

AWM

ASSOCIATION

FOR WOMEN IN

MATHEMATICS

Volume 27, Number 3

NEWSLETTER

May-June 1997

PRESIDENT'S REPORT

AWM at DC Math Splash

AWM participated in two historic firsts in Washington, DC this past March: a mathematics talk for legislators in the House of Representatives and a press conference at which presidents of 18 scientific societies (representing over a million engineers, mathematicians, and other scientists) gathered to highlight the achievements and needs of science. President Arthur Jaffe of the AMS and Sam Rankin, Associate Executive Director of the AMS and Director of the AMS Washington Office, spearheaded these magnificent events.

For the mathematics program on March 5, Ronald Coifman of Yale delivered a fascinating lecture citing the applications of recent mathematics from many disciplines to the transmission of images and information. The audience, consisting of legislators and aides as well as many members of the mathematical community, was kept spellbound by the illustrations; for example, slides showed how burglars have been apprehended using mathematical modifications to photographs. The talk was preceded by a welcome from Arthur Jaffe, remarks by Congressman F. James Sensenbrenner (Chair of the House Committee on Science) and introductory comments by Andrew Wiles, introduced as the "most famous mathematician alive today." Wiles wryly remarked that previously that dubious honor had been given to Lewis Carroll. Wiles described how he had been intrigued by the 300-year-old problem of Fermat ever since he was young and how he had been led to a solution.

The press conference, held the previous day, featured four of the presidents: Jaffe (the moderator), Paul Anderson of the American Chemical Society, D. Allan Bromley of the American Physical Society and Andrea Dupree of the American Astronomical Society. AWM Past-President Cora Sadosky (Howard University) and I were particularly impressed by Professor Dupree's impassioned defense of science. All the speakers warned that the present trend in the U.S. of declining investment in science may lead to disaster. Support of scientific research and education is vital to four national goals: economic competitiveness, medical health, national security and

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AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

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

The *Newsletter* is published bi-monthly.

The Editor welcomes articles, letters, and announcements.

Circulation: 4,500. © 1997, AWM

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quality of life. Spin-off from many scientific programs such as the space program has resulted in products which have simplified our lives and bolstered the economy.

The benefits of mathematics often come much later, and so a lack of support now will be felt keenly in the future.

The legislative aides I spoke to were impressed by the program and the press conference.

The Role of AWM

AWM participated in these two events in order to help us preserve the many gains we have made in our profession. At both events we introduced ourselves to the legislators, thanked them for their attendance and offered our services in case more information was needed. On behalf of AWM I circulated a press release about the need to continue to encourage women and girls in mathematics, as they represent a tremendous pool of talent in science.

Even though these two programs were wonderful, they represent only a beginning. We must do more. We must all work to continue these efforts to convince lawmakers of the importance both of mathematics and of support for women in the sciences.

A 1997 analysis made by the National Academy of Sciences shows that, if the production, engineering, testing, evaluation and upgrading of large weapons and related systems are not included, then the budget for research and development in science and technology is five percent lower than in 1994. There is a slight increase in the Department of Health and Human Services (DHHS) part of the budget and in the NSF share (1.8%) since 1994. Without the DHHS, the budget would have fallen by 9.7 percent since 1994.

So Write Your Legislator

The best way to influence legislators is through contact and letters (carefully written, not mass-produced) from constituents. For congressmen, the address is United States Congress, Washington, DC 20510; for senators, United States Senate, Washington DC 20510.

Personal Reflections at Two Months

(No longer on my soap box)

My first two months as AWM president have been all-consuming and have gone by like a whirlwind. We have been learning and getting organized. Some of this is fantastic and dizzying, such as being part of the congressional splash. Some of it is agony — the harsh realities, deadlines, not enough money or time. We deal with the agony, but don't dwell on it; we do better to concentrate on the highs and on our goals.

Part of my euphoria has come from finding out that AWM has so many friends and such a lot of support: here's a partial list of AWM Angels.

The NSA: An Appreciation

The National Security Agency has been extremely supportive of AWM, helping us in crucial ways in recent years. I particularly want to thank NSA because they were inadvertently not mentioned in the last newsletter. The NSA currently funds our Sonia Kovalevsky days and has helped us in other years to publish our *Newsletter* and our directories.

Jim Schatz of the NSA explained that their assistance is so generous because the women at the NSA are given a special allotment for worthy activities, and they have chosen to support AWM generously. We receive funds from various parts of NSA and we thank all of you — men and women — at NSA.

Maryland: Many Thanks

As you see by our address, AWM is housed at the University of Maryland. They have graciously given us office space for the past five years and recently agreed to extend our lease for another five years. We appreciate their generosity. In return, the AWM will be a resource for the department and continue to strive to encourage and recognize women in mathematics. At a recent visit to Maryland, I met the dean, Richard Herman, a mathematician, who authorized the allocation of space to AWM. I also met Michael Fitzpatrick, chair of the mathematics department, and several other faculty members and graduate students. Many of the faculty are members of AWM. (Sometime we might have a competition to see which university has the most members in AWM; Maryland would rank very high.) They were proud of their many women graduate students and mentioned that some of them had received fine offers for next year. The women students have formed the Women in Mathematics group [see page 9 for more information].

Thank you, Maryland, and congratulations on your good work and support of women in mathematics!

Nebraska and Jim Lewis: More Kudos

About ten years ago, faculty salaries at the University of Nebraska-Lincoln ranked 163rd out of 168 Ph.D.-granting institutions, based on information published in *Academe*. The faculty was generally unhappy and depressed about this, but had

MEMBERSHIP AND NEWSLETTER INFORMATION

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 Student, unemployed, developing nations: \$10
 Contributing: \$100
 All foreign memberships: \$8 additional for postage
 Dues in excess of \$10 and all contributions are deductible from federal taxable income.

Institutional:

Level 1 (one free basic job ad and up to ten student memberships): \$120 (\$200 foreign)
 additional student memberships: \$10 (\$18 foreign) for next 15; \$6 (\$14 foreign) for remainder
 Level 2 (one free basic job ad and up to three student memberships): \$80 (\$105 foreign)
 Corporate: \$150 Affiliate: \$250
 Friend: \$1000 Benefactor: \$2500

Subscriptions and back orders

All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for \$40/year (\$48 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; phone: (312) 508-3554; fax: (312) 508-3514; email: leggett@math.luc.edu. Send all material regarding book reviews to Marge Murray, Department of Mathematics, 460 McBryde Hall, Virginia Tech, Blacksburg, VA 24061-0123; email: murray@calvin.math.vt.edu and for the education column to Sally I. Lipsey, 70 E. 10th Street, #3A, New York, NY 10003-5106. 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.

trouble persuading the legislature that the university was important (except for its football program).

Enter Jim Lewis. As president of the Faculty Senate, he rallied faculty, students, parents' groups and the AAUP to appeal to the legislature and — bingo — the legislature and the governor responded by funding faculty salary increases that totaled 34% over three years. This has had a tremendous impact on UNL's ability to hire outstanding faculty and to retain them once they join the faculty.

Since then, Jim has been chair of the math and stat department. In addition to his department duties he has become a spokesman for our profession (as the chair of the AMS Science Policy committee), for mathematics education and for enhancing the status of women.

He was given a special award for helping women by the university's Chancellor's Commission on the Status of Women. He is pleased that in our department nearly fifty percent of the graduate students are women. The number of women receiving Ph.D.'s from our department has increased significantly, and it appears that over the next three years (1997-1999) half of UNL's Ph.D. graduates will be women. (This year, six of the thirteen students expected to receive Ph.D.'s are women.)

Besides all this, Jim has given me a reduced teaching load, office help, and travel money to support AWM activities. That support has made it much easier for me to carry out AWM duties. Our dean, Brian Foster, has also backed these allocations. Thanks, Jim and Brian!

AWM/ONR Workshop at SIAM

Thanks to SIAM for once again including the AWM/ONR Workshop in its annual meeting to be held this year at Stanford in July. The preliminary program for the workshop appears on pages 29-30.

AWM Committees

AWM has a lot of help from volunteers, in particular those who serve on committees. It helps me to be able to consult with them and occasionally thrust jobs and decision-making upon them. They offer their wisdom, assistance and time without complaints.

Committee membership as it stood at the end of 1996 was reported in the January-February issue of this *Newsletter*. A few changes have been made since then (and more will follow). Virginia (Ginger)

Warfield (University of Washington) is now the chair of the Mathematics Education Committee. Marie Vitulli (until at least 1/98; University of Oregon) and Tara Smith (until 1/2000; University of Cincinnati) are our representatives to the Joint Committee on Women (JCW). The Workshop Committee is Joan Feigenbaum (AT&T Bell Laboratories), Carolyn Gordon (Dartmouth College), Suzanne Lenhart (University of Tennessee) and Gail Ratcliff (University of Missouri at St. Louis); all members are PI's on our grant. The AWM ARG (Assessment Review Group Committee) has been expanded to Susan Addington (California State University, San Bernardino), Sylvia Bozeman (Spelman College), Doris Fischer-Colbrie (Stanford University), Deborah Tepper Haimo (University of California, San Diego), Deborah Hughes-Hallett (chair from June on; Harvard University), Genevieve M. Knight (Coppin State College), Judy Roitman (chair, rotating off the committee in June; University of Kansas), and Ginger Warfield.

Sonia Kovalesky High School Day Grants

Grants (supported by funding from NSA) have been awarded for Sonia Kovalevsky High School Days to be held at the following institutions: American University, Washington, DC; Clarion University of Pennsylvania, Clarion, PA; Cleveland State University, Cleveland, OH; Douglass College, Rutgers University, New Brunswick, NJ; Elizabeth City State University, Elizabeth City, NC; Indiana University/Purdue University, Fort Wayne, IN; Messiah College, Grantham, PA; National University, La Jolla, CA; Norfolk State University, Norfolk, VA; North Carolina A & T State University, Greensboro, NC; North Dakota State University, Fargo, Fargo, ND; Rivier College, Nashua, NH; St. John's University, Jamaica, NY; University of Alaska Fairbanks, Fairbanks, AK; University of Michigan, Ann Arbor, MI; University of Minnesota, Minneapolis, MN; University of Pittsburgh, Pittsburgh, PA; University of Tulsa, Tulsa, OK; and Valdosta State University, Valdosta, GA.

