AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 21, Number 5 NEWSLETTER September-October 1991

PRESIDENT'S REPORT

Careers That Count

By the time this arrives, the Orono meeting will have taken place and our careers booklet will have appeared. For now, leaving other comments for the November-December issue, let me thank Jenny Baglivo for her work with the panel, and also the schools who helped send the Schafer Prize winners to Maine.

Start The Meeting Right

Tricia Cross writes in this issue about the AWM Workshop held July 7th at ICIAM in Baltimore. I'd like to add my thanks to all those who worked for its success, including Pam Cook for chairing the workshop and Joyce McLaughlin, Richard Tapia, Deborah Lockhart and Julia Abrahams for their participation. It was a great way to start the meeting, and we'll use the same format again in the same city at the annual math meetings in January. Be sure to apply to attend and/or encourage eligible women to apply [see ad in this issue].

Also, the workshop is open to everyone — so mark your calendars now, to be sure to begin this mathematics meeting in good company!

Breakfast in Illinois

Laura van Zoest writes that the AWM breakfast at the Illinois sectional MAA meeting has become the first annual such meeting, with the program committee already requesting a repeat for 1992. Good work is rewarded with more work, but also with thanks to Laura!

And in Wisconsin

Rumor has it that Mary Ellen Rudin is now drinking coffee from an AWM mug, presented to her by Judy Roitman on AWM's behalf at the banquet at the Topology Conference in Mary Ellen's honor. A month later Mary Ellen wrote that the diehards were still in Wisconsin with "mathematics all afternoon and food all night!" Sounds like a perfect life to me!

See AWM Baltimore Workshop announcement on page 43.

IN THIS ISSUE

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

The Association was founded in 1971 in Boston, MA. 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: 4,000.

Notice the *Notices*

Be sure to read the *Notices* of the AMS for September; it's the "women's issue," produced under the skilled hand of Allyn Jackson, with a variety of articles about women in mathematics. There's a Marcia Sward quote in Judy Roitman's article which is absolutely wonderful — don't miss it!

That P-word Again

The department chairs' meeting takes place October 18-19 in Arlington with pipeline issues as its focus. I hope to see some of you there (not that I wish the job of department chair on anyone!).

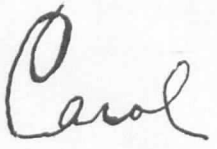
What AWM Presidents Do

When we're not going to Washington, we're being asked to serve on committees and task forces and being asked for names of others to do likewise. There is important work to be done within the mathematics community, I believe, and such service adds a certain perspective. You know better than anyone else what you are good at, what you have time and interest for, and so I would appreciate hearing this from you. Otherwise the same people end up doing much too much — and as women mathematicians we know too well the dangers there. I don't mind being told what I should already know about you, so please drop me a line.

A Very Personal Note

A family crisis has demanded almost all my attention from mid-June until now. Fortunately, my husband is recovering from traumatic brain injury at record pace, and we will have lost little more than a summer.

Everyone in the AWM hierarchy has been supportive and sympathetic, and this has meant more to me than I can say. I had to lean hard on Jill, Anne, and Tricia, to name a very special three. AWM's and my thanks are also owed to Jean Gibb and Janis Baker at Wesleyan, who have taken care of so many things in my absence, including work with Tricia and me for AWM, and who are always there when I need them.



