example, inverse boundary value problems, inverse spectral problems and inverse scattering problems. In one class of problems, one or more coefficients in a differential equation or a number of matrix entries in a finite dimensional problem are unknown. Each of these unknowns may represent physical quantity, such as the electric conductivity of a medium, density stiffness or the sound speed in a medium. In another class of problems, scattering objects are unknown. The inverse problems are to recover the unknown parameters or the shape of obstacles from boundary measurements, the spectrum of a related operator, or the far field data. Many scientists, engineers and mathematicians have studied a variety of inverse problems and have successfully obtained some very satisfactory results. A primary goal of this minisymposium is to bring together women from a variety of mathematical disciplines who are working on inverse problems. The minisymposium will focus on a number of open problems in several areas.

Organizer: Changmei Liu, University of North Carolina

3:15 p.m.	"Properties of the Lanczos approximation to the model resolution matrix for seismic inverse problems."	Susan E. Minkoff, Univ. of Texas, Austin
3:45 p.m.	"Uniqueness of Scattering Cross Sections from B.V. Data"	S.K. Patch, Stanford University
4:15 p.m.	"An inverse problem in elastodynamics"	Lizabeth V. Rachele, Univ. of Washington
4:45 p.m.	"Inverse Obstacle Problem"	Changmei Liu, University of North Carolina

CHOUTEAU "A", Mezzanine Level, Hyatt Regency

3:15 p.m. - 5:15 p.m.   **New Models and Approaches for Stochastic Phenomena**   MS13
in Physsics and Chemistry (AWM-SIAM Minisymposium)

This minisymposium will focus on new models and techniques for stochastic processes in physical applications and emphasize the use of a complementary combination of analytical and numerical techniques. The speakers will discuss the dramatic effects of small noise in simplification of dynamics, for example, elimination of chaotic behavior, the second comparison of deterministic and stochastic models for wave propagation in high contrast media, and aspects of noise activated transitions. Nonlinearities and interplay of the parameters of the model induce non-classical behavior of the escape paths. New half-range expansion techniques yield analytical results for activation by bounded diffusion processes and their boundary layer behavior.

Organizers: Rachel Kuske, Stanford University; and Malgorzata M. Klosek, University of Wisconsin, Milwaukee

3:15 p.m.	"Probability Densities for Dynamics Simplified by Noise"	Rachel Kuske, Organizer
3:45 p.m.	"Direct and Inverse Problems for High Contrast Media"	Liliana Borcea, Stanford University
4:15 p.m.	"Boundary Layer Theory and the Two-Dimensional Stochastic Exit Problem"	Robert S. Maier, University of Arizona
4:45 p.m.	"Reflected Diffusion Plus One-Dimensional Dynamics "	Malgorzata M. Klosek, Organizer

CHICAGO "B", Ballroom Level, Hyatt Regency

7:00 p.m.   **AWM Dinner Banquet and Awarding of the Alice T. Schafer Prize**

Keynote Speaker: **Bozenna Pasik-Duncan**, University of Kansas *[see ticket information below for more details]*

Schafer Prize Recipients:			
	Winner	*Ioana Dumitriu*	Courant Institute of Math. Sciences., NYU
	Runner-up	*Karen Ball*	Grinnell College
	Runner-up	*Wungkum Fong*	University of California, Berkeley
	Honorable Mention	*Tara S. Holm*	Dartmouth College

Tuesday, July 23, 1996

CHICAGO "C", Ballroom Level, Hyatt Regency

8:00 a.m.   **Coffee and Registration**

8:30 a.m. - 10:30 a.m.   **AWM Minisymposium on Applications of Control Theory**   MS16

Control theory involves inducing a desired behavior on a physical system. Applications arise in difficult areas, for example, in the stabilization of plates, beams and shells and in improving communications protocols for data transmission. The speakers will consider a variety of problems that can be modeled by partial differential equations, ordinary differential equations or discrete event systems. They will discuss recent theoretical developments and their applications to real-world problems.

Organizers: Mary Ann Horn, Vanderbilt University; and Suzanne Lenhart, University of Tennessee

8:30 a.m.	"Optimal Control of a Predator-Prey System "	K. Renee Fister, U. of Tennessee, Knoxville
9:00 a.m.	"Modeling and Estimation of the Dynamic Mechanical Behavior of Elastomers"	Nancy J. Lybeck, North Carolina State Univ.
9:30 a.m.	"Identification for Fourier-Neural Recurrent Networks"	Renée B. Koplon, Wright State University
10:00 a.m.	"Control of Shells"	Christine A. McMillan, Virginia Tech.