The Community of Math

With the press conference, the mathematics talk in congress and the CBMS meeting (see last newsletter), I have been finding out more about the community of mathematics organizations, and we have been trying to increase communication among

organizations. The CBMS meeting in December brought many of the groups together. A meeting of the Board of Mathematical Sciences is being planned with the specific aim of increasing the participation of women and underrepresented groups in mathematics.

Last Words

You AWM members and supporters are important and wonderful. Please carry on with your good work! And please let me know what AWM should be doing and help me to do it! Thanks!

Best wishes,

Sylvia

Sylvia Wiegand
March 31, 1997
Lincoln, NE



LETTER TO THE EDITOR

I'd like to make a brief comment on the interesting article "Some Thoughts on Women and Mathematics" by Marilyn K. Simon in the January-February issue of the *AWM Newsletter*. At the top of p. 18, Simon states that "even in the 1950's women were not permitted into the physics buildings of Harvard or Princeton." In defense of my alma mater, Harvard, let me state that this was not true, at least by the late 1950's. In fact my lab partner in introductory physics was a woman. Harvard even had at least one woman faculty member in the physical sciences, namely the distinguished astronomer Celia Payne-Goposhkin. Surely this counts at least epsilon.

The situation at Princeton was far different; Princeton was then an all-male institution, and did not admit women students (graduate or undergraduate) for many years after the 1950's, and then only after great soul-searching.

Sincerely,

Paul R. Chernoff
Department of Mathematics
University of California, Berkeley

NSF-AWM TRAVEL GRANTS FOR WOMEN

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

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

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

Applications. There will be three award periods per year, with applications due February 1, May 1 and October 1. An applicant should send *five* copies of 1) a description of her current research and of how the proposed travel would benefit her research program, 2) her curriculum vitae, 3) a budget for the proposed travel, and 4) information about all other sources of travel funding available to the applicant along with *five* copies of her cover letter to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461.

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



Margaret T. Munroe and Alice T. Schafer at Margaret's retirement party

IN MEMORIAM

Margaret Turner Munroe

Margaret T. Munroe, Administrative Assistant of AWM from January 2, 1978 to her retirement effective July 1, 1987, died on January 31, 1997 at age 84. She had been the Assistant to the Librarian of Wellesley College; when she retired from that post at the end of December 1977, she walked across the Wellesley campus to my office and became the Administrative Assistant of AWM. The then Secretary of AWM took Margaret's position in the Library. The AWM Office at that time was a corner of my office with a small desk and a chair. In due course Barbara Newell, President of Wellesley College, asked me if Margaret would like an office to herself. Of course, the answer was yes and so Margaret became the first employee in the AWM Office! Although her title was not Executive Director (that came with the next appointee), she

Alice T. Schafer, Wellesley College

was that in the true sense of the word. She was completely dedicated to AWM throughout her tenure and afterward.

On her retirement the members of AWM in the Boston area gave a big party for her and presented her with a photograph album with pictures of many of the then current members of AWM and notes from them. Margaret's first thought was that she would leave the album to her son and daughter and their children, but then decided that where it really belonged was with AWM. She felt that future members of AWM would want to see pictures of some of the earlier members of AWM and read their notes to her. The album is now in the AWM Office. It was taken to one of AWM's national meetings for members to see, and at the meeting I saw many people looking at the album. In memory of Margaret I suggest that it be taken to the next annual meeting of AWM. We miss you, Margaret.

Contributions in memory of Margaret Turner Munroe may be sent to the Development Office, Simmons College, 300 The Fenway, Boston, MA 02115-5898.

Chien-Shung Wu

Chien-Shung Wu, a giant of physics, died on Sunday at 84. She led the 1957 experiment that demolished what was thought to be a fundamental law of physics, the conservation of parity. She did not, however, share the Nobel prize, which was awarded to Lee and Yang for predicting that parity would not be conserved in the weak force. One of the leaders of physics who emerged from the Manhattan Project, she rescued the first Pu production reactor, at Hanford, which had shut down just hours after it was started. She fingered Xe-137, a fission product and neutron absorber, as the culprit. The rest of her career was spent at Columbia. In 1975, she became the first woman elected president of APS.

Author's note: Opinions are the author's and are not necessarily shared by the APS, but they should be.

reprinted from WHAT'S NEW by Robert L. Park, Friday, February 21, 1997, Washington, DC. Park is a past president of the American Physical Society.

roles in the ISI and other statistical associations; 3) to collect information on women in the statistical professions in different countries and to facilitate the flow of information among women statisticians; 4) to stimulate interest in statistics among women and encourage women students in schools and colleges to study statistics; and 5) to support the compilation of statistics on women, with a view to generating relevant studies concerning women's roles in the various activities in their countries.

The ISI has about 2000 elected members, of whom about eight percent are women. For some countries a fair proportion of the members are women, but in most cases more initiative is needed for nominating qualified women statisticians to ISI membership. The Committee has been trying to stimulate such initiatives. Membership in the five Sections of the ISI also includes fewer women than might be expected. The Committee is trying to encourage women statisticians to join a Section of their choice and to participate in the Section's activities.

This is not simply a question of numbers, but one of reciprocal benefits: benefits to the individuals themselves in the opportunities it provides for further professional growth, and benefits to the ISI family of associations through a further enrichment in its programs.

The committee has been conducting all its business by correspondence and will hold its first meeting during the ISI Istanbul Session in August 1997. The Committee's Open Meeting in Istanbul will provide a forum for the exchange of views on matters related to the Committee and its objectives. After a brief report from the Committee, the floor will be open for general discussion. The Committee plans to participate more formally in the following ISI Session (Helsinki, 1999) by organizing a meeting which will be part of the scientific program of that Session.

The ISI Tokyo Session Memorial Program is accepting applications for grants to attend the ISI Istanbul Session in August 1997. Applicants must be active Session participants from developing countries. [See the *ISI Newsletter*, Volume 20, no.3, 1996, p. 6.]

The Committee invites you to join its base of correspondents worldwide by sending your name, address, email address, and fax number to Mary Regier, Statistics Department, Case Western Reserve University, Cleveland, OH 44106-7054; email: mhr@po.cwru.edu; fax: 216-368-0252.

WOMEN IN STATISTICS

The International Statistical Institute (ISI) Committee on Women in Statistics was established at the ISI Beijing Session in August 1995. Its composition and terms of reference evolved over the next few months and were confirmed by the ISI in March 1996. The members of the committee are Barbara A. Bailar (U.S.), Lelia Boeri de Cervetto (Argentina), Nanjamma B. Chinnappa (India/Canada), Denise A. Lievesley (UK), Mary H. Regier (Lebanon/U.S.), and Susan R. Wilson (Australia).

The motivation for establishing the committee was concern among the ISI leadership over low female representation in the ISI and its Sections. The committee's Terms of Reference reflect this concern. They are: 1) to promote and strengthen the representation of women statisticians in the ISI and its Sections; 2) to help in providing opportunities for women members to assume active and visible

Mary H. Regier, Chair, ISI Committee on Women in Statistics. A longer version of this report is available.

NCTM STANDARDS REVISION, PART II

A previous newsletter article reported that (a) the National Council of Teachers of Mathematics is revising all three sets of *Standards: Curriculum and Evaluation, Professional, and Assessment*, and (b) AWM, along with many other mathematics and education organizations, has a Review Group to help advise the NCTM throughout the revision process.

This Review Group was deliberately chosen to include members from all sides of the math ed reform debate. Its membership has been increased, and its current chair, Judy Roitman, now a member of the NCTM writing team, will be going off the committee; Deborah Hughes Hallett will be the next chair. The Review Group has submitted its first report to the NCTM. This report is summarized below. Given the passions these issues often raise, the amount of consensus may seem surprising. If the report seems unduly critical, recall that our comments focus on how to improve the *Standards*, hence focus on what we feel should change.

If you have comments or questions, you can contact Judy Roitman at roitman@math.ukans.edu. Your message will be forwarded to the new Review Group chair. It would be especially useful to hear the thoughts of people who actually work with the *Standards* in their K-12 classrooms or in teacher education. This is a three-year process, so there is a lot of time for input.

Report Summary

What We Agreed On

The current *Standards* have a good deal of ambiguity and vagueness, and the next version should be shorter and crisper.

Mathematical focus needs to be primary; the standards relating to general notions such as problem solving, communication, reasoning, and connections (here called dispositions) should be clearly separated from the standards more focused on content; and dispositional language should be removed from the standards focused on content.

Over-arching mathematical structure, connections within and between grade levels, and the core elements that form the intellectual underpinnings of

school mathematics need to be more clearly delineated. In particular, links among areas need to be more apparent, there should be fewer content strands, and unifying ideas should be apparent.

There is a great need, which we are by no means the first to articulate, for extensive mathematical knowledge by teachers, and this should receive more prominence in the *Professional Standards*.

We all applaud the emphasis in the current *Standards* on school mathematics as more than procedural knowledge, but feel that the notions clustering around reasoning and proof need to be clarified.

Procedural knowledge is important (this does not contradict the preceding paragraph), and there should be much more emphasis on symbolic manipulation: facility with symbolic manipulation is essential to understanding even basic algebra.

Given the generally unshared nature of understanding of terms in mathematics education, examples will probably play a crucial role in the next generation of *Standards*, and these should be chosen with great care.

A variety of teaching methodologies should be encouraged. "Best practice" has meaning only within particular techniques, and no one technique can stand alone as best practice.