Carol Wood
Middletown, Connecticut
July 30, 1991

TREASURER'S REPORT: JUNE 1, 1990 through MAY 31, 1991

ASSETS as of June 1, 1990	
Operating Funds	$43,989.13
Washington Water Power, 5 shares valued at	111.88
Reserve Funds	20,042.34
ATSchafer Prize Fund	15,348.51
TOTAL ASSETS	$79,491.86
RECEIPTS:	
Dues – Individual	$23,492.00
Family	1,675.00
Institutional & Affiliate	14,680.00
NSF Travel & Workshop Grants	40,000.00
Exxon Grant for AWM	7,500.00
Raytheon Grant for AWM-Simmons Summer Institute	10,000.00
ATSchafer Prize Contributions	9,345.00
Advertising, Publications, Postage, Tax Return	978.04
Contributions	7,654.23
Interest on Operating Funds and Dividends	3,081.97
TOTAL RECEIPTS	$118,406.24
OTHER INTEREST INCOME:	
Reserve Fund Interest	$1,658.70
ATSchafer Fund Interest	$1,315.22
EXPENSES:	
Wages, FICA & Benefits for Executive Director (1)	$20,422.53
Office Assistance & Accounting (1)	4,351.67
Other Operating Expenses (1)	10,516.64
Newsletter Expenses	9,923.98
Bulk Mailing	2,508.14
AWM National Meetings (1)	1,024.24
Dues and Fees: Massachusetts Incorp. Fee, CBMS Dues	525.00
Exxon Grant Expenses: Meetings, SKHSDays, ATS Prize II	10,895.97
NSF Travel & Workshop Grants Expenses	35,667.42
ONR Workshop Grant Expenses	8,867.46
Exxon Resource Center Grant Expenses	19,262.94
AWM-Simmons Summer Institute	10,000.00
ATS Schafer Prize	1,000.00
TOTAL EXPENSES	$134,965.99
TRANSFER to ATSchafer Prize Fund	$8,336.27
BALANCES as of May 31, 1991	
Operating Funds	$19,093.11
Reserve Funds	$21,701.04
ATSchafer Prize Fund	$25,000.00

(1) Amounts are less expenses charged to NSF, ONR and Exxon Grants.

Respectfully submitted, Jenny A. Baglivo, Treasurer
Mathematics Department, Boston College, Chestnut Hill, MA 02167

AMS ELECTION STATEMENTS

As usual, all candidates for contested offices of the American Mathematical Society were invited to submit a statement in support of their candidacy to the *Newsletter*. Candidates for the Nominating and Editorial Boards Committees were announced late enough that they may not have had sufficient time to respond (so a lack of response should not be interpreted as a lack of interest). The response rate for the other offices was very good.

The letter sent to the candidates invited them to discuss the following:

> Topics discussed in the past which you might wish to consider have included the following: the role of the AMS Council, promotion and tenure practices, the David report and its implications, and how to attract more members of underrepresented groups into the mathematics pipeline.
>
> A topic of special concern this year is the following: A Strategic Planning Task Force has recently been appointed by the AMS to reexamine the Society's mission and to formulate specific goals for the AMS over the next three to five years. What do you feel this mission and these goals should be? Possible strategic issues include the current job crisis, the pipeline issue, and parental leave policies.

All responses received to date are included below. Other responses will appear in the November-December issue. The pink sheets that come with the ballot provide further information to help you make your electoral choices.

One president will be elected. The Council has nominated Ronald L. Graham and Stephen Smale. One vice-president will be elected. The Council has nominated Avner Friedman, Linda Keen, and Robert Osserman. One trustee will be elected. The Council has nominated Maria M. Klawe and Charles C. Sims. Five members-at-large will be elected. The Council has nominated Ruth M. Charney, Carl C. Cowen, Jr., Jacob E. Goodman, Alfred W. Hales, Rebecca A. Herb, Joshua A. Leslie, Elliott H. Lieb, De Witt L. Sumners, and Gunther A. Uhlmann. Three members of the Nominating Committee will be elected. Carol S. Wood has been nominated by petition. President Artin has nominated Daniel M. Burns, Hermann Flaschka, John B. Friedlander, Joseph Lipman, and Birgit Speh. Two members of the Editorial Boards Committee will be elected. The President has nominated Eugene Fabes, John Fornaess, Bhama Srinivasan, and Robert Zimmer.

All candidates are professors in departments of mathematics unless otherwise noted.

PRESIDENT-ELECT

Ronald L. Graham, Adjunct Director, Research, Information Sciences Division, AT&T Bell Labs

I think it is difficult to explore in any depth the many complex issues now facing the profession and the AMS in just a paragraph or two. As you know, my wife is a mathematician, and I have always been particularly sensitive to the wide spectrum of career obstacles that women in mathematics and science have faced. We are once again reminded of how far we have yet to go by the recent article in *Science* (concerning Jenny Harrison and U.C. Berkeley).

I enclose my statement for the *Notices*.

In recent years the activities of the AMS have begun to expand beyond their traditional boundaries, moving from an earlier almost exclusive focus on considerations of mathematical scholarship and research, into a broad spectrum of current issues involving topics such as employment and the volatile job market, mathematics education, research funding, renewal of the profession, public awareness and appreciation of mathematics, and the serious underrepresentation of women and minorities at all levels of the mathematical ladder. I feel that this trend is not only healthy, but, in fact, essential, if the AMS is to serve its membership as effectively as it should. Many of the problems now facing the Society and the profession need urgent attention. It will require creative thinking and bold actions by the AMS leadership to successfully address these critical issues. To carry out this program, the Society will have to involve a much fuller representation of the membership, to become less exclusive and more inclusive, than it traditionally has in the past.