12:00 p.m. - 12:45 p.m.   **Lunch** *[see pre-registration information below for more details]*

12:45 p.m. - 1:30 p.m.   **Panel: Government Funding Opportunities**

PANELISTS:	Deborah Lockhart, National Science Foundation	Wen Masters, Office of Naval Research
	3rd Panelist: TBA	

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AWM WORKSHOP at the SIAM Annual Meeting

Tuesday, July 23, 1996 (continued)

3:15 p.m. - 5:15 p.m.   **AWM Minisymposium on Geometric Methods in Dynamical Systems I**   MS23

Poincare introduced mathematicians and physicists to the power of qualitative techniques in the study of nonlinear dynamical systems. Differential geometry, differential and algebraic topology, and continuum theory are important tools in understanding the elements of modern dynamical systems theory. The availability of interactive dynamics software now allows scientists in virtually all fields to identify the complex structures described by topologists and geometers in models within their own specialties. The speakers will present theoretical results in the geometric and topological aspects of nonlinear dynamics.

Organizer: Kathy Alligood, George Mason University

3:15 p.m.	"A Discontinuois Dynamical System on a Non-Compact Space: What Will Reality Think Up Next?"	M. W. (Wendy) Brunzie, Montana State Univ.
3:45 p.m.	"Grazing Bifurcations in Impact Oscillators"	Wai Chin, IMA, University of Minnesota
4:15 p.m.	"Representations for Systems of Weakly Coupled Limit Cycle Oscillators"	Jody Sorensen, Bates College
4:45 p.m.	"Convergence of Solitary Wave Solutions to Compactons"	Yi Li, University of Minnesota

5:15 p.m.   **Closing Remarks: Joyce McLaughlin,** Rensselaer Polytechnic Institute, AWM Workshop Organizer

There is **no registration fee for the AWM Workshop**. The panels, minisymposia and poster session are open to all. **Pre-registration for workshop lunch and dinner banquet tickets are <u>strongly encouraged</u>.** Tickets on-site will be very limited. Individuals who wish to attend the Schafer Prize session need to pre-register for the dinner banquet. Individuals can inquire about ticket availability at the **AWM registration desk** at the Hyatt Regency Crown Center on **Sunday, July 21 from 5:00 p.m.-7:00 p.m.** or on **Monday, July 22 or Tues., July 23 from 7:30 a.m.-8:30 a.m.** To obtain a pre-registration form for the meal functions, please contact the **AWM office,** 4114 Computer and Space Sciences Bldg., University of Maryland, College Park, MD 20742-2461; **301-405-7892 or awm@math.umd.edu. Pre-registration deadline is: June 15, 1996.** For further information on the workshop, contact Dawn Wheeler, AWM Director of Meetings (awm@math.umd.edu).

ADVERTISEMENTS

# # #

ASSOCIATION FOR WOMEN IN MATHEMATICS

1996/1997 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

LAST NAME   FIRST NAME   M.I.

ADDRESS_____

_____

_____

Home Phone: Work Phone:

E-mail:

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)

Position:
Institution/Company:
City, State, Zip:

DEGREES EARNED:

	Degree(s)	Institution(s)	Year(s)
Doctorate:			
Master's:			
Bachelor's:			

INDIVIDUAL DUES SCHEDULE

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

REGULAR INDIVIDUAL MEMBERSHIP.. $ 40 _____

2ND FAMILY MEMBERSHIP.. $ 30 _____
  (NO newsletter) Please indicate regular family member: _____

CONTRIBUTING MEMBERSHIP.. $100 _____
  Indicate if you wish for this contribution to remain anonymous: _____

RETIRED or PART-TIME EMPLOYED MEMBERSHIP (circle one)........................ $ 20 _____

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ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO)....**FOR ADDITIONAL POSTAGE ADD** $ 8 _____
  All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.

INSTITUTIONAL DUES SCHEDULE

	U.S.	FOREIGN	
_____Sponsoring CATEGORY I (may nominate 10 students for membership)................................	$120	$200	_____
_____Sponsoring CATEGORY II (may nominate 3 students for membership)................................	$ 80	$105	_____

Effective July 1, 1996 -- INSTITUTIONAL MEMBERS WILL RECEIVE **ONE** FREE JOB ADVERTISEMENTS (*up to 4 lines*) IN OUR NEWSLETTER PER YEAR. Advertising deadlines are the 1st of every EVEN month. All institutions advertising in the AWM Newsletter are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD $10 ($18 for foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

TOTAL DUES ENCLOSED $ _____

J/A96

ADDRESS CORRECTION FORM

☐   Please change my address to:

☐   Please send membership information to my colleague listed below:

☐   No forwarding address known for the individual listed below (enclosed copy of label):

(Please Print)

Name_____

Address_____

_____

City_____State_____Zip_____-_____

Country (if applicable)_____E-mail Address_____

Position_____Institution/Org._____

Telephone: Home_____Work_____

☐   You may include this information in the next AWM Membership directory.

MAIL TO:

Database Corrections
AWM
4114 Computer & Space
Sciences Bldg., University
of Maryland, College Park
Maryland 20742-2461

or E-MAIL:

awm@math.umd.edu

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