There are many unfortunate interpretations of the current *Standards* which are at variance with what the *Standards* actually say. While in some sense this is inevitable, the next generation of *Standards* should at least guard against some of the current unfortunate interpretations.

What We Could Not Agree On

We could not agree on the level of detail and explicitness with which the *Standards* should describe the mathematical content that students should know by the conclusion of some chunk of their mathematical education.

While we all agreed that some amount of mathematical closure is a good thing, we could not agree on how much and when.

Corrections to part I of this article: The email address for the NCTM committee on the future of the *Standards* is future@nctm.org. Also, the chair of the writing group is Joan Ferrini-Mundy.

Judy Roitman, University of Kansas

WIM TALK SERIES

The reviews are in! The October 1996 *SIAM News* confirms that "A Good Speaker is Made, Not Born." In agreement, the University of Maryland College Park's Women in Mathematics (WIM) group sponsors a biweekly graduate student talk series. The series, entering its fourth year, was created for and by women graduate students to gain experience in presenting mathematics and to develop camaraderie and interest in each other's research areas. The twenty-minute talks are directed to all graduate students and require no more background than a first-year graduate student's mathematical knowledge. The twenty-minute time limit was devised to encourage each speaker to learn to explain her research interest concisely and to allow busy students to attend.

The fall 1996 series began with Gweneth Owens Butera, a visiting graduate student from Rice University, speaking on "The Exact Solution of a Class of Limited Diversification Investment Portfolio Selection." Amy Peng followed with "Some Problems in Biased Sampling," and Monica Jackson spoke on the "Application of Simulation to a Queuing Problem." The series ended with a panel discussion on "Finding and Dealing with an Advisor" with panelists Carol Chung, Katharine Gurski, Tammy Kolda, and Eugene Xia. The discussion proved so popular the room was quickly overflowing with

graduate students, and the advice handout was subsequently posted on the WIM homepage.

The spring 1997 series continued with Amy Galitzer speaking on "Basic HTML: How to Make a Pretty Web Page." Alison Bond continued with "Exploration of Firing Patterns in Neurons," Mary Jacobsen spoke on "Dynamics of Homeomorphisms," and Kim Weems discussed "Random Effects Models for Longitudinal Data." Karen King, a graduate student from the Mathematics Education Department tried to answer "What Exactly Is Mathematics Education, Anyway?" The series is scheduled to end with a one-hour panel discussion on "Job Success Stories" featuring several graduating, with job-in-hand, students.

The 1996-1997 talk series is co-chaired by Ruth Pfeiffer and Katharine Gurski, who are looking for speakers and possible panel discussion topics for the 1997-1998 year. The first talk of the fall semester of 1997 will be held on September 10th with all following talks on every other Wednesday afternoon. All graduate students visiting the College Park area are invited to attend and to volunteer as a possible speaker. For details about any talk or for suggestions on creating your own talk series, contact <http://www.wam.umd.edu/users/kgurski/> or check out the WIM homepage at <http://www.cs.umd.edu/users/kolda/wim.html>.

Katharine Gurski, University of Maryland

CALL FOR NOMINATIONS: ALICE T. SCHAFER MATHEMATICS PRIZE PLEASE NOTE CHANGE IN DEADLINE!!!

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

The Schafer Prize was established in 1990 by the Executive Committee of the AWM and is named for AWM former president and founding member, Alice T. Schafer, who has contributed a great deal to women in mathematics throughout her career. The eighth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Baltimore, MD, January 1998.

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

Supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, transcripts) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. The nomination deadline is **September 15, 1997**. Early submissions are encouraged.

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

HOW TO BE A SUCCESSFUL WOMAN MATHEMATICIAN

This is the first installment of reports on the panel discussion held at the Joint Meetings in San Diego in January.

A summary of Lesley Sibner's talk

My main objective at the AWM panel was to make an important point. It is that the success of AWM is due largely to the dedicated efforts of some very strong and effective women personalities who invested a huge amount of time and energy to its cause. I mentioned a few, starting with Mary Gray and on to Linda Keen, Jill Mesirov, Rhonda Hughes, Carol Wood, Cora Sadosky and Chuu-Lian Terng.

As for the overall question to be answered by the panel, I am sure I do not know the answer. How to be a success as a woman mathematician? Personally, I haven't a clue. I have much enjoyed my life both teaching and doing research. I very much enjoy participation in the American Mathematical Society at this point in my career. I think participation of this kind is becoming easier for women and that younger women mathematicians should take advantage of this.

All I can say is that I am personally delighted to be a part of the new visibility of women in Mathematics and I look forward to seeing more and more young women enter the discipline and take their place in the profession.

Five Simple Rules for (Academic) Success (or at Least Survival)

1. Don't give up. This is the most important rule.

Yes, good jobs are hard to find. You must keep sending out applications. The year I got my Ph.D. was 1970 and there were around 2000 math Ph.D.'s and very few jobs. I sent out 100 job applications and got only rejections. Then I sent out another 100. I had a two-body problem. My (now ex-) husband was a mathematician and we looked for jobs in the same department, which made the search much harder. Finally a job came in June, and it was not at one of the top five schools, but at least my spouse and I were in the same department. The next year he had a job on the west coast while I was on the east coast. A year later I moved again.

Audrey Terras, UC San Diego

And after all that, papers are hard to publish, books even harder. And teaching can be a challenge. Develop a thick skin. Change those things you can but don't apologize for doing your kind of math. If the first referee claims your paper is useless, send your paper to another journal. If the book reviews aren't glowing, don't brood. There are rival fashions in mathematics, and referees and reviewers may represent one side in a many-sided debate while you are on another side. Proofs are either right or wrong (although standards of proof can change over time), but there are huge differences in taste. The same goes for teaching. One has to try hard to sell math to an increasingly skeptical audience. [Evaluations] are often surprisingly bad when I thought I was giving my all.

Finally, mathematics is hard to do. Progress can be slow. Patience is necessary. It is important to keep working. When stuck on a problem, start writing up the proofs of the things you have already done. Heisenberg said: "You just have to be able to drill in very hard wood — and keep thinking beyond the point where thinking begins to hurt."

2. Keep learning and teaching.

Keep a notebook (like Ramanujan) with a list of problems you are working on. Keep reading books and papers. Keep writing, including expository papers. Give and go to seminars and colloquia. Give courses on a wide range of subjects. Work hard on making your lectures understandable. Give lots of examples. Write up lecture notes. Become a reviewer for *Math. Reviews* and *Zentralblatt*.

3. Network: go to meetings, give talks, collaborate.

Take leaves and visit other universities and research institutes. Send out re- and pre-prints to lots of people. Seek out supportive and friendly people. Not all mathematicians will fall into this category. In particular, keep in touch with your letter writers. Whenever asking for letters, be sure that you send your letter writers copies of your CV, recent works, and address labels. This is not only polite, but it helps to get up-to-date and timely letters. Do not get a secretary to mail out old letters. Write up short summaries of your works to help your letter writers cope with a giant stack of papers. Always support other women and all underrepresented

groups. Make a particular effort to include them in your network. Try to be a good friend, mentor, and advisor to your students and colleagues.

4. Try to do useful mathematics. But do "your kind of mathematics."

Be flexible. Expand your area of expertise. Do beneficial applications if possible. If not, at least connect with other parts of mathematics. As a number theorist, for example, I find it both useful and inspirational to make connections with graph theory, Fourier analysis, and matrix groups. Applications of number theory in computer science and signal and image processing are actually a stimulant to thought.

5. Have a (good) life.

Brains get tired and need rest or change. Often the solution to that problem that has been bugging you for weeks comes during a vacation. Do not let the life take over, however. If you have children, make use of daycare. Many universities will allow you to stop the tenure clock. But don't stop doing math. I find that it is like any kind of sport. You must keep exercising the math muscles. I don't have any children, but this doesn't mean I don't have a life apart from mathematics. Yes, I like cats, gardening, music, netsurfing, StarTrek, travel, hiking, reading mysteries and science fiction, photography.

STUDENT MATERIALS

Introduce K-12 students to women's achievements in science and math with the materials available from the National Women's History Project. 68 women, including computer pioneer Admiral Grace Murray Hopper, are profiled in *Women in Science*, a 16-page gazette with science-based puzzles, quizzes, and games. In the "You Can Be a Scientist, Too!" video, young students will see that their "why" and "what if" questions relate to women's work in fascinating science careers. "Inventive Women," a four-color poster set, introduces eleven women and their patented inventions.

For a free catalog, contact: National Women's History Project, 7738 Bell Road, Department P, Windsor, CA 95492; 707-838-6000.

AMS ON IMMIGRATION BILL

The Council of the American Mathematical Society has passed a resolution "deploring" a provision of the "Illegal Immigration Reform and Immigrant Responsibility Act of 1996," which was signed into law last fall. The resolution directs the AMS President and staff to work on challenging Section 641 of the act, which pertains to students and academics from abroad.

Educational institutions across the country have expressed grave concerns about the law, which would essentially require them to carry out, on behalf of the U.S. government, surveillance of foreign students and scholars. The law requires universities to report specific personal and academic information to the Immigration and Naturalization Service (INS) about students and scholars of particular nationalities. Perhaps most vexing is the requirement that universities collect from these individuals a fee of up to \$100, which would then be turned over to the government to defray the cost of the surveillance.

"Most of the provisions of the new law have to do with border control and deportation of undocumented aliens, issues on which the Society takes no stand," explains AMS President Arthur Jaffe. "We are only concerned about Section 641, which we believe would put the nation's universities in the position of acting as an arm of the INS. Mathematics is a highly international field, and the restrictions imposed by this new law could be detrimental to mathematicians' work with colleagues and students from abroad."

The law is to take effect April 1, 1997, with a report to be submitted to Congress within four years. The AMS will join with organizations representing colleges, universities, and international scholars which are working with Congress and the INS to try to develop ways of lessening the burden the law places on the schools.

