

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 30, Number 2

NEWSLETTER

March–April 2000

PRESIDENT'S REPORT

I have just participated in two extraordinary weeks of meetings with AWM-related activities: the Joint Mathematics Meetings (JMM) and the Pan-African Congress of Mathematicians (PACOM). There are several articles elsewhere in this *Newsletter* and the next giving more detailed reports on these activities; here I will just give some of my impressions.

Before I do, I should announce the results of the AWM election, which became effective February 1. Suzanne Lenhart, University of Tennessee, comes on board as President-Elect. Amy Cohen, Rutgers University, continues her term as Treasurer. Joan Feigenbaum, AT&T Bell Labs, and Ginger Warfield, University of Washington, will be Members-at-Large. Thanks for their service to those members leaving the Executive Committee: Sylvia Wiegand, Past President, and Lynne Butler and Teresa Edwards, Members-at-Large.

Also, I'd like to remind readers that the on-line ads of AWM are going strong. Visit the web site (<http://www.awm-math.org>) to read them or to find out how to have your institution or company advertise there. Also, if you work for a company or have any contacts with those who do, encourage the company to become a Corporate Member or even a Sponsor of AWM. Details are all available on-line.

Now, to the JMM. Rita Colwell, the NSF Director, spoke eloquently at the opening banquet Tuesday evening about the need for support of scientific research in general and mathematics research in particular. Wednesday's AWM panel discussion on "How to Increase the Number of Tenured Women in Mathematics Departments" was standing-room-only. The panelists (Elaine Hansen, Maria Klawe, Peter Sarnak, Millie Dresselhaus, and Karen Uhlenbeck) all had very interesting and specific things to say, and I only wish the panel could have gone on twice as long. A forum on the topic to continue the discussion has been set up at the AWM website (www.awm-math.org). It was disappointing that there were so few department chairs in the audience. The exemplary efforts of the institutions

IN THIS ISSUE

- 4 AWM at the Joint Meetings

- 14 Education Column

- 18 PACOM Roundtable

- 20 Have You Seen This Bunny?

- 23 SKHS Days

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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represented by the panelists (Haverford College, University of British Columbia, Princeton University, MIT, and the University of Texas at Austin) could certainly be replicated at other institutions, if they cared to. Particularly intriguing was Millie Dresselhaus's report on the American Physical Society's program of having visiting committees on women travel to various universities and colleges, at the request of those institutions, to make reports to their departments on how they could improve their hiring procedures and their climate for women. I came away with the feeling that there is little to justify the complaint I occasionally hear, that "we've tried to hire women but they just won't accept."

After the panel, certificates were presented to the six young women who were winners, runners-up, and honorable mention in the Alice Schafer Prize competition. Alice herself was unfortunately unable to be there, having injured her leg the preceding week. There was then a mass exodus from the room, leaving only a handful for the AWM Business Meeting. Later in the evening, the Noether Lecturer Dinner, honoring Margaret Wright, filled its restaurant room and a good time seemed to be had by all. And following the Gibbs Lecture, the AWM Reception was a hit as always. In spite of the fact that I had pneumonia and was on the verge of collapse, it was so interesting wandering around and talking to the hordes that I had to be dragged away sometime after 11:00. The music for the reception was the best yet (thanks, Bettye Anne, to your friends); I saw a few people dancing.

Thursday Margaret Wright gave her Noether Lecture, with many enjoyable and remarkably appropriate quotations from Jane Austen. Thursday afternoon's MER session, where the speakers were arranged by AWM, was held in a cavernous room so that the audience appeared small, but the speakers were excellent and they said the discussion afterward was extremely good. The speakers were Gail Burrill (former NCTM president), Shirley Malcom (Director of the AAAS Education and Human Resources Directorate), Bernice Sanders (author of the *Chilly Climate* studies), and AWM's own Ginger Warfield (University of Washington). Following this education session was the Joint Prize Session, where I had the honor of giving AWM's Schafer Prize to Mariana Campbell and AWM's Hay Award to Joan Ferrini-Mundy.

Thursday evening I spent a little time at the National Security Agency's reception for women in mathematics, then joined the reunion of past participants in the Park City/Institute for Advanced Study's Mentoring Program for Women. Friday morning I went to the Adopt-a-Congressperson breakfast and Hope Daly's retirement luncheon. Hopie, who has sometimes thought of herself as the midwife to AWM, really appreciated AWM's tribute to her. It included a certificate declaring her a Friend of AWM and a lifetime honorary member, a gift certificate, a modified (by Sue Geller) version of Psalms 31, and "an AWM tote bag to take home all your loot." I was unable to attend the Marcia Sward Dinner; Sylvia Wiegand presented her an AWM certificate and thanked

her on AWM's behalf. Also on Friday there was the double AMS-AWM-SIAM Special Session organized by Margaret Wright and Dianne O'Leary, with many AWM members as speakers. Friday evening I visited the NAM reception before going to the dinner and discussion groups for the participants in Saturday's AWM Workshop. I had to miss the Workshop itself due to a board meeting in Princeton, but I hear it was as always highly interesting.

Then the following Monday I flew to Cape Town. There is a Pan-African Congress of Mathematicians about every five years; this one was held in the Republic of South Africa (RSA), as a way of reaching out to RSA after its ending of apartheid. I was told that there were approximately 180 mathematicians registered, a large number (maybe 1/4?) from RSA. There were also a significant number (I'd guess 10 or more) representatives of mathematical societies in Europe and the United States. I went there as an AWM representative (one of two females not from an African country), and was the only woman, out of 15, to give a plenary address. My guess is that fewer than 15 of the 180 participants were women.

The problems of being a mathematician in Africa, whether in research or education, are daunting, and vastly greater for women. In many countries, there may be two or fewer women with Ph.D.'s in math, and they don't necessarily have email addresses and connections to the internet. Even ignoring the gender issue, there are rarely two mathematicians at the same institution that work on similar research problems. The situation is much more difficult there than it was here in the United States just before AWM was founded, when only about 6% of the Ph.D.'s in math went to women. Even in those African countries where there are a relatively large number of mathematicians, so that the mathematical isolation may not be total, the lack of opportunity to discuss the problems of being female in mathematics is almost total. A report of the Round Table on "Stimulating the AMU Commission on Women Mathematicians," which details the problems and possible first steps at solutions, appears elsewhere in this *Newsletter*.

An unexpected but very valuable part of my experience in South Africa was the opportunity to have discussions with the guides for the various excursions I took (one as part of PACOM and two on my own). In each case, the guides were non-white, and in two cases, they had been political prisoners under apartheid. Their

MEMBERSHIP AND NEWSLETTER INFORMATION

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 Dues in excess of \$15 and all contributions are deductible from federal taxable income.

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 additional student memberships: \$15 (\$23 foreign) for next 15; \$11 (\$19 foreign) for remainder
 Level 2 (one free basic job ad and up to three student memberships): \$95 (\$120 foreign)

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Subscriptions and back orders

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

Payment

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

Ad information

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

Deadlines

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

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

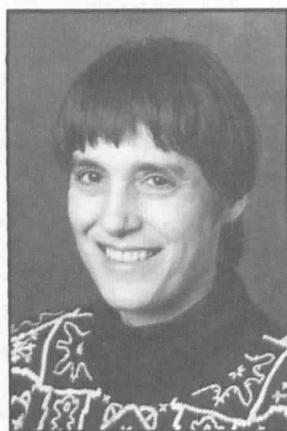
Addresses

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

combination of continued joy at having defeated that system, together with dismay at the vast economic and social problems still confronting non-whites, was remarkable.

Jean Taylor

Jean Taylor
Princeton, NJ
February 4, 2000



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AWM DEADLINES

NSF-AWM Travel Grant: May 1,
October 1, 2000

AWM Workshop, New Orleans:
September 1, 2000

Louise Hay Award: October 1, 2000

Alice T. Schafer Prize: October 1, 2000

AWM CALENDAR

AWM Workshop, SIAM meetings,
Puerto Rico, July 9–11, 2000

AWM AT THE JOINT MEETINGS, WASHINGTON, DC

Louise Hay Award for Contributions to Mathematics Education

In 1990, the Executive Committee of the Association for Women in Mathematics (AWM) established the annual Louise Hay Award for Contributions to Mathematics Education. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secure her reputation as a consummate educator. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

Citation: Joan Ferrini-Mundy

In recognition of her outstanding contributions to mathematics education, the AWM is pleased to present the Tenth Annual Louise Hay Award to Joan Ferrini-Mundy of Michigan State University.

Ferrini-Mundy is both a leader and a scholar. She is one of the leading intellectual authorities on the broad landscape of mathematics education in the United States, and a leading researcher in teacher education and development, and reform. Her knowledge, strong organizational skills, and ability to listen to and understand people from different intellectual communities have enabled her to lead, administer, and implement numerous organizational initiatives, at every scale.

Many concerned with mathematics education have had the opportunity to see one of these projects in progress. Ferrini-Mundy is the chair of the Writing Group for Standards 2000, the revision of the National Council of Teachers of Mathematics Standards. The Standards Writing Group alone consists of 26 different people — teachers, curriculum developers, mathematicians, and mathematics education researchers — with different perspectives on mathematics and mathematics education. One Writing Group member says:

As one of the writers on the Principles and Standards project I am in awe of Joan. Her organizational skills are extraordinary. Throughout this complex project she has had both a clear vision of what needed to be done and the flexibility to change when necessary. She has a great sense of integrity despite enormous political pressures. She has kept a varied group of strong-minded people on the same page for three long and hard years. Most important, I trust her judgement of what should happen in school mathematics.

Standards 2000 involves more than 26 people writing an eight-chapter volume. It is informed by White Papers from mathematics education researchers, reviews from Association Review Groups, and comments from many different constituencies — all of which must be considered. Ferrini-Mundy has led the writing adeptly, has listened carefully to many voices, and has communicated effectively to diverse audiences including mathematicians, mathematics educators, and policy makers.

In addition to chairing the Writing Group, she has occupied other positions of unrivaled leadership in mathematics education: Director of the Mathematical Sciences Education Board and Associate Executive Director of the Center for Science, Mathematics, and Engineering Education at the National Research Council. Important, although less high-profile, activities include membership in the AWM Education Committee, the redesign of the *Mathematical Reviews* classification system to incorporate the literature on undergraduate mathematics education, and currently the chairing of the AMS-MAA Committee on Research in Undergraduate Mathematics Education — helping mathematicians come to grips with a field of research which is central to the concerns of the profession, but yet is not mathematical research.

Joan Ferrini-Mundy is a model of the ability to work across disciplines and between practice and research in a way that enriches all participants.

Response from Professor Ferrini-Mundy

It is an honor to be chosen to receive the Louise Hay Award from the Association for Women in Mathematics. Beginning with my earliest research in spatial visualiza-



Joan Ferrini-Mundy

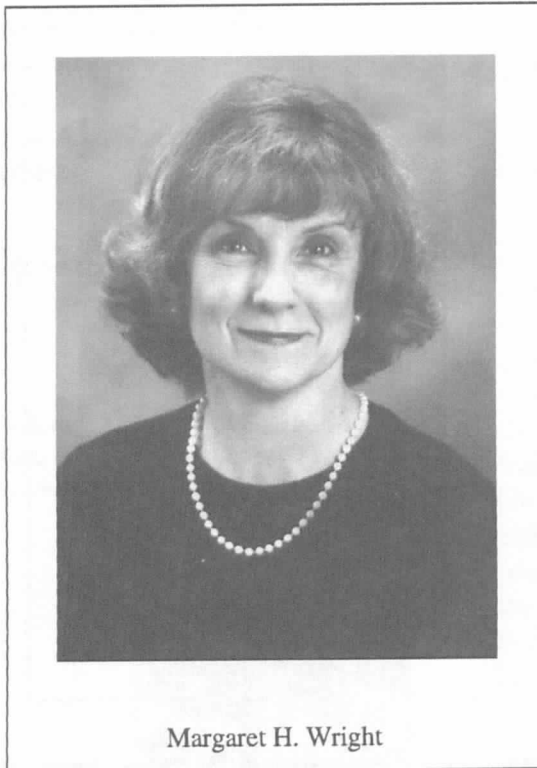
tion and calculus learning, I have been strongly committed to furthering the participation of young women, and all students, in mathematics at all levels.

Fortunately I have had the privilege of experiencing a number of professional opportunities that have enable me to work with outstanding colleagues nationally for the ongoing improvement of mathematics education. As a program officer at the National Science Foundation, as a faculty member at Mount Holyoke College and then for many years in the Mathematics Department at the University of New Hampshire, and then at the National Research Council, as well as in a number of projects over the years, including Standards 2000, I have

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, 2000**. For more information, phone (301) 405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.



Margaret H. Wright

learned from colleagues across a range of fields and commentates and value greatly the interactions I have been able to have over the past several years. I also have learned a tremendous amount from students — ranging from elementary school children encountering the delights of mathematics to graduate students pursuing deep questions about mathematics teaching and learning — about how worthwhile it is to pursue an agenda for the improvement of mathematics education.

I believe that the ongoing improvement of mathematics education at all levels in this country will depend on collaborative efforts that draw upon the best available research, the most carefully analyzed practice, and respect for history and tradition, together with respectful interaction and recognition of the varied expertise that is needed to shape the best possible experiences for children in mathematics education. Practicing mathematicians, researchers in mathematics education, mathematics teacher educators, curriculum developers, classroom teachers at all levels, and policy-makers need to continue the work of finding productive ways of communicating, building knowledge and formulating and studying solutions and efforts to improve. I look forward to continued involvement in such efforts in years to come.

