

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 31, Number 3

NEWSLETTER

May–June 2001

PRESIDENT'S REPORT

Hello to all AWM members!

AWM is delighted to be one of the sponsoring organizations of the 42nd International Mathematical Olympiad. The IMO was last held in the USA in 1981. This event in Washington, DC, to be held June 30 – July 14, 2001, will bring together 500 of the most talented high school age mathematicians from more than 80 countries. Volunteers to serve as invigilators (proctors), airport greeters, chaperones, and guides for hosting teams and their coaches are needed. See the website imo2001.usa.unl.edu for further information.

The Sonia Kovalevsky High School Mathematics Days are a very important part of AWM's outreach efforts. We appreciate the colleges and universities that host these workshops and the mathematicians that organize the sessions. We would also like to thank Coppin State University, the National Security Agency and Microsoft for their support of this program.

We could sponsor many more of these activities if we had further funding for this program. I am forming a Task Force on our Sonia Kovalevsky High School Mathematics Days to secure additional funding and to act as ambassadors promoting this program. If you are interested in being on this Task Force or in being on SK Day Selection Committees, please contact me at lenhart@math.utk.edu.

As you look ahead to plan for the summer, note that there are AWM activities at the SIAM annual Meeting in San Diego, July 9–13 [for program, see pp. 32–33] and at the MAA MathFest in Madison in August 2–4. We are hosting a workshop for female graduate students and recent Ph.D.'s at the SIAM meeting. At MathFest, Patricia Shure of the University of Michigan will deliver the AWM-MAA lecture. Patricia was the recipient of our Hay Award in January 2001, and we are starting the tradition of having winners of the Hay Award speak at MathFest. We will also be hosting a reception at MathFest.

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AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.

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

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We would like to congratulate Margaret Murray on the publication of her new book, *Women Becoming Mathematicians: Creating a Professional Identity in Post-World War II America* (MIT Press, 2000). This book is a valuable contribution to our community. We would also like to thank Marge for her continuing service as our Book Review Editor.

AWM endorsed letters from the Coalition for National Science Funding (CNSF website: www.cnsfweb.org) to President Bush and to Jim Nuzzle, the Chairman of the Budget Committee of the U.S. House of Representatives. [See pages 25–26 for a copy of the letter to the President and further information on science funding.] The letter to Nuzzle encourages significantly boosting basic research investments in science and engineering, in particular to strongly support the National Science Foundation and the Department of Energy. The National Science Foundation had proposed a major initiative to increase funding for the mathematical sciences, and this initiative may be impossible if the anticipated funding increase for NSF does not occur.

Several alert members pointed out an anti-drug advertisement on the web and in *Seventeen* and *Teen* magazines that portrayed math camp in a negative way. The ad, clearly intended to speak to teenagers in their own language, contained the ambiguous statement “I would rather go to math camp [than smoke a joint].” The Executive Committee went into immediate action, and we composed a letter explaining our position to send to the Office of National Drug Control Policy.

Recently we received an answer to this letter from Alan M. Levitt, Director, National Youth Anti-Drug Media Campaign. It said in part: “You are one of several to question the use of the line ‘I’d rather go to math camp’ and to express concern that it denigrates mathematics and kids’ interest in math. We did not intend that interpretation, and we regret it....” The letter goes on to point out that other ads in the same series portrayed math and mathematical knowledge in highly positive ways. For instance, a “mathematical knowledge” icon was placed on a park banner, along with icons representing friends, confidence, hip-hop, family and thinking; one hundred of these banners were placed in ice and roller-skating rinks and in skateboarding parks around the country. Finally: “The ‘What to Say/Girl’ ad has been retired from any further use in the National Youth Anti-Drug Media Campaign, although a few residual appearances of the ad will still occur this month.... The message has also been removed from our web site.”

Our treasurer, Amy Cohen, is resigning effective July 1st [see her farewell report on page 8], and Mary Ann Horn of Vanderbilt University will become the new treasurer to fill out the remainder of Amy's current term. We would like to thank Amy for her extraordinary service as treasurer for the past three years and welcome Mary Ann as a new officer.

Tilla Weinstein has resigned as Member-at-Large of our Executive Committee, and Tamara Kolda will be taking her place. Thanks to Tilla for her more than three years of service on the Executive Committee and for her work leading the Travel Grant Program. Tamara has been serving AWM for several years as Web Editor and will continue in that capacity; we welcome her as a voting member of our Executive Committee.

Contact me if you have any suggestions or ideas about AWM activities.

Enjoy your summer!

Suzanne Lenhart

Suzanne Lenhart
University of Tennessee
and Oak Ridge
National Laboratory
Knoxville, TN
March 20, 2001



MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues

Individual: \$50 Family (no newsletter): \$30
Contributing: \$100 Retired, part-time: \$25
Student, unemployed, developing nations: \$15
Friend: \$1000 Benefactor: \$2500
All foreign memberships: \$8 additional for postage
Dues in excess of \$15 and all contributions are deductible from federal taxable income.

Institutional Members:

Level 1: \$250
Level 2a: \$125
Level 2b: \$125

See <http://www.awm-math.org> for details on free ads, free student memberships, and ad discounts.

Affiliate Members: \$250

Institutional Sponsors:

Friend: \$1000+ Patron: \$2500+
Benefactor: \$5000+ Program Sponsor: \$10,000+
See the AWM website for details.

Subscriptions and back orders

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

Payment

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

Newsletter ad information

AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Director of Marketing, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the Newsletter must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is \$60 for a basic four-line ad. Additional lines are \$6 each. See the AWM website for *Newsletter* display ad rates.

Newsletter deadlines

Editorial: 24th of January, March, May, July, September, November

Ad: 1st of February, April, June, August, October, December

Addresses

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

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Classified and job link ads may be placed at the AWM website. Detailed information may be found there.

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<http://www.awm-math.org>

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AWM-Net

Send mail to awm-net-request@cs.umd.edu and include your email address; AWM members only.

AWM DEADLINES

NSF-AWM Travel Grant: October 1, 2001
and February 1, 2002

AWM Workshop, January 2002:
September 1, 2001

Alice T. Schafer Prize for Undergraduate
Women: October 1, 2001

Louise Hay Award for Contributions to
Mathematics Education: October 1, 2001

AWM Essay Contest: November 1, 2001

AWM CALENDAR

AWM Workshop, SIAM meetings,
San Diego, July 8–10, 2001

AWM-MAA Lecture, Mathfest,
Madison, August 2–4, 2001,
Patricia D. Shure

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PHOTO CREDITS

pp. 28-31: AWM/D. Wheeler

RUTH AND DIRK STRUIK

My parents were Saly Ruth Ramler Struik (1894–1993) and Dirk Jan Struik (1894–2000). I would like to write about the lives of each of them, along with some reflections. Each was unusual; my mother earned her Ph.D. in math at Charles University in Prague in 1919, possibly the first woman to receive a Ph.D. in math at that institution. My father was on the faculty of MIT most of his professional life and became a world-renowned Marxist historian of mathematics.

My mother was born Saly Ruth Ramler on November 10, 1894. The Ramler family came from Kolomyjan, a city in Galicia, which was then part of the Austro-Hungarian Empire; now it is part of the Ukraine. She spent her childhood in Prague and went to Charles University, where she studied mathematics under Gerhard Kowaleski and Georg Pick. Her dissertation was on the axiomatics of affine geometry in two and three dimensions. [1] My father writes that he believed that Pick did not give her too much help, and her work was the result of single-minded tenacity and original thinking. [2]

At the time of her doctorate, Ruth became a teacher at the Girls Lyceum where she had been a pupil. She taught mathematics and gymnastics, maybe some physics. Many of her pupils liked her, and years later, I was told by one of those pupils how a group of them would follow Ruth around, they were so enamored of her. In a letter to my father, one remembered her vividly: "Her classes were much more interesting than most; I think she digressed and talked about a lot of other things such as Goethe's *Faust*." [2]

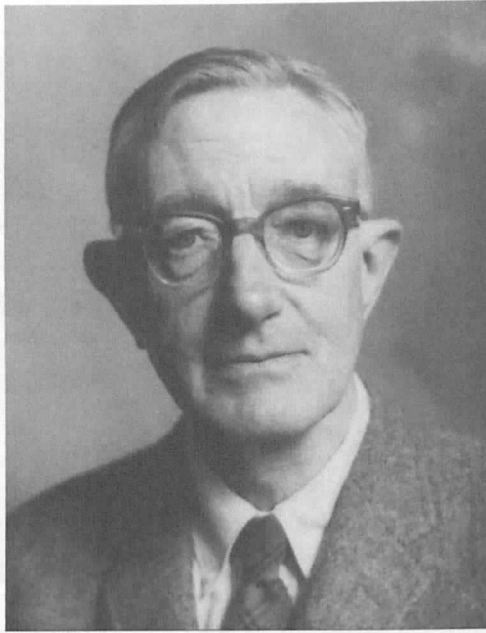
In the summer of 1921 she attended the German Mathematical Society meeting in Jena, where she met Dirk. A romance followed and they were married on July 14, 1923 (Bastille Day) in the town hall of Prague. Ruth hated Prague with its ancient hatreds, Germans vs. Czechs, and its anti-Semitism and was glad to go to the Netherlands with my father.

In 1924, Dirk received a Rockefeller fellowship to study in Rome and in Göttingen. He and Ruth traveled to Rome where he worked with Levi-Civita and Federigo Enriques. Enriques encouraged Ruth to translate the Tenth Book of Euclid's *Elements* into Italian; it appeared in 1932.

On June 25, 1925, Ruth and Dirk arrived in Göttingen on the day that Felix Klein was buried. Ruth worked on Euclid's Tenth Book and also on a German translation of De Vries' book on the fourth dimension; the translation appeared in 1928.

At Göttingen, Dirk and Ruth met Norbert Wiener who arranged for Dirk to be invited to MIT. In 1926 Dirk sailed for MIT, and Ruth joined him several months later in 1927. She continued working on the Italian Euclid and DeVries' book, but my parents started their

Ruth Rebekka Struik, emerita, University of Colorado, Boulder, CO



Dirk Struik, 1962



Ruth Struik, 1962

family: I arrived in 1928; my sisters Anne and Gwen arrived in 1930 and 1932. Most of her energies for the next decades were spent raising the three of us, with activities such as entertaining guests and political activities for Loyalist Spain and against Nazi aggression. To protest the Japanese invasion of China, Ruth wore cotton instead of silk stockings. With the rise of Hitler, Ruth and Dirk were involved with helping escapees. Among those sheltered for a while were Ruth's two sisters, Nelly and Ernie. Among the mathematicians welcomed at their home were Tarski, Szasz, Carnap, Bergman and Noether.

I remember her visits to the Women's Reformatory in Framingham. Ruth was very impressed by Dr. Miriam Van Waters, the liberal superintendent of that institution, where Ruth gave gymnastic lessons to the inmates. My recollection is that since I was the oldest child, it was my responsibility to prepare the evening meal for the family.

After World War II, Ruth was busy sending packages to friends in the Netherlands. Dirk began to get interested in the history of science in New England; they traveled widely in New England, to old factories and mills, and to the semi-forgotten Middlesex Canal. Ruth assisted in his writing. Two books, *Yankee Science in the Making* and *Concise History of Mathematics*, appeared in 1948.

In 1951 Dirk was indicted in Massachusetts under an anti-anarchy law. MIT suspended him with pay until the indictment was quashed in 1955. Then he returned to teaching until his retirement in 1960. During the period of indictment, Ruth accompanied Dirk to many meetings where he spoke about his case and in defense of other victims of that witch-hunting era. She also attended mathematical meetings and gave a presentation to a mathematics meeting in 1953 in Kingston, Ontario. At a mathematical conference in the South, Ruth was one of the few white women willing to share a hotel room with a black colleague. Recently I found out that Ruth had done at least 68 reviews for *Mathematical Reviews*.

After Dirk's retirement, he was unable to teach in this country (the McCarthy period had not ended), so he accepted several lecturing and teaching positions abroad: Puerto Rico in 1962, the Netherlands in 1963, Costa Rica in 1965, West Germany in 1977. In the later decades of their lives, they did a great deal of traveling, including a yearly trip to visit me in Colorado. Friends found them a delightful couple. In the last decade of her life, Dirk had to look after her, and finally it was necessary to admit her to a convalescent home. She died in her sleep on November 26th, 1993.