AMS Council Resolution on Immigration Policy

Whereas the American Mathematical Society recognizes the great value of international contacts to the mathematics of this country and the world and;

Whereas hospitality to foreign nationals has played a large and increasing role in making such contacts, and is fostered by all major universities;

Be it resolved that the American Mathematical Society deplores the announced intent of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 to restrict visits by foreign nationals;

That the Council directs the AMS President and AMS Staff to work with other professional societies and with U.S. universities and colleges in an effort to change or challenge the provisions of Section 641 of this act.

Resolution passed: March 1997

BOOK REVIEW

Peter Sacks, *Generation X Goes to College: An Eye-Opening Account of Teaching in Postmodern America*, Open Court, Chicago, 1996. xiv+208. ISBN 0-8126-9314-0 (paper).

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

"Peter Sacks" is the pseudonym of a successful big-city newspaper reporter (nominated for a Pulitzer Prize) who, for admirable personal reasons, decided to seek a job teaching journalism at the college level in the early 1990's. *Generation X Goes to College* is his report on what he found when he embarked on a teaching career at "The College," a public undergraduate institution somewhere in America. He has gone to some effort to conceal his own identity and that of the institution where he taught because he does not wish "to focus criticism on a specific individual, group, or institution" [vii].

Sacks describes his transition from newspaper professional to teacher of freshman/sophomore writing and journalism courses as an experience of "culture shock": students' attitudes and expectations had changed radically in the years since he was a university student, and he was ill-prepared for the change. This book is certain to be an eye-opener to parents and educational policymakers who, like Sacks, remember college as a place of hard work, high standards, and tangible rewards. For those of us who have been teaching at the post-secondary level for ten years or more, the story of Sacks' awakening may seem uncannily familiar.

When Sacks first decided to change careers, he knew enough to anticipate the obvious differences between his journalistic and professorial work roles. As a reporter, he had been able to work in a solitary fashion, consulting sources by phone and generally avoiding face-to-face confrontation. As a teacher, he had to summon the psychic energy for intensive interaction with students. In the transition from practitioner to teacher, he had to give serious consideration to the process of becoming a journalist and to devise ways of facilitating that process in his students. He approached his job as teacher, as many of us do, as a challenge: interesting and even confounding, but eminently worthwhile.

Sacks founded his philosophy of teaching on the idealistic belief that his job was to teach his students to write and to prepare them for future careers in journalism. He upheld the same high standards that he'd been required to meet as a professional.

The students' response was mixed, but for the most part negative, and it came as a shock and a horrible disappointment. Predictably, the clash between Sacks' expectations and the students' reality was reflected in poor teaching evaluations. These evaluations — crucial to continued employment at The College and at many other colleges as well — made it clear by the end of Sacks' first year that he was failing and at risk of being fired.

In the interest of saving his job, he made a deliberate decision to cater to the prevailing attitudes of the students — lowering standards, lowering expectations, making an effort to be entertaining — in what he refers to as "The Sandbox Experiment." He offers a detailed account of his experiment, and of how he evolved as a teacher — a story that is fascinating and frightening by turns. Sacks believes it was this very experiment that won him tenure, and he is probably right.

Sacks offers fairly compelling evidence, from his own experience and that of his colleagues, that the generation of students that has entered college since 1988 is truly distinguished from earlier generations by the pervasiveness of several distressing attitudes and beliefs, including:

- a sense of themselves as consumers, purchasing "education" and "grades" as a commodity;
- the belief that teachers should be entertaining;
- the belief that hard work outside of the classroom should not be necessary;
- pervasive distrust of all kinds of authority;

- disrespect and sometimes contempt for the professional accomplishments of their teachers;
- an inability to make clear distinctions between what is communicated by popular culture and the evidence of history and science.

Shocked, dismayed, and appalled by these student attitudes, Sacks is nevertheless quick to distance himself from cultural conservatism:

[Y]ou probably think I was some kind of old-fashioned, highly conservative fuddy-duddy. That certainly wasn't how I saw myself. First, I wasn't old. In my late thirties, I was actually quite young compared to most of the teachers at my college. I had a lifestyle closer to that of my students than most teachers and other professionals who had children and mortgages to worry about.... My politics? I'm a liberal.... As a reporter, I was always plugging for the underdog wherever I could. I had always distrusted authority and hated the abuse of power.... [p. 17]

What distinguishes Sacks from numerous conservative critics who have decried the sorry state of higher education in recent years is his genuine empathy for the students. He strives to understand how his students have been shaped by the culture in which they grew up, rather than merely blaming them for their attitudes and behaviors. He writes:

My encounters with college students of the nineties made me want to find out more precisely what they thought about.... I came to conclude that many of my students were torn about these matters of responsibility, expectations, grades, and so on, reflecting the confusion of a changing culture. On the one hand, they knew that their generation was profoundly ill at ease with the rules of the game they'd been taught, because ... they'd seen that following the rules guaranteed nothing in the America they grew up in. And yet following those rules remained the only way they still knew to the "good life" as the dominant society had defined it. [pp. 54, 59]

Sacks offers "postmodernism" as the underlying cultural phenomenon which explains the sometimes frightening student attitudes he encountered. Scholars of history and culture tend to date the beginnings of the postmodern trend back to the early 1970's. Sacks devotes a chapter to explaining postmodernism, with an appreciation of its virtues as well as its dangers. As a cultural phenomenon, postmodernism calls into question "modernity's belief in reason, science, and progress" [p. 120]. In

its extreme form, postmodernism moves beyond healthy skepticism and disciplined criticism into the legitimization of irrationality and relativism.

The postmodern milieu is hardly an optimal one in which to purvey the traditional values of higher education! But in Sacks' view, colleges and universities have no choice but to persevere. Rather than simply decrying the sorry state of affairs, the "decline" of society and its institutions, Sacks takes the pragmatic and somewhat optimistic view that higher education can, to some degree, adapt to postmodern reality. In his later chapters, Sacks suggests several strategies of compromise, whereby colleges and universities may acknowledge the cultural shift while at the same time holding firm to academic standards.

He recommends that educators "adopt postmodern guises" through the appropriate use of technology. Sacks asserts that until now computer technologies have been used mainly as a means of "delivering" instruction, so that students are not really engaged with technology but continue to be passive consumers of it (as with television). Sacks suggests that the students should be encouraged to take command of the available technology, using it to create work which can be disseminated widely rather than simply submitted to a teacher. The World Wide Web seems an ideal medium for this purpose. Sacks writes:

While publishing a piece on the Web says nothing about the quality of the work, doing so is a brave, postmodernist act, suggesting that the student's work has some connection to the outside world and a meaning beyond the abstractions of the classroom. And, unfortunately, most students — unless they plan to be writers — don't see the ability to write a term paper as something they'll ever use in the real world. But in the age of the amusement and the spectacular, they do see the ability to create a multimedia project as somehow useful. To educators, I say, go with it, and in time there will be clear standards by which to judge good multimedia from bad multimedia. [p. 178]

It is interesting to reflect upon the extent to which the technological aspects of curriculum reform in calculus are our own discipline's way of "adopting postmodern guises" to the teaching and learning of mathematics. Students who might not otherwise be persuaded of the importance of mathematical writing might be induced to improvement if they knew that their work would have worldwide distribution through the Web. Some of Sacks'

suggestions are clearly transferable to mathematics education, and a bit of informed web browsing should make clear that they have already been put into practice.

Generation X Goes to College will be enlightening to parents sending their children to college for the first time and others who have been long away from the academic environment. It will make entertaining and perhaps cathartic reading for college faculty who have encountered just a bit too much of the postmodern attitude in their classrooms. It will make informative reading for education policymakers who wish to understand better what's going on with at least a substantial minority of today's college students. Most importantly, it should make all of us think a little bit differently about the effect of the larger culture on the learning process.

EDUCATION COLUMN

Trends in Mathematics Education for Females

From *The Condition of Education 1996 (Condition 1996)*, a compilation of statistical data, we can glean answers to questions about some aspects of mathematics education for females. For example, to what extent has mathematics course-taking in high school increased? Has there been a corresponding increase in proficiency? [1]

Condition 1996 reports that the percentage of female high school graduates who completed at least three years of mathematics rose steadily from 13% in 1982 to 53% in 1994. (Males also increased their course-taking, but from 15% to only 48%.) At least 60% of female graduates completed Algebra II and Geometry (for males, the figure is 55%). Almost three-quarters (only 70% for males) had two years of math (unspecified), up from one-third in 1982. Of those who completed three years, the third year was unspecified for most, but 18% had trigonometry and/or pre-calculus and 9% had calculus.

During this period of increased course-taking, the average mathematics score of females on the Scholastic Aptitude Test (SAT) rose from 443 to

460, a greater increase than men achieved (from 493 to 501). As measured by the National Assessment of Educational Progress (NAEP), the average mathematics proficiency of 17-year-old females also increased by a statistically significant amount from a scale score of 296 to 304 (males: 302 to 309). It may be of interest to note the different abilities represented by NAEP scores below 300 and those above. A score between 250 and 300 represents the ability to perform basic operations with whole numbers in one-step word problems and to compare information in graphs and a developing ability to recognize simple logical relations. Achievement at Level 300 represents ability to compute with decimals, simple fractions and common percents, to deal with simple geometric, algebraic and statistical concepts, and to use logical reasoning in solving problems.

We have good reason to be pleased with the increased levels of course-taking and proficiency and to hope that the trend continues. Consider that 72% of all females (age 25–64) are part of the civilian labor force and make up almost half that labor force; and that they constitute about 8% of all engineers, 27% of all natural scientists, 32% of all mathematical and computer scientists, 68% of all social workers, 75% of all schoolteachers, and 93% of all registered nurses. [2] The total number of workers in all these categories has grown since 1983, but in addition, except for registered nurses, females represent a higher percentage of workers in each category. Between now and 2005, according to forecasts, jobs for computer programmers, nurses, and teachers will grow rapidly. Many job losses due to new technologies will be among the low-skilled; many of the newly created jobs will require good education and skills. [3] Thus both for females choosing to enter male-dominated enclaves (the percentages above show that the labor force is still segregated by sex) and for those whose predilections are to follow tradition, math skills are important for successful careers.