Emmy Noether Lecture

Margaret H. Wright, Bell Laboratories, Lucent Technologies, delivered the 2000 Noether Lecture “The Mathematics of Optimization” on January 20th.

Abstract

Optimization is an endlessly fascinating field that comes in many flavors, shapes, and sizes. It ranges from research that is entirely theoretical, without apparent connection to any application, to the nitty-gritty implementation of computational methods for solving real-world problems. It not only covers everything in between, but also has deep interconnections with other areas such as linear algebra, differential equations, and approximation.

Certain mathematical techniques are widely used in characterizing optimality, developing optimization methods, and proving their convergence in both exact and finite precision. In addition, there are numerous instances in which the needed mathematics comes from far afield. This talk will give an overview, necessarily selective, of the mathematics associated with modern continuous optimization.

Biographical Information

Margaret H. Wright received her B.S. in Mathematics, and M.S. and Ph.D. in Computer Science, from Stanford University. Her research interests include optimization, linear algebra, numerical analysis, scientific computing, and scientific and engineering applications.

Since 1988 she has been with the Computing Sciences Research Center at Bell Laboratories, Lucent Technologies (formerly AT&T Bell Laboratories). She was named a Distinguished Member of Technical Staff in 1993, became head of the Scientific Computing Research Department in 1997, and was named a Bell Labs Fellow in 1999. She worked from 1976–1988 as a researcher in the Systems Optimization Laboratory, Department of Operations Research, Stanford University.

In 1997 Wright was elected to the National Academy of Engineering. She served during 1995 and 1996 as president of the Society for Industrial and Applied Mathematics (SIAM). During 1994–1998, she served on the Advisory Committee for the Directorate of Mathematical and Physical Sciences at the National Science Foundation (as chair in 1997–1998), and has also served

recently on committees for the National Research Council, the National Science Foundation, and the Department of Energy. She is a member of the Scientific Advisory Committee of the Mathematical Sciences Research Institute (MSRI), Berkeley, California.

She is Editor-in-Chief of *SIAM Review* and an associate editor of *Mathematical Programming*, the *SIAM Journal on Scientific Computing*, the *SIAM Journal on Optimization*, and *IEEE Computing in Science and Engineering*. She is the co-author (with Philip Gill and Walter Murray) of two books, *Practical Optimization* and *Numerical Linear Algebra and Optimization*.

Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman

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

AWM is pleased to present the Tenth Annual Alice T. Schafer Prize to an outstanding young woman mathematician: Mariana E. Campbell of the University of California, San Diego.

Citation: Mariana E. Campbell

Mariana E. Campbell is currently a senior at the University of California at San Diego. After distinguishing herself ("best in the class") as a junior in both undergraduate and graduate classes at UCSD, Ms. Campbell participated in the Mount Holyoke REU program where the faculty described her as "astonishing." Her output from that program is a paper "The Igusa local zeta function for the different reduction types of the special fiber of an elliptic curve" that is currently being revised for publication. As one of her recommenders wrote, "Mari is getting into current interesting and difficult



Mariana E. Campbell

research topics at a point in her career several years earlier than the typical student." Ms. Campbell gave a talk on this work at the Mathfest '99 meeting in Providence, Rhode Island. She will also give a talk on this topic at the Joint Mathematics Meetings (Washington, D.C.) in the special session entitled: Research in Mathematics by Undergraduates on Saturday, January 22, 2000. In addition to being a fine mathematician, Ms. Campbell is a talented violinist. The consensus is that Ms. Campbell has "the drive, intellect, and creativity to become a leading mathematician." She is "remarkable" and "someone who will make a difference in the lives of those around her down the line."

Response from Campbell

I feel very honored to be awarded the Association for Women in Mathematics Alice T. Schafer Prize. I would like to thank the AWM for encouraging women to study mathematics and for continuing to recognize the achievements of women mathematicians at all stages of their careers. I would like to express my sincere thanks and appreciation to my mentors: Harold Stark, Audrey Terras, Margaret Robinson, Peter Doyle, Mark Peterson, and Ron Evans for their generous support and for



Sarah E. Dean

sharing their enthusiasm in mathematics. I thank the participants of the Mount Holyoke College REU, Mark Peterson, and especially my advisor Margaret Robinson for a very exciting and productive summer. I also thank the UCSD math community for being an incredible source of stimulation, support, and encouragement.

Runners-up

Sarah E. Dean is a senior mathematics major at Duke University. She is a recipient of the prestigious Barry W. Goldwater Scholarship and participated in the Director's Summer Program at the National Security Agency during the summer of 1998. Her mentor at NSA describes her as "one of the top two performers in this fantastically talented group of 22." Her professors at Duke say that she "has taken nearly all the advanced undergraduate and most first and second year graduate courses at Duke" and is "one of the best undergraduates we have had at Duke University."

Response from Ms. Dean: I want to thank the Association for Women in Mathematics for honoring me, and especially for recognizing my school, Duke University. Duke's math faculty have been wonderfully supportive of me, and dedicated to teaching even outside of the



Beth Robinson

classroom. I especially want to thank David Kraines, Bill Pardon, Greg Lawler, Chad Schoen, Robert Bryant, and my advisor Paul Aspinwall.

Beth Robinson is a senior mathematics major at Carleton College. Beth is lauded by one of her professors as "the only person ever in my 12 years of teaching undergraduates to earn a perfect score on an exam" — as a sophomore in an upper-division course. She participated in the St. Olaf Summer Mathematics Program for Women in 1998 and the REU at the University of Minnesota at Duluth in 1999. As a result, she authored two professional level publishable papers. Inducted into Phi Beta Kappa in her junior year, Beth devotes long hours to tutoring in Carleton's Math Skills Center and still makes time for painting and folkdancing.

Response from Ms. Robinson: I would like to thank the AWM for naming me as a runner-up for the Alice T. Schafer Prize. It is a far greater honor than I ever expected to receive. I'd also like to thank Professor Stephen Kennedy for nominating me and for all his other help and encouragement.

Honorable Mentions

Jaelyn A. Kohles is currently a junior at the University of Nebraska at Lincoln. Ms. Kohles had performed brilliantly at UNL, with a 4.0 GPA in classes



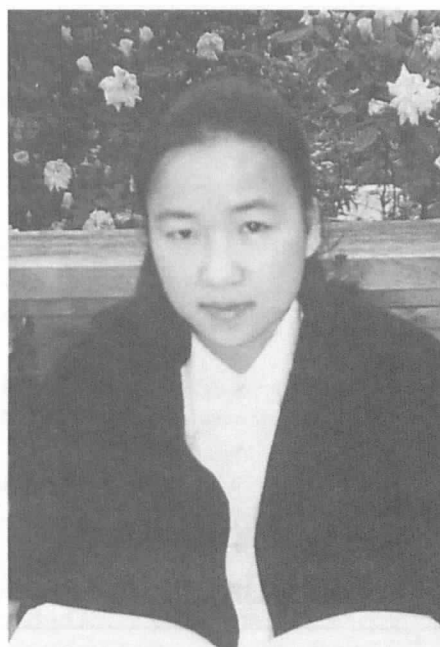
Jaelyn A. Kohles

that include 11 senior level math classes and 3 graduate classes. In addition, she has participated in the Pennsylvania State University MASS program, the Budapest Semester in Mathematics, and an REU at Carleton College. Her work in the MASS program resulted in a paper on the classification of simultaneous t^1 and t^2 cores that is currently being revised so that it can be submitted for publication.

Ms. Kohles has “blossomed into a mature mathematician” with a “talent, drive, and enthusiasm for mathematics.” She is a “gifted student who will become a gifted researcher.”

Response from Ms. Kohles: Knowing two of the other honorees in this year’s Alice T. Schafer Prize, I can tell that it is an excellent group of women, and I thank the AWM for including me in this group. I would like to thank all of the faculty and staff at Nebraska for their help and guidance. I would also like to thank all those involved in the Carleton/St. Olaf summer program, Penn State MASS program, and Budapest Semesters in Mathematics. These people and programs have benefited me immeasurably.

Fumei Lam is currently a senior at the University of California at Berkeley. Ms. Lam has participated in REUs at the College of William and Mary and at Michigan Technological University as well as the Budapest



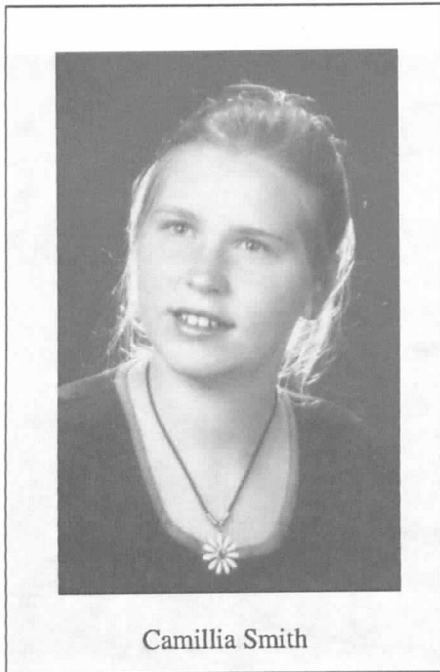
Fumei Lam

Semester in Mathematics. Her work in the REUs resulted in two papers: “Completely Positive Matrices and Their Graphs” (joint with J.H. Drew and C.R. Johnson) and “Random Sidon Sequences” (joint with A.P. Godbole, L. Fidkowski and D. Ying). In 1999 she was one of 17 math majors nationally to receive the prestigious Barry W. Goldwater Scholarship.

Ms. Lam is praised for her “creativity” and “singleminded purpose.” Her prospects for success as a mathematician are “excellent.”

Response from Ms. Lam: I would like to thank the Association for Women in Mathematics for awarding this prize. I am indebted to the math department at Berkeley and would like to express my appreciation to the many people who have guided and inspired me. I would especially like to thank Professors John Drew, Anant Godbole, Robin Hartshorne, Charles Johnson, Lior Pachter, and Alistair Sinclair.

Camillia Smith is a third-year senior at Michigan State University, spending a year in Paris while completing her B.S. in Mathematics and her B.A. in English. While still in high school, she biked two miles after running with the school’s cross country team to take courses at Michigan State. Winner of the



Camillia Smith

University's most prestigious Award, the Alumni Distinguished Scholarship, she studied senior level mathematics during freshman year. A professor says that "she knew instinctively how to write lucid mathematical prose and her grasp of the idiom of proof was flawless." Participation in the REUs at the University of Minnesota at Duluth and at Michigan Technological University led to fine research papers. Cammie has a passion for mathematics and for classical music, being a violinist in the Michigan State orchestra.

Response from Ms. Smith: I am most grateful to the AWM for honoring me in the Schafer Prize competition. I would like to recognize my indebtedness to the following: my family; Joseph Gallian and Anant Godbole for their invaluable advice and research supervision; Robert Messer for his encouragement and Ruth Favro for her longstanding example; and above all, for its continued support, the faculty of the mathematics department at Michigan State, especially Jacob Plotkin, Susan Schuur, Jeanne Wald, and Edward Ingraham.

AWM Workshop featuring Graduate Students and Recent Ph.D.'s

Gail Ratcliff, University of Missouri, St. Louis, was the Workshop Chair. Sue Geller, Texas A&M University and Catherine Roberts, Northern Arizona State University, were Co-organizers.

Research talks by recent women Ph.D.'s were:

- Monique Chyba, Princeton University
"Sub-Riemannian Geometry: The Martinet Case"
- Jennifer Courter, The Colorado College
"Construction of Orthonormal Wavelets in n Dimensions"
- Tiziana Giorgi, Towson University
"Uniqueness of Symmetric Vortex Solutions in the Ginzburg-Landau Model of Superconductivity"
- Laurie J. Heyer, University of Southern California
"Pattern Recognition in Gene Expression"
- Eugenie Hunsicker, Lawrence University
"When is a Noncompact Manifold Almost Compact, an Introduction to L^2 -cohomology"
- Heather Johnston, University of Massachusetts, Amherst
"Polygonal Knot Theory and Stuck Unknots"
- Christina Sormani, Lehman College, CUNY
"Milnor's Conjecture on Fundamental Groups"
- Judy L. Walker, University of Nebraska, Lincoln
"A Categorical Approach to the Study of Self-dual Codes"
- Posters were presented by the following graduate students:
- Irina A. Berchenko, University of Minnesota
"Geometric Methods in Classical Invariant Theory"
- C-Y. Jean Chan, University of Utah
"An Intersection Multiplicity in Terms of Ext-modules"
- Linda Eroh, Western Michigan University
"Existence of Rainbow Ramsey Numbers"
- Sara Faridi, University of Michigan
"Normal Ideals of Graded Rings"
- Michelle L. Ghrist, University of Colorado
"High-Order Finite Difference Methods for Wave Equations"
- Susan Hollingsworth, University of Wisconsin, Madison
"Square Trees"
- Diane Maclagan, University of California, Berkeley
"Combinatorics of the Toric Hilbert Scheme"
- Oana Mocioalca, University of Florida
"Contact Processes on Trees in Random Environment"

Rachel J. Pries, University of Pennsylvania
 "Formal Patching and Deformation of Wildly Ramified
 Covers of Curves"

Victoria Sadovskaya, The Pennsylvania State University
 "On Pointwise Dimension of Non-hyperbolic Measures"

Alexandra Smirnova, Kansas State University
 "Continuous Methods for Solving Nonlinear Ill-Posed
 Operator Equations with Application to Gravitational
 Sounding Problem"

Cynthia A. Spade, Northwestern University
 "Making Gradient Materials: A Model for Interfacial
 Gel Polymerization"

Theresa A. Strei, University of Nebraska, Lincoln
 "Nonlinear Wave Equations on the Two-Dimensional
 Sphere"

Amelia Taylor, University of Kansas
 "The Inverse Problem in Gröbner Basis Theory"

Jennifer Joy Ziebarth, University of Wisconsin, Madison
 "Mod p Cohomology of Symplectic Groups"

Certificate of Appreciation

A certificate of appreciation was presented January 21, 2000 to Hope Daly with thanks from the Association for Women in Mathematics (and with apologies to the writer of Proverbs 31). It read:

A woman of valor who can find? Her worth is far above rubies.