I have always had a strong personal commitment to serving the profession. The office of AMS President offers the ultimate challenge, one to

which, if elected, I would certainly give my best shot.

Stephen Smale, Berkeley

Among many issues of present and potential AMS involvement, let me comment only on the following: I feel that recognition (tenure, awards, etc.) in mathematics should be based on broader intellectual grounds than at present. There is too much weight given to technical expertise as expressed in the number of research papers, often written for a small audience in a narrow field. Research and quality exposition can go hand in hand. Good exposition can communicate new mathematics to a broader community, frequently with perspectives on history, philosophy or science in general. The present technical style of much research, articles and lectures, hampers mathematical education.

My opinions on various issues related to mathematics have been expressed in print frequently enough. Most recently one can see interviews in: (1) *More Mathematical People*, edited by Albers, Alexanderson and Reid, Harcourt Brace Jovanovich, Boston 1990; (2) *Nonlinear Science Today*, Vol. 1, #1, Springer-Verlag, 1991.

VICE-PRESIDENT

Avner Friedman, Director, Institute for Mathematics and Its Applications, University of Minnesota

Some of the main strategic issues facing the AMS in the next three to five years are:

(1) How to alleviate the job situation for new Ph.D.'s.

(2) How to increase the proportion among math Ph.D.'s of women and minorities.

(3) How to broaden the scientific education of mathematics undergraduates so that they can find jobs in an increasingly technological society.

Here are a few thoughts on these issues. The training of mathematics Ph.D.'s needs to include more integrated skills (e.g., math and biology, math and environmental studies, math and scientific computing, math and education). This will broaden their employment possibilities as well as help enhance the role of mathematics in our society. Women, in graduate schools (this is where the biggest dropout occurs) should receive much more encouragement; for minorities such encouragement is badly needed already at the undergraduate level (freshmen and sophomores). The AMS must work together with engineering and scientific societies as well as with MAA and SIAM to examine closely math-science education in the country and develop pilot programs at the high school and undergraduate levels.

Linda Keen, CUNY, Lehman College

The role of the AMS is to support the mathematical community in its broadest sense. This includes the important traditional areas of support such as research, as well as mathematical education, job opportunities and public information. To increase its effectiveness the society has begun to encourage active participation by a broad spectrum of members both in appointed and elected positions. Since it is demographically clear that the new generations of mathematicians must come from underrepresented pools such as women and minority groups, the AMS must be in the forefront of the efforts to recruit from these pools. These potential mathematics students must be recruited and prepared at an early age. Therefore, the AMS should support the efforts of existing programs and encourage new programs for teachers working with students in junior high and high schools in urban areas. As vice-president, I would encourage involvement of the AMS in these activities.

The state of the economy means that finding new funds in higher education will be extremely difficult. The AMS must be extremely vocal in its efforts to convince state legislatures that education in science is relatively inexpensive and vitally important to the functioning of our society. This is only one way in which it can approach the job crisis facing the current generation of new mathematicians.

Support for mathematics research is more important than ever. The recent cut-backs in the numbers of individual grants hurt most those who are now tenured but are not at the most prestigious institutions; this includes almost all tenured women. The AMS should work to increase the

amount of non-military research funding and the number of individual research grants. It should be guided in its efforts by the AMS referendum relating to these issues.

The motions passed by the membership mandate the Society to set standards for government and university support of research. I am sympathetic with the spirit of these motions and will support efforts of the council to carry them out.

Robert Osserman, Deputy Director, MSRI

Thank you for your letter and for the opportunity to respond to your question about specific goals for AMS in the coming years. Here is a summary of my current thoughts on several issues.