Notes

1. U.S. Department of Education, National Center for Education Statistics. *The Condition of Education*, NCES 96-304, by Thomas M. Smith. Washington, DC: U.S. Government Printing Office, 1996, pp. 72-222. <http://www.ed.gov/>
2. U.S. Bureau of the Census, *Statistical Abstract of the United States* (116th edition). Washington, DC 1996, pp. 395, 405. <http://www.census.gov/>
3. "The end of work?" *Economist* (Sept. 28th, 1996): p. 20.

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

NRC TWINNING PROGRAM

The Office for Central Europe and Eurasia of the National Research Council (NRC), operating arm of the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine, is accepting proposals for collaborative research programs which link individual U.S. scientists with their counterparts in Estonia, Latvia, and Lithuania. As funding for the Twinning Program is provided by the NSF, only proposals in fields normally supported by the NSF will be considered. Proposals should have the strong support of the scientists' home institutions and should lead to significant publications and long-term sustained linkages.

The grants awarded under this round of the Twinning Program will begin in September 1997 and run through December 1999. Subject to the availability of funding, support will be provided for travel and living expenses for research visits by American grantees and junior scientists from the same institution to the countries listed above and for visits by their foreign counterparts to the U.S. Applicants may also request modest funding for scientific supplies, telecommunications fees, and publication costs. Grants will generally be in the \$12,000 to \$15,000 range.

Applications will be accepted from individuals who are U.S. citizens, nationals of a possession of the U.S., or permanent residents of the U.S. All applicants must hold a Ph.D., be engaged in research careers (or research and teaching careers),

be affiliated with an educational or research institution in the U.S., and have existing contacts with researchers and/or institutions in the countries listed above. Although qualified U.S. specialists of any age are eligible, those who have received their doctoral degrees within the past six years or who are entering into an international collaboration for the first time are strongly encouraged to apply. NRC also welcomes the inclusion of postdoctoral students and graduate students in the program.

The application must be postmarked no later than **May 16, 1997**. For further information, contact: OCEE (FO2014), NRC, 2101 Constitution Ave. NW, Washington, DC 20418; phone: 202-334-2644; fax: 202-334-2614; email: oce@nas.edu.

CORRECTION

In the Awards and Honors sections last issue, we reprinted a list of NSF Graduate Fellows. Although the intended graduate institution of five of them at the time the awards were made was MIT, in fact only one of them, Wung-Kum Fong, is currently a graduate student in mathematics at MIT. Marina Epelman is a graduate student at MIT in operations research. Also, Ruth Britto-Pacumio, an undergraduate math major at MIT who tied for best among all MIT graduating seniors in math in 1996, is now a graduate student in physics at Harvard.

CALL FOR NOMINATIONS: LOUISE HAY AWARD

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

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

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. *Five* complete copies of nomination materials for this award should be sent by **October 1, 1997** to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461.

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

CLINTON DIRECTIVE

Preparing Students to Meet National Standards of Excellence in Eighth Grade Math and Improving Math and Science Education

Since the early 1980's, U.S. elementary and secondary school students have begun taking tougher courses, and we are starting to see the results. National Assessment of Educational Progress scores have improved in math and science, with gains in mathematics equal to at least one grade level. On the Scholastic Aptitude Test (Sat), average math scores are at their highest in 25 years, even as the number and diversity of test-takers have increased. However, the eighth-grade results of the 41-Nation Third International Math and Science Study (TIMSS), released last fall, show that the United States is below average in math and just above average in science. That isn't acceptable; in this technology-rich information era, our students need to perform much better in both subjects, but especially in math, if they are to excel at higher-level math and science courses that are critical to college admission and success and to citizenship, productive employment, and lifelong learning.

The first step in raising achievement is lifting expectations and setting high standards for what students should know and be able to do. Our National Assessment of Educational Progress, TIMSS, and the standards developed by the National Council of Teachers of Mathematics give us a solid framework to build on. Last month, to help parents and teachers learn who needs help, what changes in teaching to make, and which schools need to improve, I asked the Secretary of Education to develop a voluntary national test for individual eighth-grade students based on widely accepted, challenging national standards in mathematics. The national test will be available to States and local school districts to give to their students in the spring of 1999, and will measure whether students have reached a high level of mathematics proficiency.

The primary responsibility for achieving high standards rests with students, teachers, parents, and schools in local communities across America.

Memorandum from President William J. Clinton to the Secretary of Education and the Director of the National Science Foundation, March 6, 1997

However, it is imperative that we work to ensure that Federal resources support student success as well. We must ensure that Federal programs, research, and human resources are used as effectively as possible to help improve teaching and learning.

Therefore, I direct the Secretary of Education and the Director of the National Science Foundation to form an interagency working group and to develop an action strategy for using Federal resources to assist States and local school systems to prepare students to meet challenging math standards in eighth grade, and for involving the mathematics, scientific, and technical communities in support of these efforts.

The action strategy should include recommendations for the use of Federal resources to help States, local school districts, and schools to improve teaching, upgrade curriculum, and integrate technology and high-quality instructional materials into the classroom, as well as motivate students and help them understand how math concepts are applied in the real world. The strategy should identify significant Federal programs, activities, and partnerships available to improve teaching and learning, ensure that these resources are appropriately focused on helping students reach challenging math standards, and determine how these resources can best support State and local reforms. In developing this strategy, the interagency group should review the current status of improvements in math education and identify and address critical areas of need, drawing on research and input from educators and professional organizations.

Because teaching and learning in math and science are so integrally related, and because success in both subjects is vitally important in this information era, the working group should also review how Federal resources and partnerships with other organizations can help improve student achievement in science.

The working group should make its recommendations and submit its action strategy to me within 90 days.

Ed. note: The mathematical community is responding to this directive in a variety of ways. A meeting hosted by the Mathematical Sciences Education Board and the Conference Board of the Mathematical Sciences Education Partnership was held on Monday, April 7 and was focused on the President's directive for an eighth grade test. The CBMS Council and CBMS Education Partnership will meet May 2-5; the agendas of the overlapping meetings will allow considerable time to discuss the directive.

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND POSTDOCTORAL MATHEMATICIANS

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

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

WHEN: The next AWM Workshop will be held in conjunction with the annual Joint Mathematics Meetings in Baltimore, Maryland, January 6-10, 1998 (*pending renewal of funds*). The Workshop will be held on Saturday, January 10, 1998 with an introductory dinner for participants tentatively scheduled for Thursday evening, January 8, 1998.

WORKSHOP: We invite each participating graduate student to present a poster on her thesis problem and each postdoc to present a talk on her research. AWM will offer funding for full travel costs, meeting registration, and two days subsistence for up to 20 participants. Participants will have the opportunity to present and discuss their research and to meet with other women mathematicians at all stages of their careers. The workshop will also include a panel discussion on issues of career development, a luncheon, and a dinner with a discussion period. All mathematicians (female and male) are invited to attend the Saturday program, whether or not they are funded. Departments are urged to help graduate students and postdocs obtain some institutional support to attend the workshop and the associated meetings.

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

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

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

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

APPLICATION DEADLINE: September 1, 1997

STATEMENT ON SEXUAL HARASSMENT OF THE ASSOCIATION FOR WOMEN IN MATHEMATICS

Sexual harassment is a sensitive issue that is becoming more visible in our society. The mathematics community is not immune. While the AWM supports local solutions to sexual harassment issues, we would like to suggest guidelines for the mathematics community.

1. Sexual harassment is extremely serious.

Sexual harassment, no matter how it may appear to the perpetrator, is ultimately about power, not sex. It is demoralizing and destructive for the victim. Sexual harassment has grave consequences for our profession, contributing to loss of talent and alienation of women from mathematical professions.

2. Sexual harassment has many forms.

Sexual harassment is *the intrusion of sexuality into inappropriate contexts*. (For legalistic definitions, see the EEOC guidelines, generally available in libraries and in whatever office deals with discrimination issues, e.g., affirmative action office.) Sexual harassment has many forms besides seduction: words, gestures, body language, office decorations (the nude calendar), jokes ... even where people focus their eyes (e.g., on breasts instead of faces).

3. Sexual harassment must be taken seriously.

Institutions should put people on notice of the seriousness of the issue and of appropriate procedures to follow in reporting violations of policy. Faculty, staff and student handbooks should cover these points, which should also be covered in other effective information dissemination (e.g., new faculty and student orientations).

4. Sexual harassment must be dealt with promptly.

Once charges are made of sexual harassment, they should be dealt with as quickly as is feasible, for the sake of the accuser, the accused, and especially the wider community. Delay in dealing with sexual harassment charges leads to a loss of trust in the institution's goodwill.

5. Sexual harassment charges must be dealt with fairly.

Procedures for dealing with sexual harassment should be not only quick but fair. They should be established with input from all segments of the institution, and peers should be involved in the judgement of peers (faculty members with faculty; students with students ...).

6. Sexual harassment charges must be dealt with compassionately.

Staff members who are expected to be the first to deal with harassment charges should be trained to be sensitive to the issue. Although long delays in reporting may adversely affect the ability to get effective redress, procedures need to provide for the reality that victims are not always able, for psychological or professional reasons, to come forward quickly. The institution's sexual harassment policy should encourage victims to come forward in a timely fashion, but should set no time limits in which charges should be brought.

7. Sexual harassment must be dealt with effectively.

Because of confidentiality, sexual harassment is often essentially not dealt with at all — a letter in a confidential file and a promise of changed behavior is simply not enough. Real consequences, such as loss of salary or termination of certain duties, may unwittingly be prematurely cancelled by new administrations. The consequences of sexual harassment should be real and should be backed up by systematized institutional memory.