Mathematicians put their trust in her and lack for no good thing.

She was good to them all the days of her work life.

She looked for ways to ease the burdens of others, going way beyond her job description.

She was like the merchant fleet, setting up meetings around the country.

She rose while it was still dark that all would be ready when the meeting opened.

She worked tirelessly through the day, solving the unbounded list of problems.

She met upset, frustrated, or angry people with humor and a smile, smoothing the troubled waters to stable equilibria.



Betty Anne Case, Hope Daly, and Amy Cohen

Her functions were smooth.

She considered new organizations and welcomed them to the Joint Meetings.

She girded her loins with strength and stood by the AWM when others would have kept us out of the meetings.

She saw that her work was good, then labored long into the night that the next day's meeting would also be excellent.

Her mouth was full of wisdom, her tongue with kindly advice.

Many have done well, but she surpassed them all.

We extol her for the fruit of her labors; let all praise her for her great work.

MAA Certificates of Meritorious Service

These certificates are presented for service to the MAA at the national level or for service to a Section of the Association.

It is with great pleasure that the Allegheny Mountain Section of the MAA nominates Kathy Taylor of Duquesne University for the Meritorious Service Award. Over the past two decades, she has served in many elected offices. She was our first Newsletter Editor (1978–1984) and was responsible for starting what is now our major source for Section news and activities. She has been 2nd Vice President (1981–82), 1st Vice President (1982–83), Section Chairperson (1985–87), and Section Governor (1993–96). She has also served on many nominating committees. Generally, when the

Section needs someone to do something, Kathy is always willing to step forward and do the task happily. She is one of our most able leaders and one of our most active participants in Section activities.

We appreciate what Kathy has done for the Allegheny Mountain Section and the MAA, and are proud to nominate her for the Meritorious Service Award.

Response from Professor Taylor: I am very pleased to be the latest recipient of the Meritorious Service Award from the Allegheny Mountain Section of the MAA. Both the local Section and the national organization are important resources for all who are interested in every aspect of collegiate mathematics. It has been an honor for me to work with other members of the Section and to serve on the national Board of Governors. Thank you for this honor.

The Maryland-District of Columbia-Virginia Section is proud to honor Elizabeth J. Teles with its Certificate of Meritorious Service. She has many years of outstanding service to both the Section and national MAA. As Program Chair she has arranged lively meetings of interest to a wide audience of members. As Section Chair and, later, Governor, she led the Section with great enthusiasm. Currently, she is Section Secretary, thereby continuing her long tradition of service. Dr. Teles has been equally involved at the national level. She was member and chair of the Committee on Two-Year Colleges and the Committee on Sessions of Contributed Papers. She was for many

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 eleventh annual Schaffer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in New Orleans, Louisiana, January 10–13, 2001.

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, recommendations letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. 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, 2000**. If you have questions, phone 301-405-7892 or email awm@math.umd.edu. Nominations via email or fax will not be accepted.

years the Software Reviews Editor for the *College Mathematics Journal*. Other committee memberships include the Committee on Faculty Development, the Committee on Computers in Mathematics Education, and the Advisory Board for the Interactive Mathematics Text Project. She has organized many contributed paper sessions and panel discussions at national meetings. An award-winning teacher at Montgomery College for more than 20 years, Dr. Teles continues her leadership in collegiate mathematics education as Program Director in the Division of Undergraduate Education at the National Science Foundation.

Response from Elizabeth Teles: Thank you to my friends and colleagues in the Maryland-DC-Virginia Section of the MAA for this special honor. The Section and the national MAA organization have served a very important role in my career as a mathematician, but as importantly I have formed personal friendships over the years with MAA members. I am very appreciative to the Section for this recognition and look forward to many more years of professional growth and friendship.

The New Jersey Section of the Mathematical Association of America has selected Sister M. Stephanie Sloyan, R.S.M., Professor Emerita of Mathematics,

Georgian Court College, Lakewood, NJ, as the recipient of the MAA Certificate of Meritorious Service in recognition of her many years of leadership and dedication.

A familiar face at national and Section meetings, Sr. Stephanie Sloyan is well known for her commitment to the goals of the MAA. A member of the MAA since 1952, and one of the founders of the New Jersey Section (1956), she has served the MAA in many capacities: Section Vice Chair for Speakers, Chair-Elect, Chair (1986-87), and Past Chair of the Section; Governor of the Section (1988-91); and a member of the MAA Committee on Sections and numerous NJ Section committees. In 1991, she became the first recipient of the MAA-NJ Section Distinguished Teaching Award and has since served as Chair of the Selection Committee for this award.

Sr. Stephanie has been a role model for women who aspire to a career in mathematics. She was responsible for the formation of the Pi Mu Epsilon Chapter and the MAA Student Chapter at Georgian Court College. Sr. Stephanie has always actively encouraged her colleagues and students to attend Section meetings. In 1996, she made a presentation of the history of the New Jersey Section at the 40th anniversary meeting. She has hosted

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 description of her current research and of how the proposed travel would benefit her research program, 2) her curriculum vitae, 3) a budget for the proposed travel, and 4) information about all other sources of travel funding available to the applicant along with *five* copies of her cover letter to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The next deadlines for receipt of applications are **May 1**, and **October 1, 2000**.

several Section meetings and will host yet again this spring at Georgian Court.

Sr. Stephanie Sloyan holds an A.B. degree (1945) with a major in Natural Science and a minor in Mathematics from Georgian Court College, an M.A. (1949) and a Ph.D. (1952), both in Mathematics, from the Catholic University of America. She has been a faculty member at Georgian Court College since joining the Department of Mathematics in 1952. Following a term as President (1968-1974), she returned to the department as chairperson until 1996. During her years as chair, she established a Master's Degree program in Mathematics and a minor in Computer Science.

Whatever her specific office in the Mathematical Association of America, Sr. Stephanie has always been ready to give guidance and assistance to others. The New Jersey Section is very pleased to nominate Sister M. Stephanie Sloyan for the Meritorious Service award and is grateful for her many years of invaluable service.

Response from Sister Sloyan: I am grateful and honored to receive this award from the New Jersey Section and especially to Naomi Shapiro, Evan Alderfer and Terry Michnowicz who nominated me. I should like to add something of my experience in summer school teaching. In the summer of 1953, I was invited by Dr. Raymond Moller of the Catholic University of America to teach Geometry I to students seeking a Master's degree. I did this, followed the next summer by Geometry I and Geometry II, all classes in Catholic University. I followed this program for a number of years having at first small classes and later large classes. For me this was an excellent experience. I hope the students could say the same.

MAA Committee on the Participation of Women Panel Discussion

On Wednesday morning, January 19th, the MAA Committee on the Participation of Women sponsored a panel discussion on "Building Mathematical Leadership Among Women." The moderator was Carol Lacampagne of the U.S. Department of Education, and the organizer was Carolyn Connell of Westminster College. The panelists were: Saide Bragg, Senior Vice President of Academic Affairs at Borough of Manhattan

by Suzanne Lenhart, University of Tennessee and Oak Ridge National Laboratory

Community College; Joan Leitzel, President of the University of New Hampshire; Margaret Wright, Head of the Scientific Computing Research Department at Lucent Technologies; Marcia Sward, past Executive Director of MAA and current Director of Environmental Education at the National Environmental Education and Training Foundation.

These women discussed their career paths to a variety of leadership positions. They gave some interesting advice which included:

Don't work for a jerk. Work for someone from whom you can learn.

Assume life is long and don't try to do it all at once.

Enjoy today and learn to say "no."

Support from a spouse can be very important.

Don't be fearful about trying new jobs.

Strong academic credentials are needed to climb the ladder in academia.

Try to find mentors for guidance.

This panel discussion was an important contribution to the Joint Meetings.

EDUCATION COLUMN

Repeating a successful event is always a risky venture. This year, once again, we took the risk and it paid off. For the third year, the AWM and the MER (Mathematicians and Educational Reform) co-sponsored a session at the January Joint Mathematics Meetings, and for the third year it was exciting and very well received. This year's session included four talks and a discussion period. Three of the talks were by invited speakers, and a powerhouse trio of guests they were. Their shared objective was to focus not on the difficulties besetting the teaching and learning of mathematics, but on what needs to be done about them, and what can be done, and some of the virtues and

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

hazards of what is being done.

Gail Burrill led off. She identifies herself as a high school teacher, an identity I enjoy promoting, since it puts her in admirable position to blow the mind of anyone inclined to discount high school teachers. It is a little unfair, though, since she is also past president of the National Council of Teachers of Mathematics and currently head of the Mathematics and Science Education Board of the National Research Council. Her talk, entitled "Learning to Make a Difference," centered around the fact that in the midst of the overwhelming mass of changes going on around us, one to which we really must pay attention is that a lot has been learned about how people learn. This does not just apply at any one level. It applies at all of them, but at the university level we are being very slow to register it. A central issue is that you have to teach the students you actually have, recognizing that there is a significant difference in the way experts and novices approach learning — and students are the novices. Sounds simple, until you think how basic a reflex it is to assume, with the very best of motives, that the most generous thing to offer students is whatever it is that one would most have profited from oneself. It's not all that many years since that was an acceptable model, because until recently it was generally agreed that academia's mission was to find the Good Students (i.e., those who were able to learn from us in the same way we had learned) and weed out the others. Society and social philosophy have now changed enough to make that model not merely outmoded, but immoral.

Our next guest was Bernice Sandler, best known to most of us for her report "The Chilly Classroom Climate for Girls and Women." She is now Scholar in Residence for the National Association for Women in Education. Like Gail, she took up a topic that applies at all levels and in many contexts. Like Gail, she drew her examples and specific issues from higher education, in Bernice's case especially from situations involving women in universities. "Mentoring: Myths and Realities, Dangers and Responsibilities," made many points. One was that what tends to be looked on as the ideal helpful setup, in which a senior "expert" takes a novice under his (or occasionally her) wing to be helped, protected and strongly guided, has rather a lot of hazards both for the mentor and the mentee (for want of a suitable synonym). She certainly favors support — lots of it — but suggested a number of ways of broadening it, and pointed out some virtues to networking as well. She

finished with a list of ten commandments for mentoring, many of which involved decreasing the asymmetry found in the canonical mentoring structure and increasing the consciousness that we are all in this together, and that we all have a lot to learn from one another.

The concluding talk was by Shirley Malcom who, after some years as a program director for NSF, moved on to the AAAS some twenty years ago. She has since been on the National Science Board as chair of Education and Human Resources, and is now a co-PI of a Systemic Reform Initiative for Science and Math in the DC public schools. Given those credentials, it is not too surprising that Shirley's talk, "Rethinking K-12 Mathematics Education," took a systemic point of view. We in mathematics can, she said, take legitimate pride in the lead we took by producing our Curriculum Standards, and by putting a lot of thought into what students need to be learning and how they need to learn it, but we cannot for one moment afford to rest on our laurels. We have described a style and level of mathematics teaching from which children will benefit tremendously if it is done right — but that is hardly a virtue unless we do something about enabling it to be done right. And the kind of teaching required makes enormously more demands of teachers than any that were previously made. This means that for the Curriculum Standards to have real meaning they need to be accompanied by Professional Standards, and those professional standards need to be backed up by massive changes in how we educate, or if necessary re-educate, and support teachers at all levels. That is a responsibility which lands squarely in the lap of university and college level mathematicians, though we are not going to make appreciable progress on it unless we have the support of society in general. A tall order, but one which must not be ignored.

A session with four talks, I said, and then I described only three. That's because I gave the other one. My goals were precisely those of the other three, but my slant was sufficiently different so that I intend to take editorial privilege and reserve the content for some future column. Without apology, at that, because I'd say the words of our three guests provide us all with plenty to think about!

IN MEMORIAM

Hanna Sandler died December 22, 1999 from cancer, at the age of 39. She was spending the year at the University of Maryland as a visitor, supported by a research grant from the National Science Foundation. She was on the faculty of American University and pursued research in complex analysis and hyperbolic geometry. She is survived by her husband, Jeff Hakim (also a mathematician at American University), and her parents, Samuel and Bella Sandler.

Rodica Simion, of the George Washington University (GWU) department of mathematics, died January 7, 2000. Born in Romania, as a student there she did extremely well in the International Mathematical Olympiads. She emigrated here as a young adult. Rodica received her Ph.D. degree from the University of Pennsylvania in 1981 under the direction of Herbert Wilf. Her thesis concerned the use of Sturm sequences to deduce concavity and unimodality properties of combinatorial sequences.