After her death, Dirk set up a scholarship in her name under the auspices of the Kovalevskaja Fund for students

at the Gauss School in Peru. [3] He also wrote a 32-page biography of her; most of the facts about her life in this account are from this source. [2]

As her daughter, as I was growing up, I remembered Ruth as an unhappy person; she often spoke of her love of mathematics, and the thrill that her work had given her. But Life had given her dishes and diapers. She was very pessimistic about the possibilities for women: if you married, you can't have a career; and if you didn't marry, you were an old maid — an unfortunate fate. Probably I have lived the life my mother would have liked to have lived. I was on the faculty of the University of Colorado for 35 years and I married and raised three daughters. And she drilled into me the notion that Life is unfair to women. When Women's Lib came on the scene in the early seventies, I plunged in, hoping to change the reality that had shaped my mother's life and was shaping my life.

For Dirk Jan Struik, the account will be shorter, since there are many accounts of his life available. [4, 5, 6] He was born on September 30, 1894 in Rotterdam and educated in Leiden. At Leiden he came in contact with exciting developments in mathematics and physics. Paul Ehrenfest created a community of physicists who gathered to discuss many topics. He worked under and later with J.A. Schouten on a series of papers on tensor analysis. Out of this work came Dirk's doctoral dissertation. [7]

As related above, in 1921 he met and later married Saly Ruth Ramler; in 1924 he obtained a fellowship to study in Rome and Göttingen, and he came to MIT in 1927. While a popular professor at MIT, he helped my mother raise the three of us and continued research in differential geometry and in the history of mathematics. Domina Spencer, whose thesis Dirk directed at MIT, gives an enthusiastic account of her relationship with Dirk in [8, p. 116]. MIT was his professional home until his retirement in 1960. He received the Kenneth O. May award for his pioneering work in the history of mathematics in 1989. His many professional accomplishments are detailed in [5], which lists 94 of his publications.

As a student in Leiden he came in contact with Marxist ideas and was caught up in the excitement of the Russian Revolution of 1917. He considered himself a



Dirk and Ruth Struik, 1973

Marxist till the end of his life. From his student days on, he was involved in political activities, including support of Loyalist Spain, raising the alarm of the rise of Nazism and Fascism in Europe, giving talks on Marxism and the Soviet Union. In 1951, he and three friends were indicted under an anti-anarchy law for conspiring to overthrow the Commonwealth of Massachusetts. Bertrand Russell was reported to comment: "Oh, what a powerful man he must be." The charges were dropped in 1955, and he returned to teaching at MIT.

His work in history of mathematics was an attempt to combine his interest in mathematics with his Marxist philosophy. Before he did his significant work in this area, history of mathematics tended to consist either of anecdotes about the lives of mathematicians, or histories of mathematical ideas, unrelated to the societies in which the mathematicians lived. To Dirk, mathematics was a human activity, and it was important to look at the society in which the mathematician did his (and occasionally her) work in order to understand what was happening.

At the time of his 100th birthday, there were many celebrations. Professor Thomas Banchoff arranged for a



Rebekka Struik with her father Dirk, 1993

conference at Brown University on September 30, 1994. The First Church of Belmont (Unitarian Universalist) has a service in his honor; the neighbors gave a party. At the Cincinnati math meetings (January, 1994), Dirk was among the mathematicians invited to speak. Students and scholars were coming to visit him for information and ideas until the last year of his life. His memory for details was astounding. On Dutch video there was a three-hour documentary of his life. He loved all this attention. He was writing reviews for *Mathematical Reviews* until 1999. In September, 1999, Jane Kister, Executive Editor of *Mathematical Reviews*, wrote a letter thanking him for the 874 reviews he had done since the founding of MR in 1940. He collapsed in his home on October 21, 2000. Friends arranged for a event at MIT to commemorate the lives of both Ruth and Dirk on December 2, 2000.

While growing up, my recollections are of talks to me about the social issues of the day. In his later years, when asked to what he owed his longevity, he would reply: the three M's; they stood for mathematics, marriage and Marxism. If he was uncertain as to the attitude

of the person asking the question, he would "forget" what the third M (Marxism) stood for. My interpretation of these three M's is that they stand for meaningful work, family, and commitment to social justice. He gave me a love of mathematics, made clear the importance of family and friends, and from him and Ruth come my activism on issues such as feminism, peace, gun control and campaign finance reform. His erudition and memory on subjects from mathematics to history to current events to botany to mystery novels amazed all who knew him, as did his ability to engage in an urbane and witty discussion on almost anything. This ability to carry on fascinating conversations was with him until a year before his death. Even in his last year, if a friendly visitor came I would be amazed at how much of that ability was still there.

Another value which I would lump under Marxism (though maybe it was also part of "marriage") which both my parents transmitted was integrity and honesty. I do not recall any lectures on honesty or telling the truth, it was just understood. In his historical work, Dirk was meticulous about accuracy, and that was part of his character. This legacy of the importance of family, of friends, of meaningful work, of working for social justice, and of integrity are the ideal my parents exemplified and which I hope I have passed on to my daughters.

References

- [1] Her thesis was entitled "Axiomatik der affinen Geometrie in zwei und drei Dimensionen."
- [2] Dirk Jan Struik, "Saly Ruth Ramler," January–August, 1994.
- [3] For an account of the Kovalevskaja Fund, see the Summer 2000 issue of the *Mathematical Intelligencer*.
- [4] Obituaries of Dirk appeared in the *Boston Globe* (October 24, 2000), *The New York Times* (October 26, 2000), MIT *Tech Talk* (October 25, 2000), *The London Times* (November 3, 2000), and *Focus* (December, 2000).
- [5] David E. Rowe, "Dirk Jan Struik and His Contributions to the History of Mathematics," *Historia Mathematica* 21 (1994), 245–273.
- [6] David E. Rowe, "Interview with Dirk Jan Struik," *The Mathematical Intelligencer* 11, No. 1, Winter, 1989, 14–26.

- [7] Dirk Jan Struik, "Grundzuge der mehrdimensionalen Differential geometrie in direkter Darstellung" (Doctoral dissertation, University of Leiden, 1922), Berlin: Springer-Verlag, 1992 (?).
- [8] Margaret A. M. Murray, *Women Becoming Mathematicians*, MIT Press, 2000.

TREASURER'S REPORT AND FAREWELL

I will be leaving office as AWM Treasurer at the end of June 2001, well before the end of the term for which I was elected. I have to "shed load" to manage some health problems exacerbated by stress and over-commitment. Suzanne Lenhart has announced, in her president's report this issue, the name of my successor, Mary Ann Horn, who has generously agreed to take over on July 1, 2001.

The financial status and procedures of AWM are, I believe, in sound shape. Copies of my full Treasurer's Report to the Executive Committee and of the Auditor's Report for FY'99-00 are available from the AWM Office. Dues cover basic AWM operating expenses at a minimal level. Most AWM activities are funded by grants from NSF, ONR, AFOSR, NSA, ExxonMobil, and Microsoft; others depend on our modest endowment.

The most recent Auditor's Report had no complaints or suggestions to make about our financial procedures. From my beginner's reading of some texts on managing not-for-profit organizations, I believe that we should address two issues in the near future: (i) building up a "reserve fund" to cover at least six months of office and staff expenses (separate from both restricted and unrestricted endowment funds), and (ii) raising funds to cover somewhat more generously the expenses associated with our annual Prizes and Lectures. Of course, no organization ever stops trying to improve its budget-building process.

The fine AWM staff and the active AWM volunteers contribute immeasurably to the Association's ability to serve its members and to pursue its mission. I thank all with whom I have worked for their assistance during the three years I have been Treasurer.

Amy Cohen

AWM ESSAY CONTEST

Call for Entries and Volunteers: Biographies of Contemporary Women in Mathematics

To increase awareness of women's ongoing contributions to the mathematical sciences, AWM is sponsoring an essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers.

The contest is open to students in the following categories: Middle School, High School, Undergraduate, and Graduate. At least one winning entry will be chosen from each category. Winners will receive prizes, and their essays will be published online at the AWM website. A grand prize winner will have his or her entry published in the *AWM Newsletter* as well. The deadline for entries is **November 1, 2001**.

We are currently seeking women mathematicians to volunteer as the subjects of these essays.

For more information or to sign up as a volunteer, go to <http://www.awm-math.org/biographies/contest.html> or contact Dr. Victoria Howle, the contest organizer, by email at vehowle@sandia.gov.

TRAVEL AND MENTORING GRANT RECIPIENTS

Congratulations to the women funded in the February 2001 cycle for the AWM-NSF Travel Grants and AWM-NSF Mentoring Travel Grants.

Travel grants, ranging from \$745 to \$1515, were awarded to KRISTINE E. BAXTER, University of Illinois; KBENESH W. BLAYNEH, Florida A&M University; TRACHETTE JACKSON, University of Michigan; TONG LI, University of Iowa; VIVIEN G. MILLER, Mississippi State University; and DIANA W. VERZI, Institute of Theoretical Dynamics.

Mentoring travel grants, in amounts from \$2000 to \$4000, were earned by JENNIFER E. BEINEKE, Trinity College; SANDRA N. CATLIN, University of Nevada Las Vegas; HEATHER D. GAVLAS, Grand Valley State University; COLLEEN MARGARITA KIRK, Montclair State

University; ELENA KOSYGINA, Northwestern University; LOREDANA LANZANI, University of Arkansas; DIANE MACLAGAN, Institute for Advanced Study; CLAUDIA POLINI, University of Oregon; and ALEXANDRA SMIRNOVA, Georgia State University.

MSRI WORKSHOP: PREPARING MATH MAJORS

On February 9–11, thirty-five mathematicians, representing a wide variety of institutions, met at MSRI for a workshop on The Preparation of Math Majors in the First Two Years. AWM was invited by MSRI to send a representative to this workshop. Gretchen Matthews, a postdoc at the University of Tennessee, was our

Gretchen Matthews, University of Tennessee, Knoxville

representative. The workshop is one of eleven disciplinary workshops sponsored by the MAA Committee on the Undergraduate Program in Mathematics (CUPM) and its subcommittee Calculus Reform and the First Two Years (CRAFTY). These disciplinary workshops seek recommendations from partner disciplines on what students in that discipline need in the first two years of college mathematics.

The goal of the workshop at MSRI was to produce a report on how students should be prepared to major in math. Topics discussed ranged from understanding and content to recruitment of majors. There was much discussion on facilitating the transition from procedural understanding and computational skill to a more conceptual understanding of material. With this in mind, instructional techniques that engage students in the creative process of doing mathematics were emphasized. There was general agreement that we need to expose students early on to the culture of mathematics and the sense of discovery involved in doing mathematics. This will help prepare students who intend to major in math and may attract new majors as well.

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. For foreign travel, U.S. air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

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

Target dates. There are three award periods per year. An applicant should send *five* copies of 1) a cover letter, including the conference name, conference dates and conference location (city/state/country), 2) a description of her current research and of how the proposed travel would benefit her research program, 3) her curriculum vitae, 4) a budget for the proposed travel, and 5) information about all other sources of travel funding available to the applicant to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The next deadline for receipt of applications is **October 1, 2001**.

THREE AFRICAN-AMERICAN WOMEN PH.D.'S AT MARYLAND

On December 21, 2000 at the University of Maryland, Tasha Inniss, Kimberly Weems and Sherry Scott did something few other African-American women have done: received Ph.D.'s in mathematics.

"You can count on your hand the number of African-American women today who are Ph.D.'s in math," Inniss said. "And we all know who they are."

"These students, their work and their achievement are quite remarkable," said Patrick Fitzpatrick, chair of the department of mathematics at Maryland. "And it's gratifying that our department is almost certainly the first anywhere to award doctorates in mathematics to three African-American women at the same time."

According to Fitzpatrick, data from the American Mathematical Society show that there were only 12 math Ph.D.'s awarded to African Americans in the entire United States in 1998-99, the most recent academic year

for which data are available. "In addition, we have one of the top graduate programs in mathematics in the country, so earning a Ph.D. in mathematics at Maryland is extremely challenging," he said.

Support spells success

Inniss, Scott and Weems, who are the first African-American women to receive Ph.D.'s in mathematics from the university, said that the support they got from the program was important in their success. They lauded the faculty and the opportunities available at Maryland, and commended the school for welcoming them and making them feel at home from the very beginning. "You did not come across problems at Maryland like you could find at other schools," said Weems.