8. Sexual harassment must not be tolerated.

At every large institution (and many small ones) there are those about whom reports of sexual harassment have circulated, but who have never been subjected to institutional inquiry and/or action. Supervisors need to be as concerned as they would be if the issue were bad teaching or plagiarism and need to take an active stance where this seems justified, in fairness to all concerned.

Statement approved by the AWM Executive Committee, 1993

ETHICAL GUIDELINES OF THE AMS

Mathematical Research and Its Presentation

The public reputation for honesty and integrity of the mathematical community and of the Society is its collective treasure, and its publication record is its legacy.

The correct attribution of mathematical results is essential, both as it encourages creativity, by benefitting the creator whose career may depend on the recognition of the work, and as it informs the community of when, where, and sometimes how original ideas have entered into the chain of mathematical thought. To that end, mathematicians have certain responsibilities which include the following:

- To endeavor to be knowledgeable in their field, especially as regards related work;
- To give proper credit (even to unpublished sources because the knowledge that something is true or false is valuable, however it is obtained);
- To use no language that suppresses or improperly detracts from the work of others;
- To correct in a timely way or withdraw work that is erroneous or previously published.

A claim of independence may not be based on ignorance of well disseminated results. Errors and oversights can occur, but it is the responsibility of the person making the error to set the record straight.

On appropriate occasions, it may be desirable to offer or accept joint authorship when independent researchers find that they have produced identical results. However, the authors listed for a paper must all have made a significant contribution to its content, and all who have made such a contribution must be offered the opportunity to be listed as an author. To claim a result in advance of its having been achieved with reasonable certainty injures the community by restraining those working toward the same goal. Publication of results that are announced must not be unreasonably delayed. Because the free exchange of ideas necessary to promote research is possible only when every individual's contribution is properly recognized, the Society will not knowingly publish anything that violates this principle, and it will seek to expose egregious violations anywhere in the mathematical community.

Social Responsibility of Mathematicians

The Society promotes mathematical research together with its unrestricted dissemination, and to that end encourages all and will strive to afford equal opportunity to all to engage in this endeavor. Mathematical ability must be respected wherever it is found, without regard to race, gender, ethnicity, age, sexual orientation, religious or political belief, or disability.

The growing importance of mathematics in society at large and of public funding of mathematics may increasingly place members of the mathematical community in conflicts of interest. The appearance of bias in reviewing, refereeing, or in funding decisions must be scrupulously avoided, particularly where decisions may affect one's own research, that of close colleagues, or of one's students; in extreme cases one must withdraw.

A reference or referee's report fully and accurately reflecting the writer's views is often given only on the understanding that it be confidential or that the name of the writer be withheld from certain interested parties; therefore, a request for a reference or report must be assumed, unless there is a statement to the contrary, to carry an implicit promise of confidentiality or anonymity which must be carefully kept unless negated by law. The writer of the reply must respond fairly, and keep confidential any privileged information, personal or mathematical, that the writer receives. If the requesting individual, institution, agency or company becomes aware that confidentiality or anonymity cannot be maintained, that must immediately be communicated, and if known in advance, must be stated in the original request.

Where choices must be made and conflicts are unavoidable, as with editors or those who decide on appointments or promotions, it is essential to keep careful records which, even if held confidential at the time, would, when opened, demonstrate that the process was, indeed, fair. Freedom to publish must sometimes yield to security concerns, but mathematicians should resist excessive secrecy demands whether by government or private institutions.

When mathematical work may affect the public health, safety or general welfare, it is the responsibility of mathematicians to disclose the implications of their work to their employers and to the public, if

necessary. Should this bring retaliation, the Society will examine the ways in which it may want to help the "whistle-blower," particularly when the disclosure has been made to the Society.

Education and Granting of Degrees

Holding a Ph.D. degree is virtually indispensable to an academic career in mathematics and is becoming increasingly important as a certificate of competence in the wider job market. An institution granting a degree in mathematics is certifying that competence and must take full responsibility for it by insuring the high level and originality of the thesis work, and sufficient knowledge by the recipient of important branches of mathematics outside the scope of the thesis. The original results in a thesis should be publishable in a recognized journal. When there is evidence of plagiarism it must be carefully investigated, even if it comes to light after granting the degree, and, if proven, the degree should be revoked.

Mathematicians and organizations involved in advising graduate students should honestly inform them about the employment prospects they may face upon completion of their degrees. No one should be exploited by the offer of a temporary position at a low salary and/or a heavy work load.

Publications

The Society will not take part in the publishing, printing or promoting of any research journal where there is some acceptance criterion, stated or unstated, that conflicts with the principles of these guidelines. It will promote the quick refereeing and timely* publication of articles accepted to its journals.

Editors are responsible for the timely refereeing of articles and must judge articles by the state of knowledge at the time of submission. Editors and referees should accept a paper for publication only if they are reasonably certain the paper is correct.

The contents of an unpublished and uncirculated paper should be regarded by a journal as privileged information. If the contents of a paper become known in advance of publication solely as a result of its submission to or handling by a journal, and if a later paper based on knowledge of the privileged information is received anywhere (by the same of another journal), then any editor aware of the facts must refuse or delay publication of the later paper

until after publication of the first — unless the first author agrees to earlier publication of the later paper.

At the time a manuscript is submitted, editors should notify authors whenever a large backlog of accepted papers may produce inordinate delay in publication. A journal may not delay publication of a paper for reasons of an editor's self-interest or of any interest other than the author's. The published article should bear the date on which the manuscript was originally submitted to the journal for publication, together with the dates of any revisions. Editors must be given and accept full scientific responsibility for their journals; when a demand is made by an outside agency for prior review or censorship of so-called "sensitive" articles, that demand must be resisted and, in any event, knowledge of the demand must be made public.

All mathematical publishers, particularly those who draw without charge on the resources of the mathematical community through the use of unpaid editors and referees, must recognize that they have made a compact with the community to disseminate information, and that compact must be weighed in their business decisions.

Both editors and referees must respect the confidentiality of materials submitted to them unless these have been previously made public, and above all may not appropriate to themselves ideas in work submitted to them or do anything that would impair the rights of authors to the fruits of their labors. Editors must preserve the anonymity of referees unless there is a credible allegation of misuse.

These are ethical obligations of all persons or organizations controlling mathematical publications, whatever their designation.

Robert Fossum, Secretary, March 29, 1995

Adopted by the Council of the Society on March 18, 1995

NEWSLETTER DEADLINES:

Please submit *Newsletter* material by May 15 and July 15 for the next two issues if possible; it would also be helpful if ads were submitted by May 24 and July 24. Our production schedules are tight due to vacations and meetings.

CURIOSITY & CONFIDENCE

Curiosity & Confidence: Girls Claiming Science is the title of a symposium to be held at the Emma Willard School, Troy, NY, May 16–17, 1997. It will be a lively discussion with some of the country's leading women scientists on the future of science and of science education and how women's perspectives are shaping the issues. Maxine Singer, President, The Carnegie Institute of Washington, will be the keynote speaker. For more information, contact Kate Ferris at Emma Willard School, 518-274-4440 ext. 237; email: ferris@emma.troy.ny.us; <http://www.emma.troy.ny.us/symposium.html>.

WOMEN IN MATHEMATICS IN IRAN

We would like to explain the situation of students in mathematics in Iran in a short article, as it is shown statistically that the number of students in mathematics has grown over the last ten years. For example in 1983–84, the percentage of women in mathematics was 20.8% of all students; in 1984–1985, the percentage was 24.18%.

In 1983–1984 the percentage of women graduates was 15.6% of all students; in 1984–1985, the percentage was 15.1%. But during the last ten years the percentages increased greatly. In 1994–1995, the percentage of women students rose to 33.93% of all students, and the percentage of women graduates, to 22.92%.

In spite of many difficulties from the financial point of view, women try to do research in mathematics. In 1993, there were only 927 women researchers compared to 7709 researchers total; in other words, women are 12% of all researchers.

It is interesting to note that the number of researchers in private institutes is less than .1% of all researchers. As a matter of fact, the private institutes don't have the capability to cover

A. Mamourian, Department of Mathematics and Computer Sciences, Faculty of Science, University of Tehran, 14174 Tehran, Iran and M. Hosseini (M. Sc. Assistant), Department of Mathematics, University of Azahra, Vanak Street 19834 Tehran, Iran

expenses for research. Consequently it is difficult for women to publish.

There are many women who haven't been admitted to the high level of study or research at the universities. There are many liabilities preventing women from attaining the levels they are capable of. Women need much help with finances and from their administrations to be able to continue their studies in the universities and to participate in international conferences. It is expensive to obtain articles and books from abroad. Women, in spite of their interest in being active mathematicians, find it almost impossible to study and do research in higher-level mathematics.

We are trying to form an organization to help women in mathematics in Iran. We would appreciate any help in our efforts.

FEMINISM IS THE RADICAL IDEA
THAT WOMEN ARE PEOPLE!

HELP WITH TENURE BATTLES

In the last issue, a query from one of our members appeared asking about resources for tenure battles at liberal arts schools. Thanks to all who answered or passed the query along to appropriate persons.

The LAF of the AAUW (American Association of University Women) supports many tenure battles. The helpline is available at 800-321-4364 or helpline@mail.aauw.org.

WAGE (We Advocate Gender Equity) was formed several years ago as a by-product of Professor Jenny Harrison's tenure case at UC Berkeley's Math Department and the UC Irvine School of Medicine's women physicians' efforts to stop gender discrimination. They have newsletters which describe some of the cases of their members, and they can match individuals with others for help. Catherine Shepard-Haier (cshepard@ix.netcom.com) is the secretary of WAGE.

PUBLICATIONS OF INTEREST

AWM is in the news: the December issue of *The Emissary*, the newsletter of the Mathematical Sciences Research Institute in Berkeley, has a short article on the Julia Robinson Celebration of Women in Mathematics Conference held at MSRI last summer; *Progress & Perspectives: an Affirmative Action for Surveying and Mapping* has "The AWM is 25" in its November–December 1996 issue.