Simion wrote numerous papers in combinatorics in such areas as non-crossing partitions, statistics of words, and Dyck paths. One striking result, joint work with Frank Schmidt, showed that the number of permutations of n letters that avoid a particular pattern of 3 letters is independent of the pattern that is chosen. She organized a number of conferences, notably in Formal Power Series and Algebraic Combinatorics, and at the time of her death was co-organizing, with Richard Stanley of MIT, a special session for the recent AMS meeting in Washington in honor of the late Gian-Carlo Rota.

Not only a fine mathematician, but a fine and caring person and a good friend, she will be sorely missed. A fund in her memory has been established to support graduate education at GWU. Contributions may be sent to: The Rodica Simion Memorial Fund, Department of Mathematics, The George Washington University, Washington, DC 20052. Please write the name of the fund on the memo line of the check, made payable to The George Washington University.

Yin (Jessie) Lei, 19, a member of Canada's International Mathematical Olympiad team for the past two years, died on New Year's Day as the result of injuries received in a major highway accident in California on Christmas Day. Jessie had just completed

her first term at the University of Toronto, where she studied computer science.

LETTERS TO THE EDITOR

Millennium Capers

The dances of scantily clad females, the drum beating and pole thumping of gyrating young men, as viewed on TV, would have been at home among the pagans of 2,000 years past. Where was the evidence of the "ascent of man" through the millenium? The Magna Charta? The invention of printing? The beginnings of scientific inquiry? The decline of serfdom and the splendor of the Renaissance? The struggles and eventual triumph of Copernicus, Kepler and Galileo? The music of Johann Sebastian Bach? The genius of Newton, Maxwell and Einstein? Darwin's revelations about the origins of the species? The progress in understanding the human psyche of Freud, Adler, Jung? Pasteur's discoveries? The alleviation of the dangers of childbirth? The conquest of most childhood diseases? The abolition of slavery? Universal education and suffrage, the improvement of the condition of the working man and woman? The ongoing push for the abolition of war and nuclear weapons and the peaceful adjudication of disputes between countries? The 747?

We ought to pay homage as well to the hundreds of millions of the one hundred last generations who labored on this earth and made it fair: those who tilled the soil and cleared the primeval forests, those who built the cities and the cathedrals and mosques and temples, those who navigated the oceans and joined the continents, who built the roads and canals and railroads and worked in the factories. And where among all the trivia was serious consideration given to the problems facing mankind today: overpopulation, poverty and illiteracy on a global scale, maldistribution of income and the triumph of greed in the economic domain, the savaging of our world's natural resources, the danger of new epidemics? Where was the call to gain through education the deeper understanding required to find solutions to the looming threats to life on this earth?

We heard nothing but shallow babble and slogans from the world's leaders. They displayed a total lack of

respect for the ordinary citizen's intelligence and potential to "think different" as an informed participant in the desperately needed transformation of society.

J. Bronowski, the author of *The Ascent of Man*, wrote:

If we are anything, we must be a democracy of the intellect. We must not perish by the distance between people and government, between people and power, by which Babylon and Egypt and Rome failed. And that distance can only be conflated, can only be closed, if knowledge sits in the homes and heads of people with no ambition to control others, and not up in the isolated seats of power.

It would indeed have behooved our leaders to speak to the young generation in terms such as these: The world is there for us to rethink and redo. You will have to comprehend the nature of a dozen disciplines, a spreadsheet of America: education, transportation, city-planning, food production, the generation of power, pricing mechanism, local administration, government organization. Everybody will have to make everything his business. You will have to read the world with empathy and with logic and precision. You will need to view our society and epoch with that "holographic awareness" which captures the pattern of reality in terms of the totality of relevant meanings and thus transcends its interpretation in the mechanical language of recurrent programs. Thus we can assert our humanity.

The problems are as numerous as our brains. There are six billion human brains in the world. Let us rise to the occasion.

Miriam Yevick
Emerita, Rutgers University
Princeton, NJ

Math and Motherhood

I'd like to respond to two letters in the May-June 1999 issue of this *Newsletter*. Both concern matters which I was glad to see addressed. In brief, Louise Perkins told of the solution which has worked for her (and which to me seems quite wise) — namely, working full-time at a "less prestigious" and also less demanding (and commendably accommodating) institution, so that she can do the important things in her life — being with her toddler son, research, and teaching "a subject I love." I was thinking that *men* might, and perhaps do, consider

making the same or a similar kind of decision. Also, while Louise Perkins questions the assumption that "when women are not achieving all that they could, the cause is an oppressive society," and points out that it has been her (wise) choice to take the path she has taken, I believe that it is society's fault (and oppressive, for women *and men*) that the same conditions are not available at a more "prestigious" university. Perhaps, in fact, the term "prestigious university" needs to be explored and questioned. (Why *isn't* this kind of accommodation available at a more "prestigious" and larger university?)

I was also glad to see the letter from Marianne Korten, rightfully complaining about opposition on the part of the CIRM to her bringing along her young daughter to meetings, and especially her comment that "somewhere behind this is also my deep belief that children and work should not be presented as excluding each other, because both of them are a part of our life." *Yes*. Children and work are parts of *each other* as well. (That's a transitive law, isn't it?!) The anguish and mystery of math seem connected to that of babies, children, and motherhood (including pregnancy and birth). The things babies do and children say have the potential for giving us math ideas — new things *not* to take for granted. That is, parenthood and math can enhance and feed on each other. (This has been especially clear for me because I write poetry, in particular poetry about the experience of math, and of motherhood. My poems in recent issues of the *Math Monthly* have used metaphors connecting math and motherhood.) In general, the human condition is, to me, a lot of what math is about.

Perhaps a paragraph about my own odyssey is in order. Unlike Louise Perkins' situation, it was not always so much conscious choice as just what developed. Thirty years ago I got my Ph.D., published a handful of papers, and then had troubles finding a satisfactory full-time job (there was some gender discrimination involved). Although I expected to be a full-time working mother, what developed (more and more to my liking) was 28 years of on-and-off adjunct teaching, never-quite-ending (but as yet unpublished) research, mothering four living children (and, in various metaphoric ways, one dead child), and writing (and publishing) twenty books, some poetry, some prose, about some major events in my adult life (namely, pregnancy loss, chronic illness — my husband's M.S. — and math).

While I'm sure these writings had as much value to the world as any math papers would have had, and while emotionally math was still a big and satisfying part of my life, I do wonder what it's like to be a "real mathematician" (you know, publish papers and go to math conferences). But there's still hope for me! Two years ago I received a great surprise: an out-of-the-blue full-time job offer from the place where I was teaching an evening PDE course, and where I'm now working. It's been near perfect, and perhaps my background has increased my job qualifications. The route I've been led on has been a good one, and maybe I will have it all! I'm glad to see that some women are *allowing* themselves odysseys, and I think that men should/could/would like to, also.

I really like the *Newsletter*; it's great to see so many women mathematicians writing so honestly about their lives and work.

Marion Cohen
Drexel University
Philadelphia, PA

PACOM ROUNDTABLE

The round table "Stimulating the AMU Commission on Women Mathematicians" was attended by seven, all women, two of whom came from outside Africa. These are Professor Jean Taylor from the Association for Women in Mathematics (AWM) and Professor Frédérique Bassin from France.

It was noted that the number of women mathematicians in Africa is pathetically low, and most of these women mathematicians are not very active in research with publication profiles that are not that impressive. It was also noted that some of the women mathematicians are no longer working in mathematics but in other areas outside the sciences.

It was also noted that very few girls are eager to study mathematics at higher levels; already the problem

starts at the secondary school level. As such there is no pool from which to draw for tertiary level enrollment of female students. Also noted is the fact that even of those who do their first degree in mathematics and perform very well, very few of them are ready to do postgraduate studies in mathematics or remain as mathematicians. If they took maths with another subject, they drift to the other subject. Even though these days many scholarships put a restriction that 50% of the recipients must be female, it is very difficult to get even 10% girls to take up the scholarships. It is getting more and more difficult to interest girls in mathematics.

The round table recognized the complexity of the problem in increasing the number of female mathematicians at all levels and that of improving their performance in examinations and research. There are many complex causative reasons for this, and numerous attempts to redress the problem have been and are being undertaken.

Professor Jean Taylor from AWM informed us about things they have done over the years; the number of women Ph.D.'s has increased from 6% to 28% within 30 years. The North American experience in most of the cited cases cannot easily be replicated in Africa's socioeconomic and infrastructure setup, basically due to scarcity of resources and lack of a critical mass of women mathematicians and women postgraduate students to participate in the programs.

Nevertheless, the round table decided the commission should implement some strategic objectives that aim at improving the publications profiles of existing women mathematicians and increasing the number of women mathematicians at tertiary level institutions. Also the round table felt that it should be the commission's obligation to play a proactive role in the numerous efforts being undertaken to improve the access, participation, and performance of girls in the subject of mathematics.

The round table agreed on the following strategic objectives:

1. To improve the research and publication profile of women mathematicians.

The following strategies were proposed to be undertaken by the commission:

Report submitted by Dr. Verdiana Grace Masanja, coordinator of a Roundtable held at the Pan African Congress of Mathematicians (PACOM) – 2000, University of Western Cape (UWC), Cape Town, Republic of South Africa, January 23–29, 2000, meeting of the Africa Mathematical Union (AMU)

1.1 To assist existing women to do quality research and excel in their areas of specialization through:

- a) Soliciting and awarding research grants to women senior mathematicians and to young women mathematicians in the form of postdocs;
- b) Organization of conferences where good papers will be presented, peer reviewed and published in reputable journals;
- c) Feature at least one woman to give a lecture at a big mathematics conference that will take place in the AMU region;
- d) Send postgraduate (women) students to present posters with their research findings to every conference that takes place in the region.

1.2 To assist women mathematicians for linkages and exchange and sharing of information through:

- a) Taking up an up-to-date inventory and compiling a profile of women mathematicians in the region;
 - b) Creation of a database of women mathematicians that shows the affiliation, field of specialty, courses taught/teaching, current research interests, publications, socio-cultural and other female gender-specific problems faced,
 - c) Connectivity of every woman mathematician on the Internet or at least access to an email facility (the AWM is ready to assist in this matter);
 - d) Assist in securing study visits, sabbaticals (AWM could assist in this) and research collaborations with other mathematicians;
 - e) Creation of forums for discussing gender-related issues that interfere with academic performance; during conferences, a day could be set aside to discuss these matters; a newsletter could also be very helpful;
 - f) Carry out survey of women mathematicians that are still working in the field and those who have left, and document their experiences, their problems, etc.; this could reveal the undisclosed issues that hamper the progress of women in mathematics and hence assist in seeking solutions.
2. To increase the number of women mathematicians at the tertiary level.

The following strategies to be taken by the commission were proposed:

- 2.1 To solicit and award scholarships to girls to undertake mathematics at the undergraduate level and to nurse these girls through to postgraduate work; AMU could set up a scholarship scheme for girls in each subregion.
- 2.2 To document all the initiatives that have been undertaken (or are being undertaken) that aim at increasing the number of girls in mathematics. The aim is to collaborate with those initiatives and also to liaise with organizations that are promoting girls' education and play a proactive role in searching for solutions to interest girls in mathematics, to improve their performance, and to increase their numbers at higher levels.
- 2.3 The commission with concerted efforts of committed women mathematicians should draw up a program of reaching out to girls while they are still in high school and interest them in the subject, using a variety of methods. Collaboration with organizations such as FAWE and TWOS could be sought.

The round table suggested that the first step is that the commission should decentralize the activities to the subregional level by creating focal points, i.e., individuals through whom communication will take place. The following were nominated: southern, Professor Henda Swart; eastern, Dr. Joyce Ndalichako; western, Ms. Sy Haqqa; central, to be found; and northern, to be found.

The commission should propose an activities and implementation plan with time and financial budgets. The commission with assistance from the AMU secretariat should solicit funding from different sources, external and internal.

It was agreed that activities should be conducted at the subregional level. This will ease the work and reduce the costs. As a start, it was suggested that a conference to be held that will bring all African women mathematicians together where the AMU commission will be introduced. The conference should attract high calibre mathematicians, particularly women mathematicians, to give talks. African mathematicians will be encouraged to present good papers that will be published in a good journal. Professor Henda Swart volunteered to seek funding, and it was decided that the conference will take place about a year from now.

HAVE YOU SEEN THIS BUNNY?

Introduction

To my surprise, I recently saw this image in a general mathematics journal: a young bare-shouldered woman wearing a sun-hat with feathers, looking directly at the viewer with a come-hither gaze. It is the head and shoulders from a *Playboy* centerfold [November 1972, page 138] which shows a nude woman facing a mirror. This controversial image has been in common use by the image-processing community for many years. Discussions of fostering a professional atmosphere aside, it is a violation of copyright law for it to appear without attribution to its legal owners; nevertheless, the image appears in many journals and many talks without credit.

I personally find the use of the image in poor taste, and I have seen women whom I respect deeply become extremely upset at its continued use in seminars by researchers who are fully aware of its source. The image is a cause of rancor within the image-processing community itself. Its use in a general mathematics journal or in front of a general mathematics audience is unprofessional and contributes to creating a toxic environment for young women and men.