Their advisors are: for Tasha R. Inniss, Dr. Michael O. Ball; for Sherry Scott Joseph, Dr. John J. Benedetto; and for Kimberly S. Weems, Dr. Paul Smith.

press release, University of Maryland



Tasha R. Inniss, Sherry Scott Joseph, and Kimberly S. Weems

Fitzpatrick said the department is making a strong effort to recruit and support women and minorities. "Our department currently has what is, almost certainly, the most diverse body of [math] graduate students in the country. Thirty-three percent of our 213 graduate students are women. We have 21 African-American and 8 Hispanic graduate students. Over the past five years, fully 33 percent of our Ph.D.'s have been awarded to women."

In February of 2000, the Quality Education for Minorities Network honored the University of Maryland as one of the nation's leaders in awarding doctoral degrees to minorities in the areas of mathematics, computer and physical sciences and engineering.

Families count

Inniss, Weems and Scott said their families were a primary reason that they developed an abiding interest in math and pursued that interest all the way to Ph.D.'s. Each said that, along the way, supportive teachers also were an important factor in their success.

Inniss, whose thesis title is "Distributed Stochastic Models for the Estimation of Airport Arrival Capacity Distributions," said her mother teaches sociology at Florida A&M University and strongly believes in the value of education. And she said her grandfather, a sixth grade teacher with a master's degree from Harvard, was an inspiration and another major source of encouragement. "He taught me my multiplication tables," she said. "In fourth grade when I won second place in a math competition, my grandfather was in the front row."

"I never was given the impression that a woman could not or was not supposed to do math," Inniss said. "There were many teachers, including my grandfather, that fostered and encouraged my love in math. These teachers and mentors have influenced me to give back a little of what they have given me."

Weems said the long road to her thesis, "On Robustness against Misspecified Mixing Distribution in Generalized Linear Mixed Models," began as a young child, when she would play after school in the classroom of her mother, a middle school math and science teacher. "She always encouraged me to pursue my interest in these areas." Weems said that later she drew great strength from African-American women math professors she had at Spelman College in Atlanta, where she received her undergraduate degree.

"I have been fortunate to have strong influential women in my life, many of whom are African American," she said. "I hope that I can be a role model for young girls and inspire them to pursue mathematical careers."

Scott's mother, a professor of education at the University of Wisconsin, inspired her to pursue a higher education path that has now culminated in a Ph.D. thesis on "Spectral Analysis of Fractal Noise in Terms of Wiener's Generalized Harmonic Analysis and Wavelet Theory." "We were all taught that the math had to be there if you wanted to succeed," Scott said. All three women said they find it discouraging that there are so few women and minorities in their field and that progress in graduating more minority Ph.D.'s has been so slow.

"The fighting doesn't stop. You still have to prove yourself," Scott said.

Despite these feelings, the women say they are encouraged about the future. "You have to show 'em, don't tell 'em," Inniss said. "Be that good teacher and be that good researcher."

Life after thesis

For Weems, Scott and Inniss, "life after thesis" has already begun. Each completed the requirements for her doctoral degree in summer 2000 and has been working ever since. Inniss teaches at Trinity College in Washington, D.C. where she has been appointed as Clare Boothe Luce Assistant Professor of Mathematics. Inniss also consults for the Federal Aviation Administration. Weems does research as part of an applied mathematics program at the Department of Defense. And Scott does research and teaching as a visiting assistant professor in George Washington University's statistics department.

Related info

Weems and Scott will be speakers in an AWM minisymposium at the SIAM meeting in July; see page 33 for more info.

The story of these three women was told in the *Washington Post* on December 22, 2000 by Staff Writer Amy Argetsinger in "Counting in the Math Field." The article, informative and thought-provoking, began with this charming statement: "Tasha Inniss's math career

was sparked in fourth grade, when long division won her heart.”

Our then-president was quoted:

Math is an intimidating field, said Jean Taylor, the president of the Association of Women in Mathematics and a professor at Rutgers University.

“It takes a lot of determination and drive to overcome the feelings that everyone else is smarter than you are,” said Taylor, who is white. “And if you have extra burdens on you, it’s even harder.”

The article concludes with some comments by Inniss:

“We give the little boys the blocks, the things to construct and build. We give the girls the dolls,” she said. “When young women get into these classes where the teachers are men, the teachers call on the men more often. It’s not that women don’t have a knack for it, it’s that they’re not encouraged.”

CHRONICLE COLLOQUY LIVE

“Critical Mass” by Alex P. Kellogg, Reporting Fellow, appeared in the February 16, 2001 issue of *The Chronicle of Higher Education*. Inspired by the success of the University of Maryland program begun by Dr. Raymond Johnson while he was chair of the mathematics department, it examined the issue of women and minorities in mathematics. As he wrote the article, Kellogg decided that this topic would make a good online chat in the *Chronicle’s* series Colloquy Live. On February 15, Kellogg served as moderator, while Johnson fielded questions, some presubmitted and some submitted in real time.

The topic was stated as follows:

Many universities worry that they have far too few black and Hispanic graduate students earning Ph.D.’s in mathematics and the sciences. In mathematics, of the 1,085 recipients of Ph.D.’s in 1999 in the United States, only 10 were black, and only six of the black Ph.D.’s were women. So

mathematicians and many educators in science and math took notice in December 2000, when the University of Maryland at College Park granted Ph.D.’s to three black women. Many experts believe the university’s program, which is unusually diverse, may offer clues to how other universities can help diversify the pool of Ph.D.’s.

Dr. Johnson was then introduced:

Raymond L. Johnson is a professor of mathematics at the University of Maryland at College Park. As department chairman there from 1991 to 1996, he was credited with starting many of the efforts to diversify the graduate program. Mr. Johnson grew up in Alice, TX, and attended segregated, all-black schools. He graduated from the University of Texas at Austin and from Rice University, although he had to delay the start of his graduate studies at Rice for one year because the university was facing legal challenges to its decision to admit black students. His main area of research is the study of weighted spaces and estimates for operators on those spaces. Mr. Johnson will respond to questions and comments about efforts to educate more minority Ph.D.’s.

Johnson feels that “attracting students is the easy part.” You need to find minority students where they are and to make sure that they are qualified for your program. Once you get a critical mass of students, you can analyze your experiences and refine your recruiting strategies. Many students are recruited from HBCUs (historically Black colleges and universities). The communication involved is a two-way street: as the graduate programs learn how to value the students provided them by the HBCUs, the HBCUs learn what kind of preparation is essential for their students to succeed at the doctoral level. Maryland’s program has been much more successful at recruiting African-American students than Hispanics. Perhaps this is because the hands-on recruiting style is more effective when done locally; Maryland has little success recruiting in, say, California.

Students need to be provided with support. If the folks at the primary institutions you are recruiting from know that you are treating the students well, of course they will be more likely to send more students your way. Although minority students tend to seek out minority faculty when they are available, white faculty can

The entire chat, © 2001 by The Chronicle of Higher Education, may be found at www.chronicle.com/colloquylive/2001/02/math/. The personal history website of Dr. Johnson www.math.umd.edu/~rlj/RJ.html also makes fascinating reading.

EDUCATION COLUMN

provide excellent support for minority students. For example, "Gail Young led an effort at the University of Michigan in the sixties and Lee Lorch made a historic effort at Fisk University in the late fifties."

Questions were asked about whether the roots of the underrepresentation of minorities in math and science arises from poor K-12 education. Johnson feels that although this is a factor, we can't allow ourselves to become paralyzed into inactivity at the undergraduate and graduate levels, waiting for the precollegiate educational process to improve. When looking at our students, we need to be careful not to confuse their ability to succeed with their perhaps inadequate level of preparatory training.

One unhappy underemployed instructor at a community college wondered why we should increase the number of minority Ph.D.'s when so many will, in today's market, end up unemployed or underemployed. A related question wondered whether minority Ph.D.'s were being sought after by industry and academia.

Johnson feels that although there is a current oversupply of Ph.D.'s in terms of academic positions, he also believes the situation is improving. Also, because the pipeline to Ph.D. production is so long, it is not wise to narrow production during what may well be only a temporary glut. Graduate schools need to provide students with a realistic assessment of current employment prospects and encourage them not to train too narrowly. On the other hand, he has been disappointed with the jobs many of his graduates have found. About half his graduates hold academic jobs, as opposed to about three-quarters of new Ph.D.'s as a whole. Fortunately, many of them know some applied mathematics, which makes them more attractive to industry.

Dr. Johnson's final remarks were:

In closing, if I could urge one thing on people thinking about this problem, it would be to approach the issue of attracting underrepresented minorities to science like a scientific problem. You don't have to solve the entire problem. Pick apart and attack it. Yes, there's a big systemic problem that no one person can solve, but we break science problems into doable pieces all the time. If you try something, you can't make things any worse, and this is a problem where small improvements are almost as important as an overall solution.

What went right?

Human nature being what it is, our lives tend to be dotted with gatherings motivated by a desire to figure out what went wrong. It was therefore refreshing to be asked last month to run a gathering designed to figure out what went right. Needless to say, I agreed at once.

To set the context a little: the University of Washington Mathematics Department has a long-standing, highly casual series of Brown Bag Seminars on Teaching and Learning — occasions to gather and discuss whatever educational issues come to hand. I'm its organizer, and frequently the process by which such an issue comes to hand consists of a colleague pointing out something novel or perturbing or otherwise worthy of pursuing. I was therefore not surprised to receive an email telling me that one of our teaching assistants had collected some wonderful projects from his class, and suggesting that a celebratory Brown Bag might be in order. I duly trotted 'round to have a look and found an absolutely stunning display of models of topological surfaces, all produced in a sophomore course on vector calculus. Pete, the instructor in question, responded to my request that we do a Brown Bag on them with bemused pleasure: "Oh, yes! I'd love to discuss it. I can't figure out why it worked so well!"

What follows is a combination of ideas that arose in that discussion and products of my subsequent ruminations. We did not, alas, discover a recipe or even an algorithm, but some of the points are worth noting and/or pondering.

For starters, we asked Pete how he came to assign this project. His reply was highly illuminating. It seems that he was one of the many who did not go directly from college to graduate school. In his case the problem was that despite having majored in mathematics he was unconvinced that the field held any real attraction for him. Then he ran into a book on topological surfaces, with not only gorgeous illustrations but also nice mathematical discussions. The power of their fascination swept him right back to school. He wanted his students

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

to have a glimpse of that fascination — to realize that mathematics contains some really neat things. The glow in his eyes as he said that went a long way towards explaining his success.

The next question was how he set it up. There, I felt, was the area most susceptible to profitable imitation. To my eye (an eye well sharpened by hindsight) he managed to give exactly the right amount of instruction. He gave them references to three or four books and a couple of good, well-linked web sites (with a thumbnail sketch of each one), and told them to choose a surface to model and go for it. No holds barred on choice of material or style, no restrictions on type of surface. When they finished, they were to write a page or two about what they learned. And that was all: no suggestions about how he himself would do it, no scoring rubric. In fact (and this is a wonderful antidote to some of the jaded comments we tend to make about today's students) very few points attached to it — less than 5% of the course grade, as I recall. So grade-grubbing definitely does not account for the student who produced a cloth Möbius band with a zipper all the way around its center and a wooden rack to put it on. Or the one who cut out dozens of pieces of foam-core and produced the most elegant skeletal Klein bottle I have seen. Or the one who produced a six page report with downloaded color illustrations. These were students who had taken ownership of the project and were engaged and excited by it. There were other spectacular projects, too, as well as some where enthusiasm and a bright idea had suffered a head-on crash with real world materials, but could still be perceived in the slightly wobbly results.

On the other hand — and this is a downside which I maintain is inextricably entwined with the success — a certain number of class members had duly noted the lack of specific requirements and taken the line of least resistance. One, for instance, turned in a slightly dilapidated paper Möbius band stuck to a scant page report that was clearly a synopsis of two references at the most. A more detailed assignment might have prevented that, but would also have tied down the students who flew so high. Sitting in the midst of the whole collection, we arrived at an easy consensus that that would have been too steep a price to pay.

Looking for conclusions from all this: what did make this project tick? Well, for a start, there was Pete's incandescent enthusiasm and absolute conviction that this was something his students could do and really

enjoy. Those two elements can neither be imitated nor faked, though in searching for something to assign they make an excellent goal. Then there was the nature of the instructions, with a comforting assortment of ways to get started, and highly non-restrictive instructions beyond that point. And there was the element of novelty, which adds a little sparkle in most contexts. That seemed to sum it up.