The *SIAM News* of October 1996 devotes page 11 to the minisymposium "Presenting Your Work and Yourself to the World: A Focus on Oral Communications," part of our two-day workshop "Focus on Reporting Research Results" held at the 1996 SIAM Annual Meeting in Kansas City. Speakers Rosemary Chang, Gerald Farin, Deborah Lockhart, and Margaret Wright gave valuable advice, reported in "A Good Speaker Is Made, Not Born." (I wish more speakers would take Farin's advice to spend three to five minutes per slide during a talk.)

"Good Vibrations: Finding Properties from Nodal Lines" by Barry A. Cipra, on the first page of the same issue, gives some highlights of the invited talk on inverse problems delivered by Joyce McLaughlin, the Ford Foundation Professor of Mathematics at Rensselaer Polytechnic Institute and organizer of the AWM workshop referred to above.

For vibrating systems, she says, you can get quite a lot of information from the places where nothing is happening....

Vibrating systems are characterized by their "natural" frequencies. Physically, these are the frequencies at which a system registers a large response to an oscillatory driving force. A loose part in a car's dashboard, for example, may rattle loudly when the engine is running at one speed but hardly at all at another. The set of natural frequencies of a vibrating system is commonly referred to as the spectrum of the system....

Mathematically, natural frequencies are nothing more than the [square roots of the] eigenvalues for the wave equation associated with the physical system....

Beth Ruskai's review of *The World According to Wavelets* by Barbara Burke Hubbard appears in the *American Scientist*, January–February 1997, pp. 85–86. As Ruskai says, "[w]hen the FBI adopts a wavelet-based standard for digital coding of fingerprints, the time is ripe for a semi-popular account of

the subject." The portion of her review perhaps of most interest to readers of this newsletter is her defense of the work of Ingrid Daubechies.

[Hubbard's] account of Daubechies's wavelet construction is even more disturbing. She quotes Yves Meyer as saying "Mallat launches brilliant ideas that keep two or three hundred people busy, then he goes on to something else. It was Ingrid Daubechies, with her tenacity, her capacity for work, who implemented it." Every mathematician to whom I showed that paragraph was astonished that anyone would reduce Daubechies's breakthrough to mere crank-turning (with hardly a mention of her many other contributions to the subject). Even though the iterative process Daubechies used was present in Mallat's multiresolution work, it was far from obvious that it could be used to construct smooth, compactly supported orthogonal wavelets. In fact, many experts did not even think such constructions were possible. Moreover, Mallat's work was itself based upon the Laplacian pyramid scheme developed earlier by Burt and Adelson.

"Baccalaureate Origins of Women Physical Science Doctorates: Relationship to Institutional Gender and Science Discipline" by Noreen Radke Sharpe and Carol H. Fuller appeared in *Journal of Women and Minorities in Science and Engineering*, vol. 2, 1995, pp. 1–15. In 1976, Tidball and Kistakowsky reported in *Science* that women's colleges and private universities were the most productive undergraduate institutions for women doctorates in the physical sciences and engineering (looking at the percentage of women who received bachelor's degrees from the institution who went on to get a Ph.D.). Fuller, in a report for the Great Lakes Colleges Association published in 1989, found that nearly 50% of the most productive undergraduate sources for women physical science doctorates were liberal arts colleges.

In this paper, Sharpe and Fuller report on a study of women receiving bachelor's degrees from 1976 through 1986 who had earned Ph.D.'s through 1991 in the physical sciences. In Math/CS, the institutions with the highest percentages of such students are (in alphabetical order): Allegheny College, Brandeis, Brown, Bryn Mawr, Bucknell, Cal Tech, Carnegie-Mellon, Case Western, Dartmouth College, Harvard-Radcliffe, Loyola University, MIT, Mount Holyoke, Oberlin College, Pomona College, Princeton, Rice, Saint Olaf College, Santa Clara University, Stanford, Stonehill College,

SUNY-Binghamton, Tufts, UC Riverside, UC San Diego, University of Chicago, University of Dallas, University of Rochester, Vassar, Wesleyan University (CT), Wheaton College (IL), and Yale. Among Liberal Arts and Comprehensive colleges (the Carnegie classifications), the median physical science doctorate productivity is significantly greater both for historically women's and former men's colleges than for historically coeducational institutions.

Mathematics and Science Education around the World: What Can We Learn? is a brochure published by the National Research Council's Center for Science, Mathematics, and Engineering Education. This brochure has been produced to help set the stage for informed discussion and debate about the rich set of findings from the Third International Mathematics and Science Study (TIMSS) which were released beginning in November and will continue to be released through 1998.

TIMSS provides detailed descriptions about what is intended to be taught in mathematics and science, as seen in curriculum goals documents and in textbooks, and what is actually taught in classrooms. It reports on teaching approaches as well.

Technology for All Americans: A Rationale and Structure for the Study of Technology is a product of the Technology for All Americans Project of the International Technology Education Association. The glossy booklet outlines the importance of technological literacy for the future of the nation. The people in the photos are a good racial and gender mix; stereotyping of activities is avoided. For more information, write: International Technology Education Association, 1914 Association Drive, Reston, VA 20191; phone: 703-860-2100; fax: 703-860-0353; email: itea@tmn.com; www: <http://www.tmn.com/Organizations/Iris/ITEA.html>.

From the editorial "Student Union" (Leslie Taylor, Doug Anderson and David Colman, University of Iowa, members of U.E. Local 896, the Campaign to Organize Graduate Students) in the December 16, 1996 issue of *The Nation*:

Graduate student organizing may never be the same in the wake of a recent announcement by lawyers for the National Labor Relations Board. The N.L.R.B. will charge Yale University with illegal retaliation against the graduate students whose grade strike for union recognition ended last January. Past N.L.R.B. rulings allowed

universities to refuse to recognize student unions on the grounds that their members were students, not employees. The current move suggests a change of approach that will make it easier for teaching assistants to unionize.

Mathematics: Making a Living, Making a Life is a publication of the National Council of Teachers of Mathematics. It is an explanation for the lay community of the three *Standards* documents produced by the NCTM. Contact: NCTM, 1906 Association Drive, Reston VA, 22091-1593; phone: 703-620-9840; fax: 703-476-2970.

Susan Estrich, a professor of law and political science at USC, wrote "Separate Is Better" for *The New York Times Magazine*, May 22, 1994. The full title is: For girls' schools and women's colleges, Separate Is Better. Those who choose single-sex schools do disproportionately well in math, science — and life. From the article:

I stopped twirling my baton when I got to Wellesley. I'd like to say that I knew I needed a women's college after all those years in the mud at football games, but it doesn't always work that way. I went to Wellesley because they gave me a generous scholarship.... I was actually miserable a good deal of the time I was there, particularly during the long winters when the janitor was the only man around. But what I learned was worth it. I spent the better part of four years in a world in which women could do anything, because no one told us we couldn't. I even took some math courses. By senior year, somehow, I'd become an accomplished test-taker. When I got to Harvard Law School, where men vastly outnumbered women and sexism was the rule, a professor told me on the first day that women didn't do very well. I laughed and decided to prove he was wrong. That's a Wellesley education.

A SMALL VICTORY

Bhama Srinivasan (AWM past president, University of Illinois Chicago) was annoyed that the choices on a form for the next International Congress of Mathematician were just "Mr." and "Mrs." but not "Ms." So she emailed the appropriate person, who added "Ms." to the form and thanked her for calling it to his attention!

AWM WORKSHOP



Three organizers: Ruth Charney (Ohio State University),
Carolyn Gordon (Dartmouth College), Catherine Roberts (Northern Arizona University)



Discussion group: Joan Hutchinson (leader; Macalester College),
Beth Chance (University of the Pacific), Carolyn Gordon (Dartmouth College)

SAN DIEGO



Discussion group: Weiqing Gu (Harvey Mudd College), Deborah Lockhart (leader; NSF), Suzanne Lenhart (University of Tennessee), Magnhild Lien (Cal State Northridge)



Discussion group: Rebecca Wahl (Purdue University), Annalisa Crannell (leader; Franklin & Marshall College), Maria Klawe (UBC)



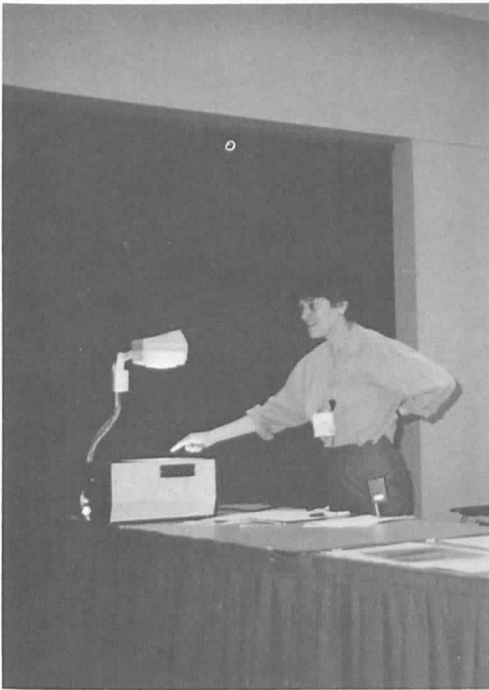
Chikako Mese (University of Southern California)



Michelle Diann Homp (University of Nebraska)
explaining her poster



AWM Panel: Launching a Career in Mathematics
Bettye Anne Case (Florida State University), Desiree Beck (NSA), Linda Rothschild (UC San Diego),
Mary Silber (Northwestern University), Mary Gray (American University)



Tracy Payne (Washington University)



Perla Myers (UC Santa Cruz), Audrey Terras (UC San Diego)



Jean Beth Mastrangeli (Bryn Mawr College), Lee Lorch (York University)



Rebecca Wahl (Purdue University), Kate Okikiolu (UC San Diego) at Wahl's poster



Stephanie Fitchett (University of Nebraska), Chandni Shah (UC Riverside)

AWM WORKSHOP: Focus on Reporting Research Results

held in conjunction with the SIAM Annual Meeting, Stanford University, California, July 13-18, 1997

Preliminary Schedule as of April 21, 1997

The Association for Women in Mathematics (AWM) plans a workshop from Sunday evening through Tuesday morning of the 1997 Annual Meeting of the Society for Industrial and Applied Mathematics (SIAM). AWM and SIAM welcome your participation.