I am communicating this information to the AWM newsletter for two reasons. First, it gives young people a precise objection to make the next time they see this image in a talk: "Excuse me, you forgot to put the copyright attribution on that transparency. It is the property of Playboy Enterprises and is the head and shoulders of the November 1972 centerfold." Admittedly, this is an oblique approach. It has the merits that it is as coolly precise as the speaker no doubt was in his talk, and it gives him three choices: to use a different image the next time, to put Playboy on his transparency, or knowingly to violate copyright law. However, it dodges the sexual aspects of the image and would become irrelevant if Playboy put the image in the public domain. Second, it is my hope that the senior members of our community will take concrete action to prevent this particular behavior of the engineering community from propagating further into our community. People have been turning a blind eye to this image for nearly three decades now. It's time to hasten its departure.

The Lenna image and the image-processing community

From a colleague of mine who does image compression as part of his research, I learned the following facts. The image is called "Lenna," the Americanization of the Swedish model's name, Lena. Almost everyone in the image-processing community knows it comes from a *Playboy* centerfold. Playboy had their lawyers contact journals about the copyright issue but eventually gave up. Perhaps they realized that even though "copyright Playboy Enterprises" wasn't appearing in the articles, it didn't matter since almost everyone reading them knew the source.

The image is ubiquitous; we looked through two random issues of *IEEE Transactions on Image Processing* and found five occurrences of the Lenna image in four articles. In practice, the image-processing community has trained their eyes on the photo and knows where to look to see how whether an algorithm is successful or not; the hair and feathers are hard to process/compress, for example.

The use of Lenna is controversial within the image-processing community. My colleague says that about 20% of the community refuses to use it, instead using other fairly standard images like "Barbara," "the bridge," and "the camera-man." For a quick history of the photo and controversy see <http://www.cs.cmu.edu/~chuck/lennapg/lenna.shtml>. (Please resist the impulse to flame the author of this site.)

In general, the image-processing community does not have a fixed set of standard images to work on. For example, there are a number of different versions of the Lenna image, when compared pixel-by-pixel. Imaging technology has developed significantly since 1972, and the image-processing community would be well-advised to construct or commission a universally agreed-upon set of modern images.

Why the Lenna image should not be used

What images the image-processing community chooses to use as standards is their own business.

By M. C. Pugh, University of Pennsylvania. I would like to thank Smadar Karni and Barbara Keyfitz for helpful conversations on this topic.

However, I can see no scientific reason for using the Lenna image in a general talk or in a general journal, where the audience will not have eyes trained for this image. In these situations I suspect the image is appearing out of laziness, something a general audience or a general journal is within its rights to protest.

I will not raise the various sexual issues of the image since those who understand these arguments already know them, and I cannot think of any action that can be taken based on them that is not some sort of censorship.

But I do believe it is unprofessional to use this image. In my experience, young people react differently than secure established researchers do when exposed to unprofessional behavior. Established researchers can be circumspect about such things and respond by thinking, "What a goof-ball" (or something like that). (And established female researchers have much bigger fish to fry: salary differentials, never getting to be chairman, never sitting on scientific panels, etc.) But when you're young, you're not committed to the field and are still trying to figure it all out. Imagine seeing such a transparency or reading such an article as a graduate or undergraduate student. It may just depress and anger you simply because it's tacky. Or you may understand the cerebral defense behind it but think, "My goodness, if I'm running into this now, how many more times will I run across this type of behavior? I can't imagine people in the business world putting up these transparencies...." Thus sensible women and men — a commodity we'd rather keep than lose — may be driven away from our field. When I was young, there were a number of times when a cloud of miserable confusion would have lifted had some senior person said something coherent in protest or at least rolled their eyes.

Certainly, academia is complicated because social life and professional life are very intermixed due to our spending so much time at work. We generally try to be thoughtful and open-minded and are tolerant of unusual behavior. But boorish behavior has a disproportionate effect on those who already wonder if they belong in academia at all: the young, especially young outsiders.

What you can do and what could be done

Much of the offensiveness of the Lenna image is its source and history. It is unfortunate that our colleagues in applied mathematics and analysis who have met this image in their own work and seminars have unwittingly

accepted and brought someone else's poor behavior into our community. It is unfortunate that the engineering professional societies, by choosing to ignore the copyright issues involved with the appearance of this image in their own journals have enabled it to move into mathematics journals as well.

Each and every one of us can stand up and give the legal attribution of the image whenever we see it in talks. Demanding that the legal attribution appear should radically decrease how often it appears in talks and articles. One would hope that it would spur the speaker to prepare a new transparency in which a clown or a puppy is image-processed for their next talk. I do not believe there is any point in personally attacking the speaker. It is possible they are ignorant of the source of the image. If their work requires that it be a face, they should choose an iconic face: "How many visual cues do you need before you can tell it's Albert Einstein?" "How much distortion can Albert Einstein take before he looks like someone else?" I would not be offended if they image-processed Marilyn Monroe or Princess Di.

There are a number of things our professional societies could do. For example, they could run articles in their newsletters in which they discuss what types of photographs and images may cause problems. These articles should address the Lenna image, its source, and its long history.

In addition, the boards of our professional societies could write to Al Bovik, the editor-in-chief of *IEEE Transactions on Image Processing*. He often starts the journal with a column of some sort; they could ask him to dedicate the column to this topic. He might do this if the letter came from a respected professional society or from respected senior mathematicians, including some with pre-existing ties in the image-processing community.

Finally, respected image-processing researchers could create a website with a collection of new standard images, which have been processed using a wide range of common algorithms. The images could be downloaded by other researchers. If the site were blessed and publicized by Bovik, it could have a huge impact by introducing modern standardized digital images and thus drumming Lenna out of the system.

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 twelve 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 New Orleans, Louisiana, January 10–13, 2001 (*pending final funding approval*). The exact date of the Workshop is not known at this time; most likely it will be Saturday, January 13, 2001 with an introductory dinner and discussion group on either Thursday or Friday evening (1/11 or 1/12).

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 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.

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

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

Phone: 301-405-7892

Email: awm@math.umd.edu WWW: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **September 1, 2000**. 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, the National Security Agency, and the Office of Naval Research. Home institutions also provided support. Hearty thanks to all the funding agencies!

Central Missouri State University

Central Missouri State University held its first Sonia Kovalevsky High School Mathematics Day on October 5, 1999. Fifty-one students and 14 teachers attended the event and seemed to thoroughly enjoy the day.

The day started with registration and refreshments. The group was welcomed to campus by Central's Provost and Vice President for Academic Affairs, Dr. Kyle Carter. Then it was off to the first workshop session. The students chose from three workshops: "Motion, Math and the Calculator-Based Laboratory" led by Cathy Battles of Lee's Summit High School; "Let's Solve a Cipher System" led by Madonna Chernesky of the National Security Agency, and "Jessica and the Case of the Cooling Body (or How Can You Tell How Long a Math Professor Has Been Dead?)" led by Anita Salem of Rockhurst University. The teachers also attended a workshop during this time, "Applying Mathematics (Calculator-Based Laboratories)" led by Terry Goodman of Central.

After a brief refreshment break, the students formed teams of two or three for the problem-solving competition. The problems were tough, but the students were up to the challenge. Their teachers gathered in a separate room to visit and give the problems a try for themselves. At 11:00 the students chose a second workshop to attend while their teachers attended the workshop "Making Mathematics More Accessible to Females" led by Cindy Ramey and Sue Sundberg of Central.

The afternoon provided to be just as busy and interesting as the morning. During lunch, Beth Hilbish, a Central Student, gave a wonderful report about Sonia Kovalevsky and her struggles as a female mathematician of the 19th century. After lunch, the group took tours of the Department of Mathematics and Computer Science. They saw demonstrations in a computer lab and an

electronic classroom, and they visited the mathematics library, where Ed Davenport, chair of the department, spoke to the students about programs offered by the department.

Four panelists spoke and answered questions during the career panel discussion. The panelists were Ann Sharp, an actuary from William M. Mercer Consulting Firm; Madonna Chernesky, a mathematician from the National Security Agency; Lillian Cooper, a manager in information technology from Allied Signal; and Rhonda McKee, a professor of mathematics at Central.

The day ended with a reception to honor all participants. Students and teachers were presented with certificates, and the winners of the problem-solving competition were given prizes, including t-shirts, key chains and calculators. One calculator was given away in a drawing.

Everyone involved seemed to have a great time. One student summed up her experience this way: "Having a math day really helped me understand math more and made me realize how many different careers there are in mathematics. The teachers were good at making their point and making it interesting." Another student said, "I had no idea what careers involved math that I never knew existed. I had a great time!" The teachers said that they enjoyed their workshops and appreciated the time that they were able to spend in discussion with other teachers. With such positive feedback, we hope to be able to have another SK Day next year!

Kalamazoo College

Kalamazoo College held its first Sonia Kovalevsky Day on Saturday, October 2, 1999. There were 18 girls registered, but only eleven girls actually attended the event. The students ranged from freshmen to seniors. Our theme, "When Sound Meets Symbol" was designed to tie the art of change ringing (bell ringing) to the theory of groups. We gathered in Stetson Chapel on campus which has eight large tower bells in place. The bells were being rung as the students arrived and met each other. Dr. Joan Hutchinson, a mathematician and a change ringer from Macalester College, was our

Directors: Rhonda McKee, Martha Diehl, Sue Sundberg

Michele Intermont, Assistant Professor of Mathematics

principal speaker. She began the morning for us with a short introduction on "English Bell Ringing." Throughout the morning, we listened to the bells and worked with handbells, all the while secretly thinking about permutation groups, and a bit about the notion of group in general. The girls received a tour of the bell tower, chimed some bells, and then got to work writing permutations that would be rung. Since it takes months to learn to ring these large tower bells properly, the Kalamazoo College Guild of Change Ringers, which includes mathematicians John Fink and T. Jefferson Smith from Kalamazoo College and Robert Messer from Albion College, was on hand to ring the bells. The members of the Guild also facilitated the handbell activities such as "ringing bodies" and "cross and stretch" that occupied the rest of the morning session.

After lunch in the dining hall, we moved to the mathematics building and continued our exploration of group theory in a more usual fashion. Dr. Hutchinson gave a talk entitled "Change Ringing and Its Mathematics." After this, we engaged in an exploration of Cayley graphs led by Dr. John Fink. Using the permutations we had written in the morning and the rules of bell ringing, we created graphs and looked for Hamiltonian cycles. The second session, on braid groups, was led by Dr. Hutchinson. We created our own braids with yarn, and examined what they had in common with the bell permutations we had been creating. Finally, in the third session, led by Dr. Michele Intermont, we formally defined the term *group*, quickly looked at symmetries of triangles and squares (which looked an awful lot like permutations on 3 bells (!) and had a lot in common with permutations on 4 bells). We looked at examples such as the integers under addition, rational numbers under addition, real numbers under addition modulo 12. We also examined some non-examples such as the integers under multiplication, etc.

At the end of the day, each student was given a copy of Dorothy Sawyers' book *The Nine Tailors* with a bookmark listing a few accessible group theory references, the *AWM Newsletter*, and the *Careers That Count* booklet.

We had planned to host a parallel session for teachers with Dr. Ellen Maycock Parker of DePauw University. After spending the morning with the students experimenting with the bells, the teachers would have adjourned to a computer classroom to explore group theory in more depth than the students. As part of this,

each teacher was to receive a copy of Dr. Parker's book *Laboratory Experiences in Group Theory* to take home. Due to lack of interest, however, this session was cancelled.

Participation in this event was much lower than we had hoped. Several students registered for the day, but failed to appear. We mailed materials and registration forms to most of the high schools in Kalamazoo County. In addition, we targeted several schools outside of the county. We followed this mailing with telephone calls to the schools, speaking directly with mathematics teachers at the schools. In addition, Kalamazoo College prepared a press release about the event which was sent to the local newspaper and the local National Public Radio station. Although the date of our event did not conflict with the SAT test, it still seems that autumn is a busy time of year; several teachers commented that they would have liked to come, but couldn't, and we imagine that students also had conflicts. Despite this setback, we would like to hold more Sonia Kovalevsky Days in the future.

We owe many, many thanks to the K College Guild of Change Ringers and to the AWM for making this day possible!

North Carolina A&T

The North Carolina A&T Sonia Kovalevsky High School Mathematics Day took place on Thursday, November 4, 1999. About 150 participants from the high schools in the Greensboro/High Point/Winston Salem area participated in the event. This year we were very successful in targeting some local high schools with a high minority enrollment. More than 60% of participants were members of a minority group.

The event started at 8:30 with registration and coffee, juice and doughnuts. The morning session began with opening remarks about the background and the history of the Sonia Kovalevsky Day given by Alexandra Kurepa of NCA&T which was followed by a welcome from the Dean of the College of Arts and Sciences, Ethel Taylor. Giles Warrack of NCA&T gave a presentation on the life of Sonia Kovalevsky, introducing the audience to the interesting and productive life she led. The principal speaker was Cora Sadosky from Howard University who

Alexandra Kurepa

gave a talk on Mathematics and Girls. The talk quickly became a "town hall meeting" with great participation from the girls in the audience. As a former President of the AWM, Sadosky shared her experiences and ideas trying to provide encouragement and inspiration to students as well as giving their teachers support and guidance in educating young women of tomorrow. The students enjoyed her one-hour lecture, and the conversation continued during the break. Then students had a choice of one of the two workshops offered: "View the Beauty of Mathematics: Patterns in Chaos" conducted in the computer lab by Mingxiang Chen of NCA&T, or "Careers in Mathematics" presented by Errol Rowe, who himself had a nonacademic career in mathematics prior to coming to NCA&T. All the students that participated in the Sonia Kovalevsky Day were given the *Careers That Count* booklet published by AWM. The workshop provided additional opportunity for the students to ask questions and obtain more information. As most of the students attended student workshops, a small group joined the teachers in a workshop entitled "Gender Gap in Mathematics and Computing" given by Virginia Knight of Meredith College in Raleigh. As the chair of a "female" institution Knight had the experience and the data to head an interesting conversation among high school teachers, high school students, A&T faculty and A&T math education graduate students.