Thinking it over, though, I became conscious of one more element which may well be the most fundamental of all of them. Somehow, by some combination of intelligence, good instincts and — let's face it — sheer, blind luck, Pete managed to come up with a project which was exactly tough enough to stretch and challenge his students, but not to defeat them or scare them off. Now if somebody could just produce a formula for that....

FULBRIGHT PROGRAM

The Fulbright Scholar Program's annual competition for lecturing and research grants in about 140 countries has opened. Opportunities are available not only to college and university faculty and administrators, but also to professionals from the business community and government, as well as to artists, journalists, lawyers, independent scholars and many others.

Grants are available to faculty and administrators from two-year, four-year, and graduate institutions. Fulbright awards vary from two months to an academic year or longer. A new short-term grants program — the Fulbright Senior Specialists Program — offers two to six week grants in a variety of disciplines and fields. About 80 percent of the awards are for lecturing. Most lecturing is done in English, but foreign language skills are required in some countries.

Application deadlines are **August 1, 2001** for Fulbright lecturing and research grants, **November 1, 2001** for spring/summer seminars for international educators and academic administrators. There are **rolling deadlines** for the Senior Specialists Program.

For more information, see the web page www.cies.org. The program is sponsored by the United States Department of State, Bureau of Educational and Cultural Affairs.

BOOK REVIEW

Women Becoming Mathematicians: Creating a Professional Identity in Post-World War II America, Margaret A. M. Murray. Cambridge, Massachusetts: The MIT Press, 2000, ISBN: 0-262-13369-5.

Reviewer: Norean Radke Sharpe, Associate Professor of Operations Research, Babson College. Reprinted by permission from *Journal of Women and Minorities in Science and Engineering*, Volume 7, Number 1, pp. 75-78.

Previous books have been published on the success of women in science disciplines (e.g., Sonnert & Holton, 1995a, 1995b) and on the struggles of women faculty and scientists (e.g., Rossiter, 1982, 1995). However, few publications have focused specifically on the challenges faced by women in mathematics. Maintaining an open discussion of institutional issues has been challenging in this field, and thus the historical literature has lacked a comprehensive description of the academic culture and environment for women studying mathematics in the twentieth century. With *Women Becoming Mathematicians*, Margaret Murray fills this gap and more. Not only does Murray provide details of the graduate mathematics departments at major universities, but she also provides interwoven biographies of many of the women who earned a Ph.D. in mathematics during the 1940s and 1950s, or post-World War II America.

For any woman who has pursued an advanced degree in a scientific field, this book will resonate with memories of issues and dilemmas as shared by well-known women mathematicians. For other readers, while the biographical academic struggles of these women may not seem as real, the detailed and personal portrait of academic life in the mathematics community during these evolutionary years should serve as a historical reference.

Murray begins in Chapter One with a description of the professional and academic climate for women during the early twentieth century. The economic influence of the Depression, the impact of World War II, and the ensuing excitement of the increased interest in mathematical problems all played a role in the numbers of women pursuing a higher degree in mathematics. In addition, the growth in women's colleges and the formation of the Mathematical Association of America were both important factors in the increased

opportunities for women scholars and teachers. The discussion of the influx of women into the mathematics community in the context of historical events provides an understanding of the ebb and flow of women's acceptance into this once-closed community.

Murray introduces the reader to thirty-six professional women mathematicians who earned their Ph.D.'s between 1940 and 1959 in Chapter Two. Most of the information was obtained from in-depth interviews with each of the women. According to Murray, she conducted all but one of the interviews in person, used the same set of questions for each of the interviews, and validated the narratives with supporting documents, such as curriculum vitae and publications. The value of these interviews as a historical record is immense, particularly since four of the interviewees died prior to the publication of the book. If Murray eventually makes the tapes and transcripts public, as she intends to do, they should form part of a priceless archive of oral histories.

Following the two chapters providing a historical perspective and an introduction to the thirty-six professionals highlighted in the book, Murray begins the biographical journey through these women's lives. For many readers, this may be the point where the book becomes more relevant and gains momentum. Chapter Three shares the family life, primary educational experiences, and early perceptions of mentors as the women begin to explore their interest and ability in mathematics. Early education differed for these women, from attending private school or public school to being home-schooled. However, it is clear that a common thread among the young lives of each of these women was a supportive and motivating environment.

In Chapter Four Murray continues interweaving the biographies with shared memories from the women's secondary and undergraduate years. While this was a time when interest in the field of mathematics blossomed and solidified for several of the women, it was also a period when blatant prejudices against women in the field were first encountered. A memorable example of such prejudice was when a mathematics teacher and principal told Alice Schafer quite bluntly that "girls can't do mathematics." Of course, Schafer's determination and capabilities have long since defied this observation. In addition to a greater set of challenges, the college years also offered more choices. As might be expected, these bright women had an array of academic alternatives, and many of the women chose to study

mathematics over one of the science disciplines, such as biology or physics. Their reasons ranged from the belief that mathematics is “clear-cut” and “practical” to the realization that the discipline was “really getting interesting” and “self-contained and beautiful.” (pp. 88–91) Clearly these women were entranced by mathematics and the subject captured their imaginations. Just as in high school, gender barriers within mathematics were not uncommon at college during the 1930s and 40s. For example, Grace Bates reported having to “petition the trustees at Middlebury [College] to get into a course in differential equations my senior year, because it was only taught in the men’s side.” (p. 95) Bates, just like Schafer, went on to become an exemplary scholar and faculty member at a women’s college (Bates at Mount Holyoke and Schafer at Wellesley) for generations of mathematics students.

While clearly fascinating, one drawback of these early chapters is that the retellings of the multiple personal histories are tightly intertwined. The alternating of narratives among the many women makes the chapters seem disjointed and at times the reader may find it difficult to connect the family, educational, and professional threads for each of the women. However, if the reader is patient and continues on to read the latter chapters discussing graduate school and careers, the reason for this literary method and approach becomes apparent. The contribution of Murray’s book is not in the biographical details, but in the portrait of the global mathematics culture and community during these turbulent decades for women. This collection of stories is successful in painting a personal and profound interpretation of the academic climate for a woman studying mathematics during and immediately after the depression and World War II.

My personal experience is that gender discrimination has greatly diminished during the primary and secondary educational years, yet women continue to be in a minority in graduate programs, which is a situation that itself produces challenges. However, although I can recall being one of only two women in many of my graduate courses, I can also remember experiencing encouragement and enthusiasm to pursue scholarly activities from most of my graduate faculty — men and women — unlike many of the women during the ’40s and ’50s. While many of the interviewees report supportive and congenial environments during their graduate studies, they also convey that they were not encouraged to

pursue research beyond the dissertation. Apparently, this was partly due to the predominant cultural attitude — that women pursued marriage, not a career — and partly due to the need for qualified teachers at women’s colleges, with schedules that left little time for research. Despite this differential treatment, many of the women, such as Cathleen Morawetz, Mary Ellen Rudin, Jane Cronin Scanlon, Domina Spencer, and Tilla Weinstein, established successful research careers. Others, such as Grace Bates, Winifred Asprey, and Rebekka Struik chose to manage a joint path in teaching and research, a career track referred to as a “scholar-teacher” by Murray. Still others, such as Barbara Beechler, Evelyn Boyd Granville, and Alice Schafer, have defined themselves as teachers and mentors.

Probably what has changed the least for women since the mid-twentieth century is the need to balance a marriage, family, and career — or the two-body problem. As Murray summarizes, “[f]or those women who combined marriage and motherhood with doctoral work in mathematics in the 1950s, the years of graduate study were far from the uninterrupted, single-minded, monastic apprenticeship spelled out in the myth of the mathematical life course. These women had to create their own opportunities and environments for concentration and creative effort — to create a niche in the complicated ecosystem of their lives for the pursuit of the Ph.D.” (p. 146) This statement could also apply to women graduate students today.

As someone who has lived in a different state (and sometimes a different country) from her spouse for more than half of her fifteen-year marriage, the complications of maintaining a personal and professional life continue to seem daunting. As Murray so aptly states, these women who successfully juggled multiple identities, did so by “accepting certain limitations, challenging others, and ... taking an inventive ... stance toward their employment options.” (p. 171) The issues and challenges faced by many of the interviewees in the book seem to personify many of the obstacles that persist even for my women students today — multiple opportunities and responsibilities. Thus what factors influence a woman’s choices and contribute to her persistence in graduate work and beyond?

Margaret Murray concludes her volume of work by attempting to identify five key elements for success in life and work. This is the capstone of her fascinating, although sometimes convoluted, weaving of the multiple

biographies together. Murray's exercise in the "compare and contrast" approach of the experiences of early women mathematicians results in a synthesis of the factors that assisted them in their journeys. Based on her interviews, Murray concludes that the main elements of success are the opportunity to explore talents and interests; the possession of ability — both natural and developed; the presence of a network; the external recognition of accomplishments; and the motivation to make a difference in the lives of future generations. Finally, the individual determination, brilliance, and hard work of each of the women interviewed by Murray were equally essential ingredients of their achievements.

Murray embraced the voluminous task of recording the stories of these pioneers and has accomplished a description of the academic climate during their education and careers without passing judgment — a difficult task. Murray's resulting work complements and expands the current literature on women in science. This book is an informative read for future women students in any scientific field and is a walk down memory lane for former women students in mathematics.

Finally, as a postscript, it is a coincidence that I was asked to review this book and that I was, in fact, also a student of Grace Bates. I remember my freshman course in linear algebra with Professor Bates quite fondly and regret not contacting her in her later years. It is a pity, although not surprising, that at the age of 18, I did not appreciate her struggles in an intimidating academic climate and the importance of her pioneering spirit and presence. Most importantly, this book is a testimonial to each of these women who had the courage and the creativity to challenge and improve the mathematics community for future women students at all levels and at all institutions.

AWARDS AND HONORS

CONGRATULATIONS to the women listed below for their meritorious achievements!

The 18th Annual Rose-Hulman Institute of Technology Conference on Undergraduate Mathematics was held March 16–17, 2001. SUZANNE LENHART, AWM

President, spoke on "Can you park your car with Lie Brackets" and "Applications of Optimal Control to Various Population Models." The topic of LINDA PETZOLD, University of California at Santa Barbara, was "Computational Science and Engineering: A Case Study."

Suzanne was on the cover of *SIAM News*, January 2001, in connection with the Workshop on Women Connecting to Industry that AWM co-sponsored with IMA last fall.

Dr. EVELYN BOYD GRANVILLE, a professor of mathematics emerita at California State University in Los Angeles, was the first African-American woman to receive a Ph.D. in mathematics, which she earned from Yale in 1949. AWM recognizes her many contributions to women and to mathematics. As part of this year's celebration of the University of Michigan's Dr. Martin Luther King, Jr. symposium, Dr. Granville gave the annual Marjorie Lee Browne (Ph.D. Mathematics, University of Michigan, 1950) Lecture. Her presentation, "Strengthening the K–12 Curriculum in Science and Mathematics: An Absolute Must" emphasized the cooperation needed between institutions of higher learning and local and state agencies to effect changes so that our students and future teachers will be well-prepared to meet the upcoming scientific demands in the job market.

Each year the AMS sponsors the AMS Award for Outstanding Pi Mu Epsilon Student Paper Presentation. Each awardee receives a prize of \$150. Four of the eight students who received awards for presentations at the Student Conference in Los Angeles, August 2000 were the following young women: ERIN M. BERGMAN, St. Norbert College, "Energizer Fractions: They Keep Going and Going and ..."; SARAH LALUMIA, Youngstown State University, "Searching for a Perfect Voting System"; JUDY MAENDEL, Mount Union College, "Fundamental Groups and the Manifolds in Your Cereal Bowl"; and KATHRYN RENDALL, St. Norbert College, "Zero Sum Rado Number for $X_1 + X_2 + C = X_3$."

One of four Whitehead Prizes awarded in 2000 by the London Mathematical Society was earned by GWYNETH M. STALLARD, The Open University. They are awarded to mathematicians who are under the age of forty, were mainly educated in the UK, and are not already Fellows of the Royal Society.

The Maria Mitchell Women in Science Award winners for 2000 were Dr. CINDA-SUE DAVIS, director of the Women in Science and Engineering (WISE) program at the University of Michigan, and CATHERINE BANKS, director of the Science and Mathematics Center (SMC) for Women at Texas Women's University.