It seems to me that the most pressing problem facing the mathematics community in the next few years is the employment crisis. We seem to be reliving the period in the 1930's when a faltering economy combined with a mass influx of refugees resulted in the premature end to many careers — of both refugees and U.S. citizens. One may hope that the current economic crisis will prove less deep and long lasting than the earlier one, but it is clear that in the best case, we will have a period of two to five years when many new Ph.D.'s will fail to find jobs and many young mathematicians will not be advanced to tenure. I believe that AMS should set up a fund designed to assist mathematicians in maintaining their professional status and activities during these transitional years. Some of the funds may come from diverting AMS resources from other areas, and some may result from a specific fund-raising effort for this purpose. One possible format might be to offer matching funds to encourage universities to release some of their own resources and make temporary appointments of eminently employable, though unemployed, mathematicians. It seems to me that a concentrated effort will not only help to alleviate the immediate problem, but also serve to assure underrepresented groups now being actively encouraged to pursue a mathematical career that at the end of a long hard road to the Ph.D., a reasonable hope of employment awaits them.

A second issue that faces us is how to deal with the effects of the end of mandatory retirements in 1994. That too may have an impact on the number of jobs opening up to new and recent Ph.D.'s, but even more critically, it can — perhaps must — affect the whole structure of the tenure system. The problem is clearly not peculiar to mathematics, but still should be addressed by us as one of the affected groups.

A third area of concern is the limited range of mid-career opportunities for research and revitalization. Again the problem is compounded by the current economic crisis that has led in some cases to cancelation of sabbaticals. A major task of AMS in the coming years will be to set priorities, to try to determine an appropriate balance for the distribution of available funds, and to engage in additional fund-raising efforts.

TRUSTEE

Maria Klawe, Computer Science Department, University of British Columbia

After agreeing to be nominated for the position of Trustee of the AMS, I provided the AMS with the following brief statement of my goals for the AMS:

> The AMS should continue to promote and support mathematical research, and should also continue to play a leadership role in other initiatives which affect the long term future of mathematics. I am particularly interested in initiatives in the following three areas: human resource issues (e.g. attracting and retaining women and minorities, motivating more students to pursue careers in mathematics); mathematical education in grades K-12 (especially exposing students to the delights and challenges of mathematical research); research interactions between mathematics and other disciplines (e.g. computer science, physics, biology).

I would like to use this opportunity provided by the AWM *Newsletter* to mention the reason I am running for the position of Trustee. The request to run came smack in the middle of one of my periodic "just say no" phases, one of those times when being a mother, researcher, and head of a department going through a major growth spurt seemed totally incompatible with meeting the myriad of other professional responsibilities looming on the horizon. I almost said no on the spot (and indeed I would have said no if the request had

come two months later, after the time when my 80-year-old father became very ill — I now really do say no to all new requests), but I agreed to think it over for a week or two. Over that time I became convinced that this was something I wanted to take a shot at. Here is the reason why.

The initiatives I list in my statement are not new interests for me — I have been out talking in the schools and at career workshops for almost fifteen years, and I have spent much of the past ten years trying to stimulate, facilitate and legitimize (in both disciplines) joint research between mathematicians and computer scientists. Sometimes (often?) I have felt like a voice crying out in the wilderness. Recently, however, all these projects have become fashionable, and I have the conviction (or at least strong optimism) that we can really make significant progress. I believe that the entire mathematical research community can and should have tremendous impact in all these initiatives, and I want the AMS to play a strong leadership role. I view serving as a Trustee as an opportunity to help make this happen.

MEMBER-AT-LARGE

Ruth Charney, Ohio State University

The primary mission of the AMS is to promote outstanding mathematics research. However, this mission must not be interpreted too narrowly. Increased participation of women and minorities, improvements in mathematics education at all levels, and greater communication with the outside world will ultimately contribute to a stronger research community. As a member of the Executive Committee of the Association for Women in Mathematics for the past few years, I have been actively involved with issues concerning women and minorities. I will bring to the AMS Council the ideas and insights I have gained from this experience. The restructuring of math/science education in this country is another area of major concern. The AMS must open debate on how it can play a constructive role in this process. Finally, it is essential to the health of academic mathematics that it not isolate itself from the larger scientific community. For example, a problem currently plaguing the mathematics community is the scarcity of jobs for new Ph.D.'s. A partial solution to this problem might be to explore and publicize opportunities for jobs outside of academics. To best serve mathematics as a whole, the AMS must keep its eyes, ears, and mind open to a changing environment.

Carl C. Cowen, Jr., Purdue University

I am running for the AMS Council because I am concerned by the current state of American mathematics and its future direction and because I feel that membership on the Council is one way in which I can affect that direction.

I believe the Society is and should be an organization for the mathematics research community, broadly interpreted, that it furthers the interests of this community and represents it to the rest of the country and the world. This involves many activities, from publishing and organizing meetings to advocating policies affecting the mathematical community. The Strategic Planning Task Force will be examining all these activities and formulating goals for the Society in the next few months.