After lunch a one-hour workshop for all participants was given by Didon Pachner, a representative from the National Security Agency and a mathematician who is out in the "real world" doing what the students consider "fun things." Pachner provided the audience with great information on how and where to apply for college support, what to expect at a job with the National Security Agency, which is the largest employer of mathematicians outside of education, and what her day as a mathematician in the real world looks like. The workshop was entitled "Elementary Cryptanalysis" and required student participation. Her lecture was very informative and entertaining, and she left all of us with a big homework assignment that she will come and collect next year at our Fourth Sonia Kovalevsky Day! The program ended by 2:30 to allow students to get back to their schools before the end of a school day and take the buses home. This year we actively included the student chapter of MAA in the event. Their role was not only to help with the organizational part but also to be role models for these future students, to talk to them, answer

questions and inform them about the activities of the chapter and student life on campus.

Organizing this event and coordinating the activities with local high schools is always a very demanding and challenging job. However, the reward of bringing such a large number of young women to campus and introducing them to some very successful women mathematicians is beyond words. We feel that we have influenced some of these young women and that we will see them one day in a mathematically oriented career.

North Dakota State University

The Sonia Kovalevsky High School Day was held on Saturday, October 16, 1999. Nineteen students and two teachers from the area participated. One reservation high school was again a major participant, sending six students and a teacher. These participants drove more than six hours to attend. We were able to provide local lodging for one night, a little additional support to help with their expenses. This kind of effort underlines the need for events such as ours in a rural state.

Following a continental breakfast the Mathematics Department Chair, Dogan Comez, welcomed everyone. Each participant received a notebook, pen and program. Dr. Jane Hawkins of the University of North Carolina at Chapel Hill presented the keynote address. Jane neatly worked a short presentation on Sonia Kovalevsky into her talk, which was enthusiastically enjoyed by the students.

After the keynote address the students participated in two workshops. In the first workshop, students learned about position and velocity in a very engaging way. Their motion was measured using a strobe-like device interfaced with a programmable calculator. The students then tried to match their movements to displayed graphs of either velocity or position. Of course, in order to try to match the graphs, they first had to interpret them. This workshop provided an energizing kickoff for the program. The second workshop involved public key cryptography, and this time the students were actively and enthusiastically involved in sending and decoding messages sent through a simplified public key system.

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

Immediately following lunch, Hursha Raimaya, one of the repeat participants, gave a short speech on Innumeracy. She had prepared the speech after our conference last year and had used it to win prizes in several speech competitions. We then presented a career panel for the students. The participants included Jane Hawkins (University of North Carolina mathematics professor), Elizabeth Mossberg (NSA analyst), Ayse Sahin (NDSU mathematics professor), Lisa Nolan (veterinarian and NDSU microbiology professor), and Manya Harsch (University of Minnesota Dentistry School statistician). The participants explained the kinds of work that they perform and how mathematics has helped them achieve their career objectives. The questions asked by the students covered a wide range of topics.

Following the career panel, students took part in two of three additional workshops. One workshop concerned regular solids; the students looked for various patterns using convex polyhedral models. Our NSA visitor presented a workshop on classical cryptanalysis in which the students solved a transposition cipher. In the last workshop participants found patterns in several problems related to graph theory. At the end of a long but enjoyable day for all, first-time participants received a copy of the John Allen Paulos book *Innumeracy* while second-year participants received the MAA book *She Does Math!* All participants received a copy of the AWM brochure *Careers That Count*, an AWM *Newsletter*, information about AWM and a postage paid envelope containing an evaluation sheet.

From the organizer's point of view, we were happy with the day. Participation was not quite as high as it was last year. Last year we got a substantial boost in participation when our news release appeared in local papers, but this year the press release didn't make it into local papers until less than a week before the event. Again we were disappointed by the lack of participation by teachers. As last year we had a web page for our event which allowed students to look into the program and get their questions answered on-line. (See <http://skday.math.ndsu.nodak.edu/>.)

The Sage Colleges

The Sage Colleges were pleased to host their first Sonia Kovalevsky High School Mathematics Day on Friday, October 15 and Saturday, October 16, 1999. The program was held on the campus of Russell Sage Col-

lege for Women in Troy, New York. Six individuals, mostly faculty of The Sage Colleges, presented hands-on workshops to the students and teachers, while five women participated in a career panel. Throughout the day, Russell Sage College Students belonging to the group SMaRT (Science, Mathematics, Research, and Technology) Women helped with organization, directing traffic, and greeting the visiting students. We hosted a total of 15 students and three teachers from four schools.

The day began at 8:30 a.m. with registration and refreshments. Each student had her own folder containing a copy of the day's program, a campus map, an information sheet on AWM, the booklet *Careers That Count*, pad of paper, pen and pencil, and an invitation to a Russell Sage College Open House. The teacher folders contained the same material, but instead of *Careers That Count* they were given a copy of the book *She Does Math!* All participants were given T-shirts featuring a graphic and quote of Sonia Kovalevsky. Once all participants were registered, Professor Tina Mancuso of the Division of Mathematics and Computing Sciences of the Sage Colleges, gave some opening remarks and a PowerPoint presentation on Sonia Kovalevsky's life.

There were two morning sessions and one afternoon session of workshops. During each session, students could choose to attend one of two workshops, while there was only one set of workshops for the teachers. Given the presentation and recent interest in using rubrics, we were able to arrange for the purchase of the book *Performance Tasks and Rubrics — High School Mathematics* at a discounted price, thanks to the sponsorship of The Book House in Albany, New York.

At the luncheon, Dean Enid Burrows of Russell Sage College gave some welcoming remarks. The sandwich buffet provided a wonderful opportunity for the Sage faculty and SMaRT students to chat with the visiting faculty and students.

The career panelists were: Francis Bronet, Dean of the School of Architecture, Rensselaer Polytechnic Institute; Nicole Clay, secondary school mathematics teacher, Long Trail School; Phyllis Conroy, Director of Academic Technologies, The Sage Colleges; Lynn Edmunds, Statistician, School of Public Health, The University of Albany; and Arlene Woodruff, Senior Actuary, Health Underwriters Group. Each panelist gave a five-minute introduction to herself, her field, her particular job, her education and career path, etc. This was followed with questions from the audience. This was a

wonderful way for the students to hear first-hand about careers that involve the use of mathematics, whether directly or indirectly. A reception immediately followed, giving the students and panelists an opportunity to interact in a one-on-one fashion.

Following the career panel, evaluations were distributed to all students and teachers attending. Overall, the evaluations were very good. The students really enjoyed their day. However, since some of the sessions ran longer than expected, lunch was shortened. The students would have preferred more time for their campus tour. Those students and teachers who chose not to stay overnight departed after the evaluation forms were filled out.

Ten students and one teacher elected to stay overnight. They were housed in the residence halls with eight students from SmART Women. First they could choose between recreation time in the Gator Pit (a workout facility on the Sage campus) or leisure/game time with the SmART students. A pizza dinner followed in German House, one of the residence halls. This was particularly fitting as five of the students staying overnight were German exchange students. Then we held a "Math Jeopardy" tournament. Teams of four or five were created with each team having at least one SmART student. Math Jeopardy was divided into two parts. Teams were given a grid of answers on four categories. They were Branches of Mathematics, Mathematical Symbols, Famous Mathematical Quotations, and Mathematica and Minitab. The teams had 20 minutes to work on this section. Next, the teams worked to answer three questions related to the day's workshops and drawn from *She Does Math!* and *Earth Algebra*. Each student was provided with a TI-85 calculator and could use a computer which had Internet access and the programs Mathematica and Minitab to use in the solution of the problems. The team that accumulated the most points at the end was declared the winner. Through generous donations from Follett Bookstores (the campus bookstore), each member of the winning team was given a thermal travel mug bearing the Russell Sage College name. Faculty served as judges, and this activity was well received.

We rounded off the evening by relaxing and showing the movie "The Net" with Sandra Bullock and making our own sundaes. The movie featured a female computer scientist trying to solve the mystery of stolen identity.

Saturday began with a catered brunch, followed by a presentation by an admissions counselor on using the

web to search for colleges. At 11:30 the students filled out evaluations based on the evening and morning program, checked out, and departed. However, several students left early because the SATs were being given. This portion of the program received rave reviews.

As other hosts of Sonia Kovalevsky Days have mentioned, our greatest difficulty was in the area of recruitment. We sent mailings to ten local high schools in the Spring of 1999, describing our program and inviting them. We only heard back from two high schools. In September we sent follow-up packets. We found the best way to spread the word and recruit was to make phone calls to individual teachers at the school. We have funding from the MAA/Tensor Foundation for a similar program to be held next fall. We plan to begin in Spring 2000 again. This time we will mail to 30 local schools. Another concern was the date. During our Friday/Saturday program, several of the area high schools were having homecoming. In addition, the SAT's were being given. This caused several students to back out at the last minute. We gained particular insight from one teacher who was unable to participate. She explained in detail the difficulty of getting a bus for a field trip. She explained how the event needs to begin after all classes have begun and how the bus needs to return before the end of school. When I suggested sending the students without her, she thought that was an excellent idea. Another school also chose that option. We will offer it as an option to all schools next year.

Based on the discussions and evaluations, the students most enjoyed the career panel. They were happy to meet people in the field. The teachers really enjoyed working on web pages. They wished the session were longer. Although we were disappointed in the lower than expected numbers, we feel the day was a great success. The program was well received and all the teachers said they would participate again. Also, the SmART students loved the experience. They were apprehensive about hosting high school students but they all said they would do it again. We would like to thank you very much for the opportunity to do this.

St. Joseph's University

St. Joseph's University hosted its second Sonia Kovalevsky High School Mathematics Day (SKHSMD) on Saturday, October 7, 1999. Twenty young women and four teachers from six high schools in the city of

Philadelphia attended this event. Of the 20 students seven were African-American and three were Asian American. The workshop leaders were all members of the faculty from the Department of Mathematics and Computer Science at St. Joseph's University.

After registration and continental breakfast, the opening session began with a welcome from SKHSMD coordinator, Dr. Elaine Terry. Melissa Hudak, a mathematics major, welcomed the students and talked about being a math major at the University. Ms. Martina Leaphart followed with a welcome from the Office of Admissions.

Dr. Deborah Lurie gave the first of three workshops, entitled "What Are My Chances?" In this workshop the students were introduced to the concept of probability and the use of probability models to evaluate the likelihood of an event occurring. Through experiments with dice, the students were able to assign probabilities using empirical results and compare them to those assigned theoretically. The students were given a packet of worksheets with additional experiments to pursue on their own.

Workshop II was a problem-solving contest that was conducted by three St. Joseph's University students: Melissa Hudak, Michelle Barbeta, and Gina Panichella. The students were placed in teams of four or five. Each team was given six problems to work on for thirty minutes. With the help of faculty, the St. Joseph's University students came up with the problems. Number theory and geometry problems were given. The students were also given a website where they could find similar problems.

Workshop III was held in Barbelin Hall. Dr. Stephen Cooper and Dr. Susanna Wei led the computer workshop entitled "Creating Your Own Saturday Morning Cartoons Using Alice." The students were given a demonstration about how to use (and then given a chance to try out) Alice. Alice is a software package for building 3-dimensional virtual worlds. Alice allows the students to build animated sequences involving 3-dimensional objects they create or select. At the same time, it helps to teach them important problem solving skills and programming concepts.

Following this workshop the group headed to the Campion Student Center for a buffet lunch in the North Lounge. Approximately twenty minutes into lunch, a career panel consisting of three professionals was convened. The three professionals were: Laura Corcoran, cryptologic mathematician with the National Security

Agency; Kathleen Jenkins, engineer with NASA; and Sandi Cooper, software engineer with IBM. Each professional was given ten minutes to speak about her career and how mathematics played a role. A question and answer period moderated by Dr. Terry followed.

Dr. Agnes Rash, Chair of the Department of Mathematics and Computer Sciences at St. Joseph's talked about the life of Sonia Kovalevsky, including both professional and personal aspects of Dr. Kovalevsky's life. Dr. Rash discussed the hardships that women of Dr. Kovalevsky's generation endured. She entertained questions from the students after the twenty-minute talk.

The team from Archbishop Ryan High School won with the most correct solutions. Each of the four students was given a Hoberman Mini Sphere. All of the participants were given a Certificate of Participation. Everyone received writing pads from the Admissions Office, and Kathleen Jenkins gave the students key rings and stickers with the NASA logo. The day ended with a group photo taken outside the Campion Building.

As the questionnaires indicate, the second Sonia Kovalevsky High School Mathematics Day at St. Joseph's University was a success. We look forward to another successful day next year.

University of Mississippi

The University of Mississippi held its Sonia Kovalevsky High School Mathematics Day on Thursday, September 23, 1999. We invited teachers from rural high schools in the area to bring female juniors and seniors to participate in the day. The 41 students who attended were accompanied by six teachers from different high schools in the area. Of the 41 students, twelve identified themselves as minorities.