Under Davis' direction since 1984, WISE provides enriched learning, research, and mentoring opportunities for girls and women from the pre-college years through graduate study; among them are the Future Science/Future Engineering summer camp program for seventh and eighth grade girls, the WISE Residence Program for first- and second- year women in science and engineering, and the Climate Workshops, which use interactive theater to address gender issues in the classroom.

As the founding director of SMC, Banks has galvanized resources to enable girls and women to pursue education in science, math, computer science, and engineering. Projects include ACES (Access to Careers in the Sciences), a two-week summer camp for girls in grades six through eleven, Texas Woman's University Area Science Fair for students K-12, and the annual Expanding Your Horizons one-day conference for girls in grades 6-8.

One of six Rhodes Scholars in mathematics chosen by the Rhodes Scholarship Trust is SARAH S. JOHNSON of Lexington, KY. She is a senior at Washington University in St. Louis, where she majors in mathematics, environmental studies, and earth and planetary sciences. The recipient of both Truman and Goldwater Scholarships, she has worked on the NASA Discovery mission Team and was a delegate to the United Nations Climate Summit. Johnson is also active as a peer advisor, as a math tutor, and with the Special Olympics. At Oxford she will read philosophy, politics, and economics. Rhodes Scholarships provide full support for two or three years of study at the University of Oxford.

The AMS has made awards to four undergraduate mathematics majors through the Waldemar J. Trjitzinsky Memorial Fund, which was established to assist needy students in mathematics. Four geographically distributed schools are chosen at random each year; the departments chosen select students to receive the one-time awards of about \$3750. Two of this year's awards were received by YEN HAI LE, Cal State Long Beach and ALYSSA BURNS, University of Houston.

University of Massachusetts Professor ANNA NAGURNEY has been nominated for the Fulbright/University of Innsbruck distinguished faculty chair for academic year 2001-02. Nagurney will travel to Austria and will teach from March 2002 until June 2002.

Nagurney, who is the John F. Smith Memorial Professor at the Isenberg School of Management, received one of 34 Fulbright distinguished faculty chairs awarded this fall. At Innsbruck, she will teach three courses that will focus on the theme of network economics and globalization.

Nagurney says, "The University of Innsbruck has recently completed the building of its new business school, which houses a variety of departments and has an interdisciplinary focus. I am sure that my stay there will be not only very interesting, but also productive. The theme of network economics and globalization is particularly timely."

She has been to Austria twice before, to Lech, under the sponsorship of IBM, which held two special-themed workshops in computational economics and finance, Nagurney says. She was an invited speaker at the two workshops.

Nagurney also recently received three grants from the National Science Foundation worth nearly \$470,000 to conduct research on how travelers and consumers make decisions involving telecommuting and teleshopping.

Nagurney joined the University in 1983 and is an internationally known scholar whose work includes constructing computer models of large-scale financial, transportation, and regional economic systems. Last spring, she delivered a Distinguished Faculty Lecture at UMass and was awarded the Chancellor's Medal. In 1999, she was the recipient of an Eisenhower Faculty Fellowship from the National Highway Institute.

MARGARET H. WRIGHT of Bell Laboratories, Lucent Technologies, received the SIAM Prize for Distinguished Service to the Profession, which is given for distinguished contributions to furthering applied mathematics on the national level.

CATHLEEN S. MORAWETZ, professor emerita, New York University, Courant Institute, recently earned a Mayor's Award for Excellence in Science and Technology. It was presented by Mayor Rudolph Giuliani for her long service on the panels to choose the winners of these awards.

FERN Y. HUNT of the ITL Mathematical and Computational Sciences Division has received the prestigious Arthur S. Fleming Award. Hunt was recognized for a sustained record of fundamental contributions to probability and stochastic modeling, mathematical biology, computational geometry, nonlinear dynamics, computer graphics, and parallel computing. Hunt was also cited for the impact of her work in her extensive close collaborations with scientists and engineers seeking to apply these developments to diverse problems of scientific and technological interest. Examples include flow in complex geometries, modeling of micromagnetic devices, study of optical reflection, image rendering in computer graphics, and visualization of genetic sequences. Hunt's was also cited for her outstanding dedication to the mathematics profession. She has been a mentor and leading proponent of careers in mathematics for students at the high school, undergraduate, and graduate levels, especially for women and minorities.

Established by the Downtown Jaycees in 1948, the Flemming Awards honor outstanding federal employees. More than 500 individuals have received the award to date. Hunt received the award on June 8, 2000 at the 51st annual Flemming Awards ceremony and banquet which was held at the Cosmos Club in Washington, DC.

Ford Foundation Minority Fellowships for 2000 are given to provide students of demonstrated ability from underrepresented groups with the opportunity to engage in advanced study leading to the Ph.D. The women who received fellowships in mathematics were NANDI OLIVE LESLIE of Princeton University and ERIKA TATIANA WIRKUS of Cornell University. Both are students in applied mathematics.

The following women were elected in the 2000 AMS elections: Vice President, INGRID DAUBECHIES, Princeton University; Members at Large of the Council, IRENE FONSECA, Carnegie Mellon University and LOUISE AREKELIAN RAPHAEL, Howard University; Editorial Boards Committee, JANE P. GILMAN, Rutgers University; and Nominating Committee, CORA SADOSKY, Howard University.

Fifty-nine young researchers received the 2000 Presidential Early Career Awards for Scientists and Engineers (PECASE). The recipients were selected from nominations made by nine participating federal agencies. Each

recipient receives a five-year grant of up to \$500,000 to further his or her research and educational efforts. SARA C. BILLEY and GEORGIA PERAKIS, both of MIT, were among the recipients nominated by the National Science Foundation.

NCES REPORT

The report *Entry and Persistence of Women and Minorities in College Science and Engineering Education* by Gary Huang, Nebiyu Taddese, and Elizabeth Walter of Synectics for Management Decisions, Inc. with Project Officer Samuel S. Peng, National Center for Education Statistics, was released in September 2000. The full report may be found at http://nces.ed.gov/pubs2001/quarterly/fall/post_women. Below is the web version of the executive summary of the report.

Introduction

This study examines the gaps related to gender and race/ethnicity in entry, persistence and attainment of postsecondary science and engineering (S&E) education. After reviewing selected prior research and examining potentially relevant variables in two National Center for Education Statistics (NCES) surveys, several variables were selected to create a multivariate model for use in two empirical analyses. The overall goal of the study was to try to determine the relative importance of these variables in sustaining the gender and race/ethnicity gaps in S&E education. The specific goals for the two analyses are described below.

The first analysis examines the link between high school experience and entry into S&E postsecondary programs to explore the extent to which women and underrepresented minorities continue to have lower entry rates into S&E programs at the postsecondary level. This part of the study analyzes data from the National Education Longitudinal Study of 1988 Eighth-Graders (NELS:1988/1994). Now that the 1994 third follow-up survey data are available, researchers can follow a nationally representative population of 1988 eighth-graders through high school and into college or the workforce.

The second analysis addresses issues relating to persistence and degree attainment by underrepresented minorities and women in postsecondary S&E study. It traces a cohort of postsecondary students who began their S&E education in their first postsecondary year (i.e., as freshmen) through a five-year time frame (1989–90 to 1993–94) using data from the 1990 Beginning Postsecondary Students Longitudinal Study (BPS:1990/1994).

The two analyses are presented in one report to address an overarching policy concern, namely, gender and racial/ethnic gaps in postsecondary S&E entry and persistence. It was thought that presenting both analyses in one report may help readers learn about the policy issues in a more coherent way because entry and persistence are related equity concerns. However, the reader is cautioned against linking the results of the two analyses because the data sources are independent cohorts.

Findings

Entering the S&E Pipeline

The findings from the first analysis support an overall notion that much of the racial/ethnic and gender difference in the entry into S&E programs in postsecondary education can be explained by examining family environment, family support, student behavior, and school factors across race/ethnicity and gender. That is, while the initial findings showed that the racial/ethnic gap only occurred among men and the gender gap mainly happened among Asians and whites, further examination showed that students of any race/ethnicity or gender with the following characteristics had a greater likelihood of entering into (i.e., majoring in) S&E in postsecondary education: students who had taken advanced science courses; students who were self-motivated to study science; students who had parents with relatively higher levels of educational attainment; and students who had parents with high expectations for their children's college education. Once these key factors were held constant — that is, comparing racial/ethnic and gender groups with similar attributes in these measures — the racial/ethnic and gender differences among S&E majors tended to get smaller.

Additional findings related to S&E entry include the following: A separate analysis of the male students confirmed that the racial/ethnic gap in majoring in S&E

among men steadily closes when comparing students who had similar motivation, aspirations, and confidence regarding math and science; who had earned similar total and advanced credits in the subjects; and whose parents' educational attainment and expectation for their child's education were similar. Since the broad gender gap only narrowed to a limited extent after examining family environment and support, student behavior, and school factors, it was hypothesized that traditional values that emphasize marriage, family, and children, in contrast to "nontraditional" views that stress individual success and independence, might make a difference in female students' career choice. However, the results did not support this hypothesis.

A separate analysis of white and Asian students revealed no different pattern of gender gap from that found in the overall analysis.

Persistence and attainment in the S&E pipeline

The second analysis yields important findings regarding underrepresented minority and female students' status in and out of the S&E pipeline. While the racial/ethnic gap is not as obvious as the gender gap in enrolling as S&E majors, underrepresented minority students face greater difficulties in S&E programs. Among the students enrolled in S&E programs in the first year of postsecondary education, underrepresented minority students seemed to have difficulty attaining a degree in S&E fields within a five-year college calendar. Some of them had to switch to other fields. However, data did not show racial/ethnic differences in college dropout rates among these S&E students. The racial gap remained wide even after the multiple regression analysis considered theoretically important predictors of success, a finding that implies that more extensive factors should be examined in order to understand the racial/ethnic difference in S&E attainment and persistence, including a detailed analysis of course-taking patterns.

Female students in S&E programs did not fall behind in the pipeline; they actually were more likely than male students to complete an S&E degree and less likely to switch to a non-S&E program. This finding suggests that although women are less likely than men to enter S&E, those women who do enter S&E fields are likely to do well. Further, among students enrolled in 4-year S&E

programs in the first year of college, women tend to have strong family support, high expectations, healthy self-confidence, and solid academic preparation.

Data sources

The National Education Longitudinal Study of 1988 Eighth Graders (NELS:1988/1994)

The 1990 Beginning Postsecondary Students Longitudinal Study (BPS: 1990/1994)

complaints, and the actions taken in response by OCR.

A License for Bias outlines the obstacles to Title IX enforcement efforts and offers action agendas for Congress, the Office for Civil Rights, and educational institutions that will accelerate the equity advancements made possible by Title IX and ensure equitable educational institutions as we approach the 30th anniversary of this important legislation.

This publication is available to \$11.95 to AAUW members, \$12.95 to non-members. See www.aauw.org.

A LICENSE FOR BIAS

A License for Bias: Sex Discrimination, Schools, and Title IX is a publication resulting from a research project of the American Association of University Women Legal Advocacy Fund (AAUW LAF). The AAUW LAF sees many cases brought under Title IX, the federal law prohibiting sex discrimination in institutions of education that receive federal funds. Unfortunately, while Title IX has great potential to create gender-fair schools, public misperceptions about the law's scope plague its implementation, and recent legislative and legal developments threaten enforcement efforts.

The research project was undertaken to analyze the enforcement of Title IX in non-sports-related cases. The research analyzes complaints files with the Department of Education's Office for Civil Rights (OCR), the primary Title IX enforcement agency. It examines the kinds of complaints filed, the status of those making

MARIA GAETANA AGNESI

The website curriculum/calstatela.edu/faculty/sgray/ Agnesi [note: this URL is case-sensitive] was created by Shirley Gray, Professor of Mathematics, California State University, Los Angeles. There are wonderful graphics, including the cover of Agnesi's calculus, *Istitutioni analitiche*, the first surviving mathematical work written by a woman. Lots of information about Agnesi's life and work is presented. There is a computer animation of her celebrated curve, and an explanation of the translation error which has led to it being called in English "the witch of Agnesi."

The site, a work-in-progress, currently contains the sections Sequence of Events, Interesting Mathematics, and Vignettes from Her Life. I am waiting for the subhead Her Warning to Future Students to become clickable!

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings in 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 nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. Five complete copies of nomination materials for this award should be sent to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2001**. For more information, phone (301) 405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

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

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

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

WHEN: The next AWM Workshop to be held in conjunction with the annual Joint Mathematics Meetings will be in San Diego, California, January 6–9, 2002 (*pending final funding approval*). The Workshop is scheduled to be held on Saturday, January 9, 2002 with an introductory dinner and discussion group on Friday evening, January 8.