By and large, I feel the activities of the AMS involving publications and meetings are going well and probably will not be a principal concern of the Task Force. However, the Task Force's recommendations on the missions of the Society in the renewal of our profession, in education, in research funding, in communication, and in jobs will be more decisive. It is imperative that the Task Force seeks and receives broadly based input on these issues.

The single most important problem facing mathematics in the United States is the renewal of our profession. To quote President Carol Wood in her report in the AWM *Newsletter* of July 1991, "it's not only *fair* to include women and minorities; it's *necessary*." It is the responsibility of the AMS, and every individual mathematician, to advocate policies that will improve the preparation of students for, and increase interest in, mathematical careers. Our historical and cultural heritage makes it necessary to especially target women and minorities in this effort. AMS programs and other national programs have a key role, but also AMS needs to facilitate communication among departments and individual mathematicians who have effective plans for recruitment or bridging the gap between undergraduate and graduate mathematics. The AMS and individual mathematicians, in a

myriad of little ways, need to help change the cultural climate that has gotten us here.

As an individual who works to bridge the gap between research and non-research institutions, who works to coordinate teaching and research on my own campus, who works to provide opportunities for women and minorities in mathematics, and who works to attract students to our discipline, I will be an effective representative on the AMS Council.

Jacob E. Goodman, CUNY, City College

There are a number of problems confronting the American mathematical community that I feel must be addressed if we are to retain our scientific vitality. These are: (1) persisting inequality of access and of opportunity for women and minorities; (2) the draining away of funds from individual researchers to support large institutes, especially at this time when resources are scarce; (3) the declining quality of primary and secondary education in mathematics and the concomitant widespread mathematical illiteracy among our fellow citizens; (4) the critical shortage of jobs for mathematicians, which is being compounded by the influx of increasing numbers of mathematicians from other countries.

I come from an institution that — as much as any — has borne the brunt of the educational crises of the past twenty years, that continues to produce students who are capable of entering into the front ranks of mathematical researchers and — at the same time — finds that it must also concern itself with thousands of underprepared students who are sometimes unable to perform the simplest arithmetical calculations. This same challenge, of balancing academic excellence on the one hand, and educational access on the other, is now being faced by increasing numbers of institutions around the country, and the Society must provide leadership in helping them to meet it successfully.

Alfred W. Hales, UCLA

The primary purpose of the AMS is, and should continue to be, the promotion of mathematical research. At the present time specific attention to educational issues and the pipeline problem is essential for the health of mathematical research. The AMS should work with the AWM, MAA, etc. — without preempting the mission or responsibilities of these organizations — to address the pipeline problem, job crisis, and other related issues.

Rebecca A. Herb, University of Maryland

The primary mission of the AMS is to promote high quality mathematics research. However, the AMS must also take an active role in other issues facing the profession of mathematics. We must promote good teaching at all levels, encourage talented young people, especially women and minorities, to enter the field, and improve communication between mathematicians and other scientists and the general public.

De Witt Sumners, Florida State University

Mathematics is a changing discipline in a rapidly changing world. The American Mathematical Society is currently reviewing its mission through strategic planning. Among its strategic goals, the Society seeks to increase participation of women and minorities in mathematics, to improve the way mathematics is taught and learned, and to expand avenues of communication between mathematics and the natural sciences, and mathematics and the public at large. These and other goals must be accomplished without diminishing the promotion of quality mathematical research. The forces of change provide challenges and opportunities for the Society. I would welcome the opportunity to serve on the AMS Council and to help in finding ways to meet these challenges.

NOMINATING COMMITTEE

John B. Friedlander, University of Toronto

The current job crisis differs from that of twenty years ago in that it is not the result of an oversupply of mathematicians but rather an undersupply of money. It is therefore of greater danger to the mathematical community since, if it persists, it may lead to a re-definition downward of what is the proper supply.

The AMS should greatly expand its reawakened interest in instruction. Instruction in Calculus may attract the largest numbers, but there

Calculus may attract the largest numbers, but there is need for the AMS to encourage an interest in all levels of instruction, undergraduate and graduate, including the training of graduate students (and young faculty) in teaching and including the training of young Department Chairs in administration. This is our business in any case and it can have an effect, everywhere locally, on the job crisis.