The event is the second such program at the University of Mississippi. The organizer of the meeting was James Reid, an associate professor in the Department of Mathematics at the University of Mississippi. He was assisted by a committee of faculty members from the mathematics department including Dale Bowman, Gerard Buskes, and Patricia Treloar. The staff of the math department also spent a great deal of time helping with mailings and arrangements. Several graduate students also volunteered their time during the day.

Learning from our experiences of the previous year, we planned a shorter program this year to encourage greater participation from students and teachers who had

some distance to travel to the event. James Reid opened the program with welcoming remarks and introductions. Immediately following, Gerard Buskes gave a brief history lesson on Sonia Kovalevsky and her contributions to mathematics and to the women who followed her. Dr. Buskes is a professor in the Mathematics Department at the University of Mississippi and the editor of an international newsletter on the history and pedagogy of mathematics.

Dale Bowman, an associate professor in the math department, orchestrated an activity designed to simulate a biological field experiment. Students were shown a large tub filled with animal crackers, simulating a population of unknown size of animals in the wild. A sample was taken from the tub by an assistant from the audience who was a recent graduate from the math department and currently a mathematics teacher at Olive Branch High School. The assistant counted the crackers in the sample, "tagged" them and "returned them to the wild." Students were split into groups, and each group was then allowed to take a second sample and use their sample to estimate the size of the entire population. The activity was very successful in stimulating the groups to discover approaches to use in estimating the population size. The students were also interested to discover how different population estimates could be when based on samples. Dr. Bowman worked as an actuary for several years before obtaining her Ph.D. and was able to give the students some idea about the kinds of opportunities available to mathematics majors.

Following the activity Jane Gerber gave a talk on career opportunities for math majors and her experience in the work place. Ms. Gerber graduated with a Bachelor of Science degree in mathematics in May of 1998 from the University of Mississippi. Since her graduation she has been working at Ernst and Young in Memphis, TN. She encouraged the students to attend college by emphasizing the importance of a college degree in the workplace. She also spoke of the employment prospects available to math graduates. The participants enjoyed hearing of her personal experiences as a math major.

Next, participants had lunch at the student union. After lunch students were brought to the math building where snacks were provided in the math library. While participants visited with faculty members and graduate students, groups of ten to fifteen students were taken to a computer laboratory where they enjoyed the competition of trying to "earn" a million dollars. James Reid

conducted the session in the computer program Mathcad. Students were allowed to modify interest, saving, and inflation parameters with the goal of trying to save exactly one million dollars. Students were engaged by the monetary aspect of the problem and enjoyed the connection between the "real world" and mathematics.

We plan to contact students and teachers who participated in the program when they are ready to graduate to attempt to encourage their interest in mathematics. Further, the teachers will be contacted immediately in order to assess this year's event. Continued contact is extremely important to the students from small rural areas where poverty levels are high and interest in mathematics may not be fostered. We all felt the second Sonia Kovalevsky Day was even better than the first and would like to make the Sonia Kovalevsky Day an annual event at the University of Mississippi.

CBMS MEETING

Suzanne Lenhart represented AWM at the Council Meeting of the Conference Board of the Mathematical Sciences at the MAA Building in Washington D.C. on December 4, 1999. At the meeting, Judith Sunley and Philippe Tondeur from the National Science Foundation discussed programs in Education and Human Resources and the overall prospects for the improvement of NSF funding for mathematical sciences.

David Lutzer, Director of the 2000 CBMS Survey, presented the plan of selecting survey questions. He mentioned some particular areas for questions — teaching of statistics, training of pre-service teachers, and follow-up of teaching reform efforts. To make suggestions about the survey and to get further information, contact Lutzer at lutzer@math.wm.edu.

Joan Ferrini-Mundy, the Chair of the Standards Writing Group, described the the process of generating feedback and review of the preliminary NCTM Principles and Standards document. The document will be released in April 2000 at the NCTM national meeting. The AWM office will receive a summary version of the document.

Suzanne Lenhart, AWM President-Elect

Thomas Berger and William Haver reported on the work of the Committee on the Undergraduate Program in Mathematics involving a new document on undergraduate curriculum. The document will discuss "What should a math major in 2010 know?" For further information, contact Berger at trberger@colby.edu or cupm-curric@maa.org.

James Lewis and Alan Tucker discussed the draft report of the CBMS Mathematics Education of Teachers Project. To see a copy of the current draft report, see the web page www.math.org/cbms/metdraft/index.htm. The writing team would appreciate input from the mathematics community about the draft report.

The next CBMS Council meeting will be May 6th.

OPPORTUNITIES

REU Program at the University of Tennessee – Knoxville

The Department of Mathematics of the University of Tennessee, Knoxville, will sponsor a summer research program for outstanding mathematics majors; the program is funded by the National Science Foundation and the Tennessee Science Alliance. Research projects are available in several pure and applied mathematics areas. The program will be from June 5, 2000 to July 28, 2000. For further information, contact Suzanne Lenhart at 865-974-4270 or lenhart@math.utk.edu.

Other REU Programs

Similar opportunities are also available at other institutions. For further information, see <http://www.nsf.gov/home/crssprgm/reu/reulist.htm>.

Hudson River Undergraduate Mathematics Conference

The seventh annual Hudson River Undergraduate Mathematics Conference will be held on April 8, 2000, at Vassar College in Poughkeepsie, NY. The conference includes presentations on mathematics by both faculty and students, and both are encouraged to participate. Conference sessions are designed so that some presenta-

tions are accessible to undergraduates in their first years of study, and others are accessible to third or fourth year undergraduate mathematics majors. Additionally, Peter Hilton will give a presentation on some generalizations of the Chinese Remainder Theorem. You can find out more about HRUMC by visiting the conference web site: <http://www.skidmore.edu/academics/mcs/hrumc.htm>.

Connecting Women in Mathematical Sciences to Industry

The IMA Career Workshop "Connecting Women in Mathematical Sciences to Industry" at the Institute for Mathematics and its Applications, University of Minnesota in Minneapolis, will be held September 8–10, 2000. This workshop will be co-sponsored by AWM.

Mathematical problems arising in industrial applications typically involve complicated, interdisciplinary issues of formulation, analysis and solution. Many women in mathematical sciences today are contributing to this important work in industrial applications, but more women should be informed of the opportunities provided by real-world problems for high-quality research, contributions to practical solutions and rewarding careers. This weekend workshop is intended to increase and enhance the awareness of women mathematicians about industrial applications.

The diverse nature of industrial applications will be conveyed through technical talks by selected participants, chosen based on their successful experiences with real-world problems. A panel of women established in successful industrial careers will give their viewpoints to encourage women to become involved with industrial problems. Focused small group discussions will be included to exchange ideas on strategies to enhance the participation of women in industrial applications.

The organizing committee consists of Rosemary Chang, Suzanne Lenhart and Margaret Wright. Contact Suzanne Lenhart at lenhart@math.utk.edu or the Institute at ima.staff@ima.umn.edu for further information. See the web site <http://www.ima.umn.edu>.

Project NExT: New Experiences in Teaching

Project NExT (New Experiences in Teaching) is a professional development program for new or recent Ph.D.'s in the mathematical sciences that addresses a broad range of issues, focusing on the teaching and

learning of undergraduate mathematics. Each year, about sixty faculty members from colleges and universities throughout the country are selected to participate in a workshop preceding the MAA summer meeting, activities during MAA meetings, and an electronic discussion network.

Faculty who are just beginning or just completing their first year of full-time employment with teaching responsibilities at the college/university level are invited to apply to become Project NExT Fellows.

The first event for the 2000–01 Fellows will be a Workshop, July 31 to August 2, 2000, just prior to the summer MAA meeting (the Mathfest) in Los Angeles, CA (August 3–5, 2000). At this Workshop and at Project NExT sessions during the Mathfest, Fellows will explore and discuss issues that are of special relevance to beginning faculty, including: New approaches to teaching calculus, pre-calculus, and more advanced courses; Alternative methods of teaching and assessing student learning; Involving undergraduates in mathematical research; Using technology in the classroom; Perspectives from pedagogical research; Writing grant proposals; Balancing teaching and research. The Fellows will also have an opportunity to meet with Fellows who began the program in previous years.

Following the Workshop, Project NExT Fellows will attend the summer MAA Mathfest, August 3–5, 2000, participating in all the opportunities of that meeting, and choose among special short courses organized by Project NExT. During the following year, Project NExT Fellows will participate in: An electronic network that links Project NExT Fellows with one another and with distinguished teachers of mathematics; Special events at the Joint Mathematics Meetings in New Orleans, LA, January 10–13, 2001; A second workshop in 2001 and the MAA Mathfest immediately afterwards (probably in Madison, Wisconsin, August 2–4). Funding for room and board at the Workshop in Los Angeles will be provided for participants. Fellows also do not have to pay for the special short courses at the summer Mathfest that are organized by Project NExT. Institutions employing the Project NExT Fellows are expected to provide financial assistance for all other expenses associated with the meetings, and the level of institutional support is a consideration in the application process. Limited funds are available to assist those institutions that are unable to afford full support.

Application forms may be found at <http://archives.math.utk.edu/projnext/>.

The application deadline is **April 14, 2000**. For more information, contact one of the following: T. Christine Stevens, Director of Project NExT, Department of Mathematics and Mathematical Computer Science, Saint Louis University, 221 North Grand Blvd., St. Louis, MO 63103 (314-977-2436; stevensc@slu.edu); Joseph Gallian, Co-director, Department of Mathematics and Statistics, University of Minnesota-Duluth, Duluth, MN 55812 (218-726-7576; jgallian@d.umn.edu) Aparna Higgins, Co-Director, Department of Mathematics, University of Dayton, Dayton, OH 45469 (937-229-2103; higgins@saber.udayton.edu).

NSF-CBMS Regional Conferences

The National Science Foundation has funded four NSF-CBMS regional research conferences to be held in the summer of 2000. These four will bring to 276 the total number of such conferences since the NSF-CBMS Regional Research Conference Series began in 1969.

Support for about thirty participants is provided for each conference; the organizer invites both established researchers and interested newcomers, including post-doctoral fellows and graduate students, to attend. This summer's topics are: Interactions of Harmonic Analysis, Statistical Estimation and Data Compression (May 22–26, www.math.umsl.edu/CMBS); Superconvergence in Finite Element Methods (May 22–26, www.math.ttu.edu/~zhang); Lectures on the Geometrical Study of Differential Equations (June 20–25, donaldson.math.howard.edu/~reb); and The Existence and Non-Existence of Periodic Orbits in Smooth Dynamical Systems (July 10–14, www.mercer.edu/math). Krystyna Kuperberg will be the lecturer at the final conference of the summer.

Proposals for 2001 conferences are requested; the closing date is **April 18, 2000**. Each five-day conference features a distinguished lecturer who delivers ten lectures on a topic of important current research in one sharply focused area of the mathematical sciences. The lecturer subsequently prepares an expository monograph based upon these lectures, which is normally published as a part of a regional conference series. Information about the series and guidelines for submitting proposals may be obtained from: CBMS, 1529 Eighteenth Street, NW, Washington, DC 20036; 202-293-1170; <http://www.maa.org/cbms/cbms.html>.

BUDGET 2001

SCIENCE LOBBY: NEWT GINGRICH URGES SCIENTISTS TO SPEAK OUT. "The fate of our country may depend on whether or not scientists recognize that they have real responsibilities as citizens," the former speaker of the House wrote in the *Boston Globe*. Describing the mind set of most scientists as a conviction that "their work is so obviously important that they should not have to explain it," Gingrich asks scientists to attend town hall meetings, contact members of Congress, and go on talk radio. "All I'm asking is that every scientist spend an hour or two each month being an active citizen. Do your duty and educate your fellow countrymen about the exciting world that awaits...and we will help you find the resources to achieve these breakthroughs."

THE STATE OF SCIENCE: A SUCCESS STORY FOR A JOINT EFFORT. "To accelerate the march of discovery across all disciplines of science and technology, my budget includes an unprecedented \$3 billion increase in the 21st Century Research Fund, the largest increase in civilian research in a decade." It came toward the end of the longest State-of-the-Union speech in history, and went unremarked upon by the media, but the President's call reflected three years of intense lobbying by scientists. Three years ago, President Clinton's budget request marked five straight years of decline in science investment. On 4 Mar 97, representatives of 23 scientific, mathematical and engineering societies met with reporters to call for an across-the-board increase in research. They stressed the interconnectedness of modern science. APS President D. Allan Bromley predicted that economic growth would pay for the increase. That message has gotten through to the White House. Now we must convince Congress.

BUDGET: THE TIDE RAISES ALMOST ALL THE BOATS. Neal Lane, the President's science advisor, was clearly elated to be delivering good news at Monday's budget briefing. The overall FY 2001 budget

is up a mere 1.5%, but calls for boosting basic research by 7%. Media coverage of the budget included little mention of science, which is probably a good thing - the nail that sticks out usually gets hammered down. Some highlights:

NSF is the big winner. The total is up a stunning 17.3% to \$4.6B, and research is up 19.7%. There are major initiatives in information technology, nanotechnology, and biocomplexity.

DOE basic science programs are up 13%, including funding for the Spallation Neutron Source. No funds are budgeted to make up the \$400M National Ignition Facility overrun, it must come out of other lab programs. Secretary Richardson grouched to the press that "NIF science is sound, but the management stinks." Critics of the program told WN that the Secretary is only half right.