FORMAT: Twenty women will be selected in advance of the workshop to present their work; the selected graduate students will present posters and the recent Ph.D.'s will give 20-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. The workshop will also include a panel discussion on issues of career development, a luncheon and a dinner with a discussion period. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and recent Ph.D.'s who do not receive funding to obtain some institutional support to attend the workshop presentations and the associated meetings.

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

ELIGIBILITY: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years (whether or not they currently hold a postdoctoral or other academic position.) Women with grants or other sources of support are welcome to apply. All non-U.S. citizens must have a current U.S. address. All applications should include a cover letter, a curriculum vitae, a concise description of research (2–3 pages), and a title of the proposed talk/poster. All applications should also include at least one letter of recommendation; in particular, graduate students should include a letter of recommendation from their thesis advisors. Nominations by other mathematicians (along with the information described above) are also welcome. For some advice on the application process from some of the conference organizers, see the AWM website.

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 URL: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **September 1, 2001**.
Applications via email or fax will not be accepted.

SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

The Sonia Kovalevsky High School Mathematics Days below were funded by a grant awarded to AWM by Coppin State University, Microsoft Corporation, and the National Security Agency. Hearty thanks to all the funding agencies!

Elizabeth City State University

The Celebration of Women in Mathematics was held on October 17, 2000 on the campus of Elizabeth City State University. The event was co-sponsored by AWM, The Office of Naval Research Nurturing ECSU Research Talent Program and The NASA Network Resources and Training Site. Participants included 338 girls and 22 teachers from local area schools. All received registration packets, which included a portfolio and notepad imprinted with the Women in Mathematics logo. AWM literature was also distributed to all participants. The Celebration consisted of a series of workshops, a career panel, a videoconference with Goddard Space Flight Center, a math sprint competition, lunch and Math on the Internet. Photos may be viewed at nia.ecsu.edu/nrts/workshops/cwm/cwm2000.html.

The mathematics sprint competition involved teams of six girls. First, Second, Third Place and three honorable mention trophies were given to winning teams during the awards luncheon. Dr. Margery Coulson-Clark, ECSU Assistant Vice Chancellor for Academic Affairs, was the luncheon speaker. She reviewed the history of women in mathematics.

ECSU faculty members Dr. Linda Hayden and Dr. Georgia Lawrence served as program organizers and workshop leaders. The special guest was Dr. Carolyn Mahoney, Dean of the School of Mathematics, Science and Technology at ECSU.

Workshops were conducted by students and faculty from ECSU, by Shannon Griffin (graduate student, South Carolina University), and Dianne Meiggs (Coastal Rural Systemic Initiative). Each year, teams of girl and their teachers are invited to conduct workshops. Two workshops resulted this time: "BioMath" and "Using Graphing Calculators." Girls had the opportunity to explore mathematics sites on the Internet and to participate in a videoconference with Valeria Thomas of Goddard Space Flight Center. Another workshop directed girls in exploring the NASA site "The Women of NASA".

Penn State Harrisburg

Penn State University at Harrisburg (PSH) held its first Sonia Kovalevsky Mathematics Day (SK Day) on November 3, 2000. We are happy to report it was a huge success! Participation was much higher than we anticipated when we began this project; we planned for 50 students, but 76 students actually attended the event. In addition to the grant we received from AWM, we received monetary support from Penn State Harrisburg (staff support), the PSH student ACM chapter (workshop supplies and food), Tyco Electronics (speaker stipend donated back to SK Day), Casio, Inc. (all contest prizes and door prizes) and the PSH Residence Council (supplies). In addition, we received student support from the PSH student IEEE and ASME student chapters and the Mathematics Integration club.

The day started with registration and a general welcome to introduce the participants to SK Day and to Penn State Harrisburg. Lisa Busch, president of our local ACM chapter, and Dr. Susan Richman, our Senior Associate Dean for Academic Affairs and past chair of our Mathematical Sciences and Computer Science Department at PSH, welcomed the group. Lisa provided a wonderful report about Sonia Kovalevsky and her struggles as a female mathematician in the 19th century. Dr. Richman provided a few more details about Sonia's life and related some of her own experience as a woman mathematician and program chair. After a few announcements, the students were off to their first workshop session, choosing from five different possibilities: "Genetics is Life: Everything Else is Just Details (and Math)," led by Dr. Kathy Bluch and Meg Burton from the Capital Area Institute for Math and Science; "Games on Graphs," led by Dr. Sandra Kingan, PSH; "An Introduction to Problem Solving Using Robots," led by Martin Kreibe, PSH; "Practical Applications of Mathematics," led by Megan Durkin, Jenn Mitchell, and Amanda Wright, PSH; and "The Language and Grammar of Mathematics," led by Dr. Genevieve Knight, PSH Scholar-in-Residence, Professor of Mathematics at Coppin State College. During this time period, teachers attended a workshop entitled "Making Technology Fun in the Classroom," led by Sarah Forst, Regional Manager Southeast, Casio, Inc.

After a brief break, the students were off to their second round of workshops, including "Career Talks," led by Lisa Busch, Megan Durkin, and Stefani Mastandrea, PSH; "Games on Graphs," led by Dr. Sandra Kingan, PSH; "Genetics is Life," led by Dr. Kathy Blouch; and "What is That and What Does it Do?" led by Sara Forst, Casio, Inc.

During lunch each student filled out a personal data sheet and then exchanged it for a tee shirt. Megan Durkin, vice president of our local ACM student chapter, designed the shirts. Each shirt indicated the date and time of SK Day at PSH and had the following quote from Sonia Kovalevsky printed on the back: "Say what you know, do what you must, come what may." All sponsors of the event were listed on the back as well. There was also a Mother Goose nursery rhyme ("As I was going to St. Ives ..."). After significant mathematical discussion about how many were going to St. Ives, no one could agree on the answer! During lunch, Amy Wimmersberger, an employee of Tyco Electronics, spoke to the girls about the importance of mathematics in all aspects of life. She discussed her job, that of an ethical hacker, and the many people working with her. Her support personnel had a wide variety of backgrounds, including accounting degrees, physics degrees and even English degrees, which really emphasized the fact that *everyone* needs to use mathematics.

After lunch, the students chose one of four contest workshops from: "Logo: How to Teach Your Turtle to Dance," led by Dr. Thang Bui, PSH; "Machines that Eat

Your Words," led by Dr. Linda Null, PSH; "Relationships in Prolog: How to Prove that Your Mother's Brother's Daughter is Your Cousin," led by Dr. Tim Wahls, PSH; and "Mathematical Scavenger Hunt," led by Sarah Forst, Casio. After brief introductions to the topics, these workshops allowed the students to participate in contests centered on the various concepts introduced in each. It was refreshing to see how hard the participants worked on these problems and how successful each and every student was. Later, when they were told some of the problems had been given to college students in our classes, they were very proud of themselves. Results of the contest were kept secret until the final awards.

The day ended with closing remarks, prizes awarded to the contest winners and door prize drawings for both students and teachers. Casio donated the contest prizes and the door prizes, which included graphing calculators and data collection tools, as well as other calculators. Students were given packets including postcards they were to address to themselves and then give to one of the speakers or presenters to whom they felt a special connection (the speakers are to return the postcards in six months to a year with special words of encouragement for the students); information about Sonia Kovalevsky; and a CD with mathematical and computer science software (including several versions of Logo; programs for fractals, cellular automata, graphing, equation manipulations, and mathematics worksheet creation for drill and practice; and a Prolog interpreter).

CALL FOR NOMINATIONS: ALICE T. SCHAFFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schaffer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career. She must either be a U.S. citizen or have a school address in the U.S. The twelfth annual Schaffer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in San Diego, California, January 6-9, 2002.

The letter of nomination should include, but is not limited to, an evaluation of the nominee on the following criteria: quality of performance in mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any.

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schaffer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2001**. If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

Everyone seemed to have a very good time. One student summed up her experiences in the workshops with the following comment on her evaluation form: "I really enjoyed my workshops. They showed me just how smart I really am." The teachers enjoyed their workshops as well and thanked everyone for inviting them and their students.

We owe many thanks to all the people who donated their time and to the AWM for making this day possible. Even though organizing and coordinating this event was very demanding, we feel we had a positive influence on many of these bright young women who attended, and we hope to see them choose careers involving mathematics.

BUSH SCIENCE BUDGET

In February, President George W. Bush presented an outline of his FY2002 budget proposal. He proposed a 1.2 percent increase for the NSF, well below the 15% increase proposed by the Coalition for National Science Funding (CNSF) in its recent statement and also counter to the Bond-Mikulski initiative to double the NSF budget by 2006 [see the March–April issue of this *Newsletter*, p. 27]. Because a new \$200 million Math and Science Partnership Initiative aimed at K–12 education is included in the proposal, the funding available to support basic research would actually be reduced. Except for the NIH, other scientific agencies fared even worse.

Many articles appeared in the press on this issue: "Bush, Seeking to Make Room for Tax Cuts, Tightens Budgets for Science Agencies" by David Rogers, staff reporter, appeared in the February 16 issue of *The Wall Street Journal*. A *Boston Globe* editorial by David Warsh on February 20 was strongly critical of the Bush budget cutbacks in science funding. Yale physics professor D. Allan Bromley wrote a *New York Times* op-ed for the March 9 issue. Bromley, who was the science advisor to the current President's father, called "the proposed cuts to scientific research ... a self-defeating policy."

A summary of recent events appears in *What's New* for April 06, 2001, an electronic newsletter by Robert L. Park:

1. BUDGET I: "NO SCIENCE, NO SURPLUS." Within Republican ranks supporters of a strong science program have been speaking up, and it seems the President is listening. First came a widely quoted *New York Times* op-ed by Allan Bromley, "Science and Surpluses" (*WN* 09 Mar 01). Bromley observed that the estimated \$5.6 trillion surplus over a decade, which is supposed to bankroll the Bush program, must come from scientific innovation. "No science, no surplus," Bromley declared, "It's that simple." Yesterday, Bromley's line was quoted in an editorial in the widely-read Capital Hill newspaper, "Roll Call." Meanwhile, a letter to Rep. Young, chair of the House Appropriations Committee, signed by both Republican and Democratic members, urged that science agencies, and the NSF in particular, be given high priority in the budget, putting them back on the doubling track. The House Science Committee expressed concern about the "minus-cule" budget increase for NSF in its Views and Estimates report. The report was signed by all but three of the Republicans on the Committee.

2. BUDGET II: BOND AMENDMENT PASSES SENATE ON A VOICE VOTE. How widespread is congressional sentiment favoring an increase in the nation's investment in science? Last night, on a voice vote, the Senate passed the Bond-Mikulski amendment, boosting the General Science Account in the President's budget request by \$1.44B. Compared to 2001 enacted levels, this amendment adds \$469M to DOE's science account, \$674M to NSF and \$518M to NASA.

3. BUDGET III: PRESIDENT BUSH SHOWS HE'S PAYING ATTENTION. Until now, any interest of the President in science has been carefully concealed. And on Monday, when he releases his final budget request, his direct involvement in the budget comes to an end. So what's he going to do when, in an evenly divided Congress, the leadership of his own party and most Democrats agree on funding for science? Redefine his position. Yesterday, in remarks before the American Society of Newspaper Editors, Bush devoted a single brief paragraph to research. He said his budget would finish the job of doubling medical research at NIH by 2003. Then he added, "Basic research gets big increases too." He gets an A.

THE AMERICAN PHYSICAL SOCIETY (Note: Opinions are the author's and are not necessarily shared by the APS, but they should be.)

Congress is now in recess until April 24; much may have happened by the time you receive this *Newsletter*. To keep an eye on the situation or to review the latest events, the new CNSF website www.cnsfweb.org and the Association of American Universities (AAU) website www.aau.edu are both extremely informative.

CNSF letter to the White House

Dear Mr. President:

As you develop America's budget priorities, the undersigned professional, academic and industry organizations urge you to make federal investment in basic science and engineering research a priority by providing strong funding for basic research in FY 2002.

Last year Congress made bipartisan commitments to strengthen science, engineering and long-term growth by significantly boosting investments in basic research. It is vital to sustain such strong federal investments in FY 2002 and beyond because they are critical to fostering technological progress in research-intensive industries. Although private firms have increased their total R&D spending in recent years, only a small portion of their spending goes to basic research. Increasing the federal investment in basic research is particularly important today to help reverse declines in federal spending relative to the U.S. economy over the last decade.