The sessions focus on the reporting of research results and the mentoring of graduate students and postdoctoral mathematicians. Our first session is a minisymposium which focuses on skills in written communication involving research papers and grant proposals. Our workshop also has three research minisymposium, a panel discussion on research and funding opportunities, and a poster session.

Sunday, July 13, 1997

4:30 p.m. - 6:00 p.m. AWM Discussion Group (*invitation only*)

7:00 p.m. AWM Dinner Banquet
 Keynote Speaker: **Pam Cook**, University of Delaware
 Title: **"Thoughts from a Chair(person)"**

[Cash Bar from 6:15 p.m. to 7:15 p.m. -- attendees must have ticket to attend banquet; contact AWM for ticket information]

Monday, July 14, 1997

8:00 a.m. Coffee

8:30 a.m. - 10:30 a.m. AWM Minisymposium on Presenting Your Work and Yourself to the World: A Focus on Written Communications

One key to success in academia and industry is a person's ability to communicate with those around her. These talks will focus on how to develop written communication skills. The relevance of excellent technical work must be clearly displayed. Writing journal articles and grant proposals will be included.

Organizer: Linda R. Petzold, University of Minnesota

8:30 a.m. **Deborah F. Lockhart**, National Science Foundation [← at press time this was the tentative order of talks]

9:00 a.m. **Margaret H. Wright**, Bell Laboratories [← Titles of talks: to be announced]

9:30 a.m. **Lloyd N. Trefethen**, Cornell University

10:00 am. **Linda R. Petzold**, University of Minnesota

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

12:45 p.m. - 1:30 p.m. Panel Discussion on Research and Funding Opportunities

Panelists: **Avner Friedman**, Institute for Mathematics and its Applications
Deborah F. Lockhart, National Science Foundation
Wen Masters, Office of Naval Research [Tentative]

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

Donna Calhoun, University of Washington

Carolyn (Hill) Coleman, Case Western Reserve Univ.

Ivonne Diaz-Rivera, Arizona State University

Anna V. Georgieva, Duke University

Sigal Gottlieb, Brown University

Misha E. Kilmer, University of Maryland, College Park

Kristen S. Moore, University of Connecticut

Ruth Pfeiffer, University of Maryland, College Park

Svetlana Rudnaya, University of Minnesota

Maria Sosonkina, Virginia Tech

A Cartesian Grid Method for 2d Stefan problem

Expanding Generalized Receiver Operator Characteristic (ROC) Analysis

The Dynamics of Queues of Re-entrant Manufacturing Systems

Nonlinear Particle Chains with Alternating Masses

Weighted ENO Schemes for Steady State Calculations

Cauchy-like Preconditioners and 2-D Ill-posed Problems

On a Singular Semilinear Elliptic Boundary Value Problem with Boundary Blowup

A Threshold Estimation Problem for Stochastic Processes with Hysteresis

Application of Genetic Algorithms in Diffractive Optics Design

Sparse Approximate Inverses in Preconditioning of Distributed Linear Systems

- continued on next page -

AWM WORKSHOP at the SIAM Annual Meeting

Monday, July 14, 1997 (continued)

3:30 p.m. - 5:30 p.m. AWM Minisymposium on Mathematical Modeling

Modeling is the key to many application areas. This minisymposium will treat a variety of mathematical models and applications. The underlying systems to be modeled range from continuous to discrete.

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

3:30 p.m. Gabriella A. Pintér, North Carolina State University

4:00 p.m. Debra Polignone Warne, Univ. of Tennessee, Knoxville

4:30 p.m. Kathleen A. Rogers, University of Maryland, College Park

5:00 p.m. Hong Zhou, University of North Carolina, Chapel Hill

Global Attractors for Damped Abstract Nonlinear Hyperbolic Systems

Non-symmetric Deformations in Incompressible Nonlinear Elasticity

Stability Properties of Equilibria within a Continuum Mechanics Model of DNA Minicircles

The effect of dynamic surface tension on the oscillation of slender elliptical Newtonian jets

3:30 p.m. - 5:30 p.m. AWM Minisymposium on Optimization

This minisymposium will present a variety of optimization problems with varied applications. The impact of scientific computing on these problems will be illustrated.

Organizer: Margaret H. Wright, Bell Laboratories

3:30 p.m. Dana Bedivan, University of Texas at Arlington

4:00 p.m. Tamara G. Kolda, University of Maryland, College Park

4:30 p.m. Lianfen Qian, Florida Atlantic University

5:00 p.m. Zhiyun Yang, Pacific Northwest National Laboratory

Least Squares Methods for Optimal Shape Problems

Information Retrieval via Limited-Memory Matrix Methods

On Maximum Likelihood Estimators for a Threshold Autoregression

The solution of the Elliptic Boundary Value Problems on Irregular Regions

Tuesday, July 15, 1997

8:00 a.m. Coffee

8:30 a.m. - 10:30 a.m. AWM Minisymposium on PDEs and Applications

Partial differential equations model a variety of physical and biological applications. This minisymposium will showcase different types of PDEs and solution methods and display the applications.

Organizer: Joyce R. McLaughlin, Rensselaer Polytechnic Institute

8:30 a.m. Xin Chen, University of Illinois Laboratory

9:00 a.m. Dawn A. Lott-Crumpler, Univ. of Maryland, College Park

9:30 a.m. Elsa Newman, Marymount University

10:00 a.m. Barbara Niethammer, CIMS, New York University

Worse Case L-infinity to L-infinity Gain Minimization Via State Feedback

The Quasilinear Wave Equation Governing Compressional Wave Motions of Nonlinearly Elastic Bodies: A Numerical Approach

Axisymmetric Flow in Transonic Aerodynamics

Derivation of the Lifshütz-Slyozov Theory for Coarsening by Homogenization Methods

REGISTRATION: There is **NO registration fee for the AWM Workshop**. The minisymposia, panel session and poster session are open to all. **Pre-registration for workshop lunch and dinner banquet tickets are strongly encouraged**. Tickets on-site will be very limited. Individuals can inquire about ticket availability from the AWM staff on-site. To obtain a pre-registration form for the meal functions, please contact the **AWM office, 4114 Computer and Space Sciences Bldg., University of Maryland, College Park, MD 20742-2461; 301-405-7892 or awm@math.umd.edu**. **Meal function registration deadline is June 15, 1997**. For further information on the workshop, contact the workshop chairperson, Suzanne Lenhart (lenhart@math.utk.edu) or Dawn Wheeler at the AWM office (awm@math.umd.edu).

ADVERTISEMENTS

BROCK UNIVERSITY, ONTARIO, CANADA - DEPARTMENT OF MATHEMATICS - The Department of Mathematics at Brock University invites applications for two nine-month limited term appointments at the entry Assistant Professor level, subject to budgetary approval. The beginning date is September 1, 1997. Applicants should have the Ph.D., with demonstrated research potential and a strong teaching record. Duties may include teaching either mathematics major courses or service courses. For one position we seek a person in Analysis, for the other a broad pure mathematician with a special concern for preparing teachers. In each case, an extension to a second nine-month appointment is possible. In accordance with Canadian immigration requirements, this advertisement is directed first to Canadian citizens and permanent residents. Applications including a curriculum vitae and names of three referees should be sent to: **Professor T. A. Jenkyns, Department of Mathematics, Brock University, St. Catharines, Ontario, Canada L2S 3A1**, for receipt by June 4, 1997. Brock University is committed to a positive action policy aimed at reducing gender imbalance in faculty; qualified women are especially encouraged to apply.

SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE - DEPARTMENT OF MATHEMATICS - Temporary Positions 1997-1998 - Temporary positions as Lecturer are anticipated starting on August 16, 1997. Master's degree in mathematics or admission to candidacy required; Ph.D. preferred. Applicants must provide evidence of excellence in teaching and evidence of ability to teach in English effectively. Preference given to applicants with research interests compatible with those of the faculty. The duties will consist of 12 hours of undergraduate mathematics instruction each semester. Closing date May 15, 1997, or until positions are filled. Send applications (including transcripts) to: **Temporary Positions c/o Ronald Kirk, Chair, Department of Mathematics, Mailcode 4408, Southern Illinois University at Carbondale, Carbondale, IL 62901**. SIUC is an Equal Opportunity/Affirmative Action Employer.

ASSOCIATION FOR WOMEN IN MATHEMATICS

1996/1997/1998 MEMBERSHIP FORM

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

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

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

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

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

PROFESSIONAL INFORMATION:

If student, GRADUATE or UNDERGRADUATE? (circle one)

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

DEGREES EARNED:

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

INDIVIDUAL DUES SCHEDULE

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

REGULAR INDIVIDUAL MEMBERSHIP.....	\$ 40	_____
2ND FAMILY MEMBERSHIP..... (NO newsletter) Please indicate regular family member: _____	\$ 30	_____
CONTRIBUTING MEMBERSHIP..... Indicate if you wish for this contribution to remain anonymous: _____	\$100	_____
RETIRED or PART-TIME EMPLOYED MEMBERSHIP (circle one).....	\$ 20	_____
STUDENT or UNEMPLOYED MEMBERSHIP (circle one).....	\$ 10	_____
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.	\$ 8	_____
<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"	\$	_____

INSTITUTIONAL DUES SCHEDULE

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

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

TOTAL ENCLOSED \$ _____

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