NASA got only a 6% increase overall, but space science is up by 9.4%. A well-timed initiative, Living with a Star (yucky title), will use several spacecraft, including a Solar Sentinel on the far side of the Sun, to track solar storms as the Sun rotates. With the 11-year solar maximum almost upon us, the budget debate in Congress may be played out against a backdrop of power failures, zapped satellites, radio blackouts and astronauts risking dangerous levels of exposure to assemble the ISS.

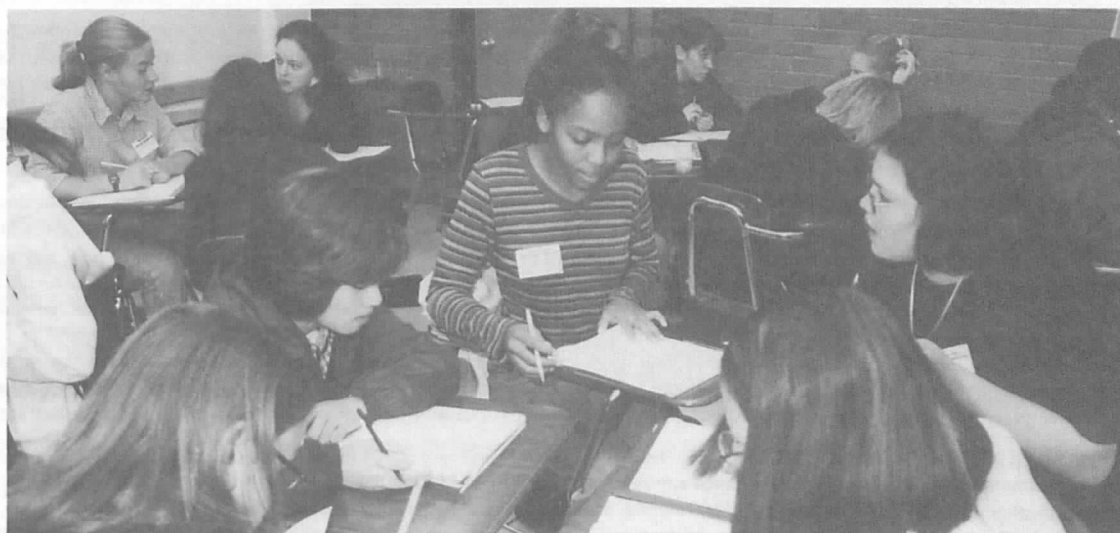
NIST wants a \$50M Institute for Information Infrastructure Protection (great timing), and a 23% increase in the Advanced Technology Program. I think they call for a big increase in ATP each year just to give Republicans something to vote down.

Enacting such a budget is another matter. In hearings this week, Rep. Joe Knollenberg (R-MI) demanded to know why DOE wants to increase funding for research on alternative energy sources when nothing has come out of the last ten years of research. He also objected to climate research, accusing the Clinton administration of implementing the Kyoto accords without consulting Congress.

from What's New by Robert L. Park, The American Physical Society (Note: Opinions are the author's and are not necessarily shared by the APS, but they should be.)



Carleton and St. Olaf Colleges' Summer Mathematics Program Reunion at the Joint Meetings.
 In front: Andrea Frazier, Anna Beckhorn; Seated: Deanna Haunsperger, Laura Chihara, Sarah Brown,
 Annie Draganova, Jackie Kohles, Steve Kennedy; Standing: Suzanne Lynch, Maria Slughter,
 Beth Robinson, Becky Weinhold, Katherine Crowley, Gretchen Christianson



St. Joseph's Problem-Solving Workshop, SKHS Day 1999

ADVERTISEMENTS

COLLEGE OF ST. CATHERINE - DEPARTMENT OF MATHEMATICAL SCIENCES - Assistant/Associate Professor, Computer Science - Full-time; three-year renewable contract; rank depending on qualifications; for Fall 2000. Responsibilities include teaching undergraduate classes and updating a computer science program to reflect the current trends in the field. Opportunities for teaching in a subfield or area of related interest, as well. Requirements: Ph.D. in Computer Science; will consider Ph.D. in Mathematics with strong computer science background or ABD in Computer Science with teaching experience. Review of applications begins March 15 and continues until position is filled. Submit an application letter, current curriculum vita, and the names of three references to: **Human Resources #00F12, The College of St. Catherine, 2004 Randolph Avenue, St. Paul, MN 55105**. For information, contact Professor Ann Sweeney at ajsweeney@stskate.edu. As an affirmative-action, equal opportunity employer, the College of St. Catherine actively seeks applications from members of ethnic and minority groups. EEO/AA.

GETTYSBURG COLLEGE - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Gettysburg College invites applications for a two-year position at the Assistant Professor level beginning August 2000. Applicants must have a Ph.D. in mathematics or applied mathematics or expect to complete all requirements for the degree by September 2000. Excellence in teaching and a commitment to research are essential. Preference will be given to an individual who is willing to teach a broad range of undergraduate mathematics courses and who has the desire to involve undergraduate students in research. Gettysburg College is a highly selective liberal arts college located within 90 minutes of the Baltimore/Washington area. Established in 1832, the College has a rich history and situated on a 220-acre campus with an enrollment of 2,300 students. The College seeks to promote diversity in its community through its affirmative action/equal opportunity programs. Please send a letter of applications explaining your interest in our department, a curriculum vitae, a brief description of your teaching methods and objectives, and a summary of your research goals to: **Mathematics Search Committee, Department of Mathematics, Gettysburg College, Gettysburg, PA 17325**. Also arrange for the committee to receive three letters of recommendation addressing teaching effectiveness and research potential. If you applied for our tenure-track position beginning August 2000, then please send only an email (bhelm@gettysburg.edu) or a letter indicating that you wish to be considered also for the two-year position, and do not resubmit your application materials. Completed application received by March 17, 2000, will receive full consideration.

PURDUE UNIVERSITY - DEPARTMENT OF STATISTICS - Faculty Position(s) in Statistics - The Department of Statistics has one or more openings for faculty positions. Screening will begin December 1, 1999, and continue until the position(s) is (are) filled. Essential Duties: Conduct advanced research in statistical sciences, teach undergraduate and graduate students and maintain service in the Statistics Department. Essential Qualifications: Require Ph.D. in Statistics or related field, in hand or expected by August 15, 2000. Candidates must demonstrate potential excellence in teaching. Salary and benefits are competitive and commensurate with qualifications. Rank and salary are open. Candidate for assistant professor should send a letter of application, curriculum vita and three letters of reference. For senior positions, send a letter of application or nominations, curriculum vita, and the names of three references. Purdue University is an AA/EO employer and educator. Send applications to: **Mary Ellen Bock, Head, Department of Statistics, Purdue University, 1399 Mathematical Sciences Building, West Lafayette, IN 47907-1399**.

SOUTHEAST MISSOURI STATE UNIVERSITY - DEPARTMENT OF MATHEMATICS - Seeking outstanding candidates for one or more tenure-track positions in Mathematics Education and/or Applied Mathematics at the Assistant professor level beginning in August 2000. Send the *AMS Application Cover Sheet*, a letter of application, vita, transcripts, and three current letters of recommendation, at least one of which addresses teaching qualifications to: **Department of Mathematics MS6700; Southeast Missouri State University; Cape Girardeau, MO 63701-4799**. Review of applications will begin immediately and continue until the positions are filled. The complete position description and the search status is available at <http://cstl.semo.edu/math/position.htm>. An EO/M-F/AA Employer.

SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE - DEPARTMENT OF MATHEMATICS - Temporary Positions - Temporary positions as Lecturer are anticipated for the 2000-2001 academic year. Starting date is August 16, 2000. Master's degree in mathematics or admission to candidacy required, Ph.D. preferred. Applicants must provide evidence of excellence in teaching and evidence of ability to teach effectively in English. Preference given to applicants with research interests compatible with those of faculty members in the department. Duties consist of 12 credit hours of undergraduate mathematics instruction each semester. Review of applications will begin April 3, 2000, and continue until positions are filled. Send applications (including transcripts) to: **Temporary Positions, Department of Mathematics, Mailcode 4408, Southern Illinois University Carbondale, Carbondale, IL 62901-4408**. Southern Illinois University Carbondale is an equal opportunity/affirmative action employer. Women and minorities are particularly encouraged to apply.

UNIVERSITY OF MINNESOTA - SCHOOL OF MATHEMATICS - Mathematical Biologist with interest in at least one of the following areas: functional genomics, analysis of complex metabolic networks, gene control networks, molecular evolution. This will be a tenure-track or tenured position. Level of appointment will be commensurate with qualifications. Ph.D. in mathematics or related field required by beginning date of appointment. Salary competitive. Consideration of applications will begin February 1, 2000 and continue until position is filled. Send curriculum vitae, description of research, and minimum 4 letters of recommendation to: **Professor Hans Othmer, School of Mathematics, University of Minnesota, 127 Vincent Hall, 206 Church Street, S.E., Minneapolis, MN 55455**. Phone (612) 624-8325. See also <http://www.math.umn.edu>. The University of Minnesota is an equal opportunity educator and employer.

UNIVERSITY OF SASKATCHEWAN - DEPARTMENT OF MATHEMATICS AND STATISTICS - Two-year Term Position - Applications invited for a two year term position at the rank of Assistant Professor to commence on July 1, 2000. Priority is given to hiring in the following areas: Statistics/Probability, Analysis, Geometry/Topology and Applied Mathematics. The first priority is to hire in the area of Statistics/Probability. Applicants must hold a Ph.D. degree, or equivalent, and have demonstrated excellence in both research and teaching. Applicants should send a curriculum vitae and arrange for three confidential letters of reference to be sent to: **Dr. M. Marshall, Acting Head, Department of Mathematics and Statistics, University of Saskatchewan, 106 Wiggins Road, Saskatoon, SK S7N 5E6 Canada**. Email: math@sask.usask.ca. The deadline for applications is March 31, 2000. The University of Saskatchewan is committed to Employment Equity. Members of Designated Groups (women, aboriginal people, people with disabilities and visible minorities) are encouraged to self-identify on their application. In accordance with Canadian immigration requirements, this advertisement is directed to Canadian citizens and permanent residents in the first instance. However, this position has been cleared for advertising at the two-tier level. Applications are invited from qualified individuals, regardless of their immigration status.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Tentative full-time visiting position in mathematics for the 2000-2001 year, probably at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and research, and Ph.D. required. Please have a vita and three letters of recommendation on teaching and research sent to: **Visitor Hiring Committee, Department of Mathematics, Williams College, Williamstown, MA 01267**. Evaluation of applications will begin on or after January 15 and continue until the position is filled. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS - Anticipated tenure-track position in mathematics, pending administrative approval, beginning fall 2000, probably at the rank of assistant professor. In exceptional cases, however, more advanced appointments may be considered. Excellence in teaching and research and a Ph.D. are required. Please have a vita and three letters of recommendation on teaching and research sent to: **Hiring Committee, Department of Mathematics, Williams College, Williamstown, MA 01267**. Evaluation of applications will begin on or after December 6. As an EEO/AA employer, Williams especially welcomes applications from women and minority candidates.

ASSOCIATION FOR WOMEN IN MATHEMATICS

1999/2000 MEMBERSHIP FORM

AWM's membership year is from October 1st to September 30th. Please fill-in this information and return it along with your DUES to:
AWM Membership
 4114 Computer & Space Sciences Building
 University of Maryland
 College Park, MD 20742-2461
 The AWM Newsletter is published six times a year and is part of your membership. Questions? (301) 405-7892, or awm@math.umd.edu

LAST NAME _____ FIRST NAME _____ M.I. _____
 ADDRESS _____

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Home Phone:

do not publish home number

Work Phone:

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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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DEGREES EARNED:

Degree(s)

Institution(s)

Year(s)

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Master's:

Bachelor's:

INDIVIDUAL DUES SCHEDULE

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

REGULAR INDIVIDUAL MEMBERSHIP.....	\$ 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	\$ 8	_____
All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.		
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<input type="checkbox"/> I am enclosing a DONATION to the "AWM GENERAL FUND".....	\$	_____
<input type="checkbox"/> I am also enclosing a DONATION to the "AWM ANNIVERSARY ENDOWMENT FUND".....	\$	_____

Indicate if you wish for your **contribution(s)/donation(s)** to remain **ANONYMOUS** ⇨
 Dues in excess of \$15 and all cash contributions/donations are deductible from federal taxable income.

INSTITUTIONAL DUES SCHEDULE

M/A00		U.S.	FOREIGN
_____ Sponsoring CATEGORY I (may nominate 10 students for membership).....	\$150	\$230	_____
_____ Sponsoring CATEGORY II (may nominate 3 students for membership).....	\$ 95	\$120	_____

INSTITUTIONAL MEMBERS WILL RECEIVE ONE FREE JOB ADVERTISEMENTS (up to four lines) IN OUR NEWSLETTER PER YEAR. Advertising deadlines are the 1st of every EVEN month. All institutions advertising in the AWM Newsletter are Affirmative Action/Equal Opportunity Employers. Also, Institutions have the option to nominate students to receive the newsletter as part of their membership. NOTE: List names and addresses of student nominees on opposite side or attach separate page. [ADD \$15 (\$23 for foreign members) for each additional student add-on over initial 10 students for Category I; over initial 3 students for Category II]

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 Please send membership information to my colleague listed below:
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(Please Print)

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