The return on research investment to the economy and society is remarkable. Over the last 50 years, advances in science and technology have produced more than half of our nation's economic growth. No other federal investment generates a greater long-term return to the economy and society than does basic research, prominent economists agree. Federal Reserve Chairman Alan Greenspan has said that "the phenomenal performance of the U.S. economy, with its strong growth, low inflation, low unemployment, and high business profits is due in large part to technological innovations that have caused productivity growth to accelerate." Federal research also helps educate and train the next generation of scientists and engineers, which is especially critical today to help meet the growing demand for skilled workers in the new economy.

According to a recent poll, more than 85% of Americans believe it is very important that the U.S. maintain its role as a world leader in research. Therefore, as you work with Congress on the FY 2002 budget, we hope

you will help keep America on the path of technological progress and economic prosperity by continuing the strong investments made last year in research. Thank you for considering our views.

Signed by 61 societies, universities, and corporations, including: American Mathematical Society, Association for Women in Mathematics, Mathematical Association of America, and Society for Industrial and Applied Mathematics.

BRIEF NOTES

Each month, Dianne O'Leary spotlights a website in AWM-News, our listserv. Always interesting, the pages have varied from <http://www.math.buffalo.edu/mad/wmad0.html>, a website on Black Women in Mathematics, part of a larger site on Mathematicians of the African Diaspora (<http://www.math.buffalo.edu/mad/mad0.html>), to a survey of campus administrators on the question "Should You Publish in Electronic Journals?" considered in an article in *The Journal of Electronic Publishing*, December 2000, <http://www.press.umich.edu/jep/06-02/sweeney.html>. And of course in AWM-News, the URLs are hot-linked!

A report from the European Commission on Women and Science (ETAN), *Science Policies in the European Union: Promoting Excellence Through Mainstreaming Gender Equality* is available at http://www.cordis.lu/improving/src/women_documents.htm.

Lustina, Michael J.; Aronson, Joshua; Good, Catherine; Keough, Kelli; and others. (1999). When white men can't do math: necessary and sufficient factors in stereotype threat. *Journal of Experimental Social Psychology* 35(1), 29.

The Association for Women in Science (AWIS) website has been redesigned. Visit www.awis.org and check it out. AWIS works with other groups to create a global network of supporters for women in science. In conjunction with the Office of Naval Research, AWIS is keeping a registry of women scientists.

Thanks to Cathy Kessel for sending some of these items.

Concerns of Young Mathematicians, the electronic newsletter of the Young Mathematicians Network, had a couple of interesting articles in Volume 9, Issue 2, February 2001 about the YMN panels held at the Joint Mathematics Meetings in New Orleans, January 2001. Visit www.youngmath.org for the text.

Notes on "Balancing Career and Family" by Heather Ames Lewis summarized the questions and answer session from the panel of that name. The panel was organized and moderated by John Kuchenbrod (Emory and Henry College) and Heather Ames Lewis (Nazareth College). The panelists were Cheri Boyd (Nazareth College), Stephanie Edwards (Bemidji State University), Patti Frazer Lock (St. Lawrence University), and Michael Prophet (University of Northern Iowa). The four panelists were all married; three of them had children. All were tenured or on the tenure track at schools with a variety of research expectations. The answers were informative, and much of the advice offered applies whether or not you are married or have children.

The jointly sponsored Young Mathematicians' Network/Project NExT panel "Keeping Active in Research" was organized and moderated by Sharon Frechette (Wellesley College) and Lyn Miller (Western Kentucky University). The panelists Janet Andersen (Hope College), Cristina Ballantine (Dartmouth University), Randy Swift (Western Kentucky University), Ann Trenk (Wellesley College), and Emil Volcheck (National Security Agency) covered the spectrum of the profession. In the wide-ranging discussion, panelists and audience members provided some valuable advice.

The Spring/Summer 2000 issue of *Women's Studies Quarterly* concerns "Building Inclusive Science."

Dannenber, Anne. (2001). Who's lagging now? Gender differences in secondary course enrollments. California Counts: Population Trends and Profiles (3). Public Policy Institute of California. Available at: www.pic.org/publications/CalCounts2/calcounts.page.html.

WME (Women and Mathematics Education) has published a *Comprehensive Bibliography for Gender Equity in Mathematics Resources Published in 1996–2000*. It was compiled by Martha Carr, University of George, in collaboration with several other WME members. For further information, contact Dorothy Buerk, membership chair, WME at Buerk@ithaca.edu.

National Center for Education Statistics. *Trends in educational equity of girls and women* (NCES 2000-030). Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement. The report is available at nces.ed.gov/spider/webspider/000030.shtml.

The article "The Glass Ceiling as Signifier" by Jon Carroll in the San Francisco *Chronicle* was inspired by the California State Audit hearings on UC faculty hiring. The complete text may be found at: <http://www.sfgate.com/cgi-bin/article.cgi?file=/chronicle/archive/2001/02/12/DD192690.DTL>. The article begins:

PERHAPS THE LEAST startling study to emerge recently is that things are worse than ever for women on the faculties of major universities.

For a time, during the bad old days of affirmative action (1995–96), 35.8 percent of the faculty members hired in the University of California system were women. Still disproportionately small, but OK. After Proposition 209 killed affirmative action, we all marched bravely into private-sector voluntary multiculturalism, and in 1999–00, 25.1 percent of the faculty hires were women.

These statistics will come as no surprise to faculty women.

Visit the page — the man tells it like it is.

It is fair to say that the men of academia have not been well socialized to the brave new world of equality. They will say that they take each new hire on a case-by-case basis, and yet the UC Berkeley math department has not hired a female faculty member in nine years.

DOCTORAL DEGREE DECLINE. For the first time in 14 years the total number of Ph.D.'s awarded in the United States has gone down, dropping 3.6% between 1998 and 1999. Physical Sciences, Engineering and Mathematics led the slide, together down 8.5%, including a 12% reduction in degrees to non-U.S. citizens. The U.S. Commission on National Security for the 21st Century recently identified science and technology education as a national security imperative, stating "the word 'crisis' is much overused, but it is entirely appropriate here." [Reprinted from Robert L. Park's electronic newsletter *WHAT'S NEW*, Friday, 16 Feb 01, Washington, DC.]

AWM AT NEW ORLEANS



Bettye Anne Case, Florida State University (AWM Meetings Coordinator)
K. Renee Fister, Murray State University (AWM Clerk effective February 1, 2001)



Sue Geller, Texas A&M University (AWM Clerk, December 1, 2000 to January 31, 2001)
Amy Cohen, Rutgers University (AWM Treasurer, June 1998 to June 30, 2001)



AWM Workshop Panel, *Launching a Career in Mathematics*: Carolyn S. Gordon, Dartmouth College; Lisa Mantini, Oklahoma State University; Tamara G. Kolda, Sandia National Laboratories; Tasha R. Inniss, Trinity College, D.C.

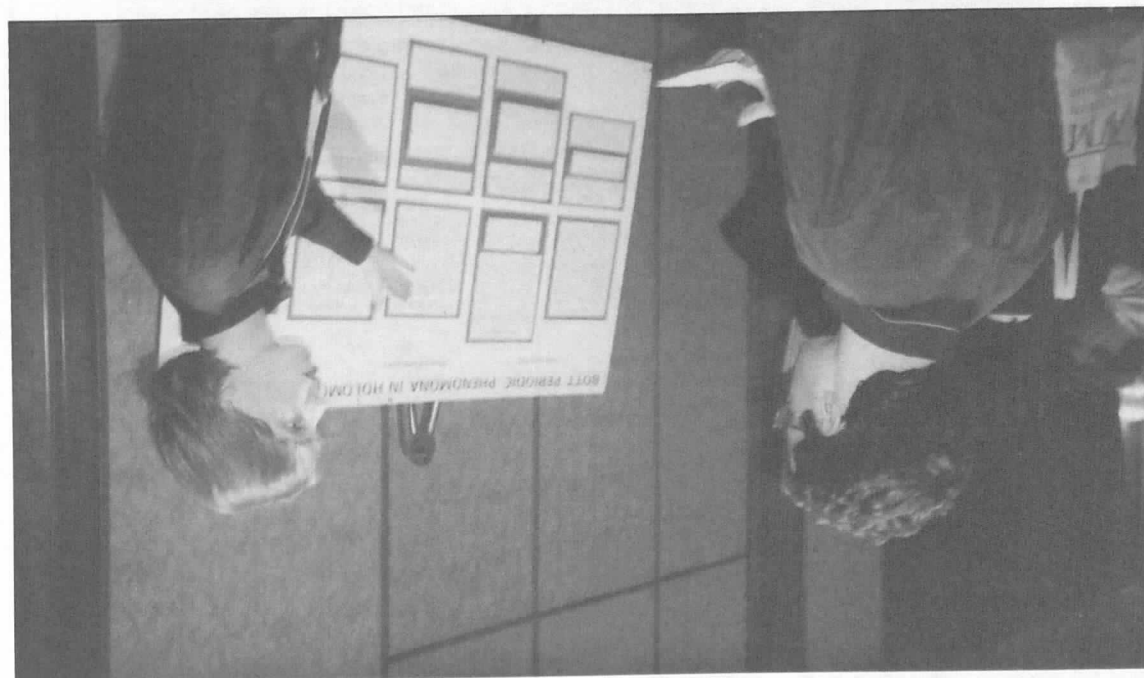


AWM Workshop: Recent Ph.D. Speakers: Jennifer Beineke, Trinity College, Hartford; Maria Basterra, University of Illinois at Urbana-Champaign; Diane Maclagan, Institute for Advanced Study; Christina E. Heistch, University of British Columbia; Katrina Barron, University of California, Santa Cruz; not available for photo: Amy Myers, University of Pennsylvania; Gretchen Matthews, University of Tennessee; Irina Mitrea, Institute for Advanced Study

AWM Workshop Poster Session: Emma Carberry, Princeton University, explaining her poster "Harmonic Tori: An Algebraic-Geometric Perspective"



AWM Workshop Poster Session: Dana P. Rowland, Stanford University, explaining her poster "Bott Periodic Phenomena in Holomorphic K-Theory"





AWM Workshop Poster Session: Dorothy Buck, University of Texas at Austin, explaining her poster entitled "The Geometry of DNA and DNA-Protein Interactions"



AWM Staff: Muriel Daley, Accountant; Roya Jaseb, Program & Grant Administrator; Dawn Wheeler, Director of Membership, Meetings & Marketing

AWM WORKSHOP: Focus on Research & Career Experiences

*held in conjunction with the 2001 SIAM Annual Meeting (July 9 - 13, 2001),
Town & Country Resort Hotel, San Diego, California*

Schedule as of April 10, 2001

The Association for Women in Mathematics (AWM) plans a workshop from Monday mid-day through Tuesday, July 9-10, 2001. These events are held in conjunction with the 2001 SIAM Annual Meeting. AWM and SIAM welcomes your participation.

The sessions focus on showcasing the research of women graduate students and recent Ph.D. mathematicians and helping individuals to prepare for careers in the mathematical sciences. Our Tuesday morning session is a minisymposium which focuses on career planning and experiences. The workshop also has two research minisymposia presented by recent Ph.D. mathematicians and a poster session presented by graduate students. In addition, on Monday evening there will be a dinner followed by discussion groups.

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

AWM is grateful to SIAM and their Meetings Department for all 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. A special thank you is extended to Professors Suzanne Lenhart (University of Tennessee) and Elsa Schaefer (Marymount University) who kindly served as the 2001 Workshop co-organizers. AWM also wishes to express its gratitude to the Office of Naval Research (ONR) and Air Force Office of Scientific Research (AFOSR) for support of the AWM workshop.

Volunteers Needed - Volunteers are needed to be "mentors" at the AWM Workshop (July 9-10, 2001) held in conjunction with the SIAM Annual Meeting at the *Town & Country Resort Hotel, San Diego, California*. Mentors are matched with a recent Ph.D. who is giving a talk in the workshop. Mentors should attend the talk of their assigned mentee and give some constructive advice about the talk. If possible, the mentor should attend the AWM dinner to get introduced to the mentee or arrange to talk with the mentee at some other time. Volunteers are also needed to **participate in a "discussion group" session on Monday evening, July 9** following the AWM Dinner. Career advice and situations will be discussed at the session. If interested, **volunteers should contact** Suzanne Lenhart (lenhart@math.utk.edu) or the AWM office (awm@math.umd.edu)

LOCATION: *Town & Country Resort Hotel* [rooms below subject to change ↓]

Monday, July 9, 2001

TBA

3:15 p.m. - 5:15 p.m. **AWM Minisymposium on
Numerical Methods and Analysis of PDE and Linear Algebra Systems**

This minisymposium will feature talks by female recent Ph.D.'s on numerical methods for PDE and linear algebra systems. The PDE applications include acoustic waves, subsurface flow, and traveling waves (with Ginzburg-Landau equations). Variable preconditioning in Krylov subspace methods for linear algebra systems will be featured.

Organizer: Elsa Schaefer, Marymount University

Speakers:

- 3:15 p.m. "Tunable front interaction and localization of periodically forced waves"
3:45 p.m. "Use of Mixed Finite Elements for Acoustic Waves"
4:15 p.m. "Discontinuous Galerkin Methods for Subsurface Flow"
4:45 p.m. "Flexible Quasi-Minimal Residual and Other Variable Preconditioned Krylov Subspace Methods "

Catherine Crawford, Elmhurst College
Eleanor W. Jenkins, University of Texas at Austin
Béatrice Rivière, University of Texas at Austin

Judith A. Vogel, Virginia Commonwealth University

TBA

6:30 p.m. - 9:30 p.m. **AWM Dinner Banquet**
[see AWM staff on-site for ticket availability or email awm@math.umd.edu prior to the meeting]

- continued on next page -

AWM WORKSHOP: Focus on Research & Career Experiences

Tuesday, July 10, 2001

TBA

10:30 a.m. - 12:30 p.m. AWM Minisymposium on Planning for Your Professional Future

This minisymposium will feature four mathematicians with a variety of careers and experience levels. The speakers will discuss their career experiences and give some advice on starting a career. Academic and industrial careers will be included.

Organizers: Suzanne M. Lenhart, University of Tennessee, Knoxville and Oak Ridge National Laboratory and Elsa Schaefer, Marymount University

Speakers:

- | | |
|--|---|
| 10:30 a.m. "A perspective on careers in scientific computing and biological modeling " | Lisa Fauci, Tulane University |
| 11:00 a.m. " Hints for Finding Non-Academic Research Positions (Postdoctoral and Permanent)" | Katharine Gurski, National Institute of Standards and Technology
Gary Green, The Aerospace Corporation |
| 11:30 a.m. " Planning for Your Professional Future" | |
| 12:00 p.m. "MATHEMATICS: more or less Applied in Academia and Government " | Fern Hunt, National Institute of Standards and Technology |

TBA

12:30 p.m. - 1:30 p.m. AWM Poster Session -- poster presentations by female Graduate Students

[Session is open to all SIAM attendees. AWM will have refreshment items available during the poster session.]

Graduate Student Presenters:

- | | |
|--|---|
| "Optimal Controls of Discrete-time Dynamic Systems Driven by Singularly Perturbed Markov Chains" | Grazyna Badowski, Wayne State University |
| "Toward a Recursive QR Algorithm" | Karen S. Braman, University of Kansas |
| "The Generalized Variational Principle, contact transformations, and conservation laws" | Bogdana Georgieva, Oregon State University |
| "A Population Model of Prion Dynamics" | Meredith L. Greer, Vanderbilt University |
| "Simulation and Comparison of Spatial Models for Discrete Data on a Lattice" | Monica C. Jackson, University of Maryland, College Park |
| "A New Global Optimization Strategy for the 6n-dimensional Molecular Replacement Problem from X-ray Crystallography" | Diane C. Jamrog, Rice University |
| "Smoothing Methods in Biomedical and Health Research" | Erin E. Kammann, Harvard University |
| "A Posteriori Error Estimation for Discontinuous Galerkin Solutions of Hypbolic Problems" | Lilia Krivodonova, Rensselaer Polytechnic Institute |
| "Transition Layer Dynamics of a Viscoelastic System using the Time Discretization Method" | Hyeona Lim, Michigan State University |
| "Cluster Analysis in Electronics Manufacturing" | Shona D. Morgan, North Carolina State University |
| "Coupling of Continuous and Discontinuous Finite Element Methods Transport Problems" | Jennifer Proft, University of Texas at Austin |
| "Generalized Matrix-Weighted Function Spaces" | Svetlana Roudenko, Michigan State University |
| "System Reliability Under Precise and Imprecise Classification" | Kimberly F. Sellers, George Washington University |

TBA

3:15 p.m. - 5:15 p.m. AWM Minisymposium on Analysis and Applications of Models

This minisymposium will feature talks by female recent Ph.D.'s on modeling applications of mathematics in various scenarios. Two of the talks involve partial differential equations, in particular, wave equations, plate equations and reaction diffusion equations. Spectral analysis of signals with fractal noise is featured, and statistical estimates for Poisson mixed models will be discussed.

Organizer: Suzanne M. Lenhart, University of Tennessee, Knoxville and Oak Ridge National Laboratory

Speakers:

- | | |
|---|---|
| 3:15 p.m. "Boundary Stabilizability of a Nonlinear Structural Acoustic Model including Thermoelastic Effects" | Catherine Lebieczik, University of Virginia |
| 3:45 p.m. "Spectral Analysis of Fractal Noise" | Sherry Scott, George Washington University |
| 4:15 p.m. "Speeds of Invasion in a Model with Strong or Weak Allee Effects" | Mei-Hui Wang, University of Tennessee |
| 4:45 p.m. "A Sensitivity Analysis of Estimates for Poisson Mixed Models" | Kimberly S. Weems, National Security Agency |

ADVERTISEMENTS

NATIONAL SCIENCE FOUNDATION DIVISION OF MATHEMATICAL SCIENCES

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POSITIONS. Several of the technical staff of the Division of Mathematical Sciences of the National Science Foundation serve on 1-2 year 'Visiting Scientist' or 'Intergovernmental Personnel Act' appointments as Program Directors while on leave from universities, colleges, industry or national laboratories. Since the timing of these positions is staggered, the Division continually seeks talented applicants. In 2001 the Division will be seeking to make appointments in all areas. 'Permanent' Program Director appointments will also be considered. The positions involve responsibility for the planning, coordination, and management of support programs for research (including multidisciplinary projects), infrastructure, and human resource development for the Mathematical Sciences. Normally, this support is provided through merit-reviewed grants and cooperative agreements that are awarded to academic institutions and nonprofit, nonacademic research institutions.

QUALIFICATIONS. Applicants should have a Ph.D. or equivalent training in a field of the mathematical sciences, a broad knowledge of one of the relevant disciplinary areas of the Division of Mathematical Sciences, some administrative experience, a knowledge of the general scientific community, skill in written communication and preparation of technical reports, an ability to communicate orally, and several years of successful independent research normally expected of the academic rank of associate professor or higher. Skills in multidisciplinary research are highly desirable.

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Applicants should send letter of interest and vita to:

**Dr. Bernard R. McDonald, Executive Officer, Division of Mathematical Sciences,
National Science Foundation, 4201 Wilson Boulevard, Suite 1025, Arlington, Virginia 22230**
Telephone: 703-292-4851 Fax: 703-292-9032 Email: bmcdonal@nsf.gov

EASTERN KENTUCKY
UNIVERSITY



DEPARTMENT OF MATHEMATICS AND STATISTICS TENURE-TRACK FACULTY POSITION

The Department of Mathematics and Statistics at Eastern Kentucky University invites applications for a tenure-track position. The primary teaching responsibilities are teaching courses in developmental mathematics, mathematics education, or general education mathematics. Experience with large lecture classes preferred. Although the field is open, additional ability to contribute to the teaching and student research in the department's graduate and undergraduate programs are a plus. Educational qualifications: a doctoral degree in mathematics, statistics, or related field. A complete application package includes: a letter of application addressing qualifications and developmental or service course experience, a detailed curriculum vita, a statement of teaching philosophy and research interest, unofficial copies of all academic transcripts, and the names, phone numbers and e-mail addresses of four professional references. See the Department's Web Page at www.math.eku.edu or call (859) 622-5942 for a complete job description.

Mail application to:

Department Chair
312 Wallace Building
Department of Mathematics and Statistics
521 Lancaster Avenue
Eastern Kentucky University
Richmond, KY 40475-3102

Review of applications will begin immediately and will continue until the position is filled. Further information about the department and the university is available at <http://www.math.eku.edu>.

Eastern Kentucky University is an Equal Opportunity/Affirmative Action Employer.

KANSAS STATE UNIVERSITY Department of Mathematics

Subject to budgetary approval, applications are invited for one or more instructorships commencing August 15, 2001. Instructors will participate in the design and implementation of an online homework system and teach in the undergraduate program. The instructor will have time to pursue research in the department along with these duties. Applicants must have a commitment to excellence in teaching. A Ph.D. in mathematics or a Ph.D. dissertation accepted with only formalities to be completed is required.

Preference will be given to applicants with background in mathematics education, physics education, and/or teaching with technology, as well as applicants whose research interests mesh well with current departmental faculty. Letter of application, current vita, three letters of reference, and a statement of teaching philosophy should be sent to: **Louis Pigno, Kansas State University, Dept. of Mathematics, Cardwell Hall 138, Manhattan, KS 66506.** Offers may begin at any time and applications for the position will be reviewed until the position is closed. AA/EOE

Association for Women in Mathematics

2000/2001 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. Any questions, contact AWM at awm@math.umd.edu; (301) 405-7892 or refer to our website at: <http://www.awm-math.org>

LAST NAME _____ FIRST NAME _____ M.I. _____

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I DO NOT wish for my AWM membership information to be released for the **Combined Membership List**.

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Date of Birth (optional): _____ (MMDDYYYY) [the date of birth field is to strictly help prevent duplicate entries]

PROFESSIONAL INFORMATION:

Position: _____ If student, GRADUATE or UNDERGRADUATE (circle one)

Institution/Company: _____ If not employed, leave position & institution blank

City, State, Zip: _____

DEGREES EARNED:

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

MJ_01

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.....	\$ 50	_____
2ND FAMILY MEMBERSHIP..... (NO newsletter) Please indicate regular family member: _____	\$ 30	_____
CONTRIBUTING MEMBERSHIP.....	\$100	_____
RETIRED or PART-TIME EMPLOYED MEMBERSHIP (circle one).....	\$ 25	_____
STUDENT or UNEMPLOYED MEMBERSHIP (circle one).....	\$ 15	_____
ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO).... FOR ADDITIONAL POSTAGE ADD All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.	\$ 8	_____
BENEFACTOR [\$2,500] or FRIEND [\$1,000] (circle one).....	\$	_____
<input type="checkbox"/> I am enclosing a DONATION to the "AWM GENERAL FUND".....	\$	_____
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Indicate if you wish for your **contribution(s)/donation(s)** to remain ANONYMOUS ⇨
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INSTITUTIONAL DUES SCHEDULE

<input type="checkbox"/> CATEGORY 1 (includes 10 student memberships; 1 free ad; 25% off additional Newsletter & online ads*)..	\$250	_____
<input type="checkbox"/> CATEGORY 2A (includes 3 student memberships; 1 free ad; 10% off additional Newsletter & online ads*)....	\$125	_____
<input type="checkbox"/> CATEGORY 2B (includes 6 student memberships; 10% off Newsletter & online ads*).....	\$125	_____

ADVERTISING: Institutional members on Categories 1 and 2a receive ONE FREE job link ad or ONE FREE Newsletter ad (up to 4 lines) for the membership year Oct. 1st to Sept. 30th. All institutional members receive discounts on other eligible* advertisements (25% off for Category 1 and 10% off for Categories 2a and 2b). *Eligible advertisements: The institutional discount applies to both classified and job link online ads as well as classified *Newsletter* ads, but it does not apply to *Newsletter* display ads. If institutional dues have not been received by the invoice date, the full advertising rate will be charged. *Newsletter* advertising deadlines are the 1st of every EVEN month. All institutions advertising are Affirmative Action/Equal Opportunity Employers. **STUDENT NOMINEES:** Institutions have the option to nominate students to receive the newsletter as part of their membership. List names and addresses of student nominees on opposite side or attach a separate page. [ADD \$15 (\$23 for foreign members) to the listed institutional rate for each student add-on over the initial 10 students for Category 1; over the initial 3 students for Category 2a & over the initial 6 students for Category 2b]. For more advertising/membership info see www.awm-math.org

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