Joseph Lipman, Chair, Purdue University

The fundamental task of the AMS is, and must remain, to foster communication about Mathematics among all devotees.

The Society should also be concerned with the vitality of the profession — employment outlook, equal opportunity, research support, education, representing Mathematics to the world at large, etc. But within our capabilities, we can hope to deal effectively with such societal issues only after thorough consideration and judicious choice: there is a danger that any of them could turn into a black hole for good intentions. If the job situation is bad, might that not mean that there is an oversupply of mathematicians? Should we be encouraging people to become mathematicians who don't find the calling irresistible? To whom, and with what sense of context, are the research appendices to the 1990 David report addressed?

The Society needs leaders of proven accomplishment and broad outlook, to pursue its priorities without getting bogged down by overcommitment or polemics. As a member of the Nominating Committee, my aim would be to promote such leadership.

Carol S. Wood, Chair, Wesleyan University

This is not a power trip on my part, running for yet another office! I was persuaded that, through AWM and related activities, I could provide some good names to the committee. If you vote for me, or if you don't and I'm elected anyway, please send me suggestions for AMS officers and committees.

EDITORIAL BOARDS COMMITTEE

Bhama Srinivasan, University of Illinois at Chicago

New developments in mathematical research change the editorial needs of journals. One particular example is the recent interactions of mathematics and physics. I would like to play a role in the selection of editors to reflect the new trends in mathematics.

One of my first involvements with AWM was to work on a project aimed at increasing the representation of women on the editorial boards of journals. Women now serve as editors of many journals. I would also like to play a role in ensuring that this trend continues.

LETTER TO THE EDITOR

Thank you for the brief article (July-August '91) about the case of Jenny Harrison. Readers interested in knowing more about this case should read the June 28 issue of *Science*.

The *Science* article places Harrison's case in context: among tenure track positions in the top ten mathematics departments in the United States there are four women out of 363 tenure positions, and one woman out of 86 nontenure positions.

We have formed a support group for Harrison. We will shortly be mailing out a newsletter with an update of the legal activities in the case; we are raising funds for the legal battle (which has already cost $120,000); and we are publicizing her case to illuminate the discrimination faced by women mathematicians.

We welcome support. For further information please write to: The Support Committee for Jenny Harrison, 841 Coventry Road, Kensington, CA 94707.

Charity Hirsch
Secretary, Support Committee for Jenny Harrison

CALL FOR NOMINATIONS: THE LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be given annually to a woman at the January Business Meeting. Shirley Frye received the first such award in January 1991. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. The awardee will be selected by a committee appointed by the President and will receive a citation at the AWM Business Meeting.

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.

Nominations for the award should be sent by October 7, 1991 to: The Hay Award Committee, c/o Patricia N. Cross, Association for Women in Mathematics, Wellesley College, Box 178, Wellesley, MA 02181. (617) 237-7517.

AWARDS AND HONORS

Congratulations to all the women listed below for their meritorious achievements.

First we list those who have earned Graduate Fellowships or Minority Graduate Fellowships in the mathematical sciences from the National Science Foundation. The lists provide the following information: name, current field, baccalaureate institution, and tentative fellowship institution. Fellowships are for three years of support.

Graduate Fellowships were awarded to: Jennifer Elaine Beineke, algebra, Purdue University, UCLA; Marianne Parcella Bitler, applied math, Penn State, University of Minnesota; Carol Ethel Fan, topology, Pomona College, Cornell University; Brenda Lucille Genet, topology, Calvin College, University of Texas; Deborah Gail Goldman, algebra, MIT, Harvard University; Tempie Elizabeth Hulbert, statistics, Indiana University, University of Michigan; Helen Louise Kim, algebra, Texas A&M, University of Illinois; Miriam Ann Myjak, applied math, Seattle University, Berkeley; Jèanne Adele Nielsen, geometry, Duke University, Harvard University; Christina Ann Sormani, analysis, NYU, NYU; Ileana Vasu, topology, Stanford University, Yale University; Susan Lynn Whitmire, operations research, Georgia Tech, Stanford University; Kim H. Whittlesey, topology, Princeton University, Berkeley; and Elizabeth Lee Wilmer, algebra, Radcliffe College, Princeton University.

Minority Graduate Fellowships were awarded to: Alana Tonita Hodges, statistics, Florida Agricultural and Mechanical University, Georgia Tech; Karen Denise King, algebra, Spelman College, University of Maryland; Stephanie Ruth Land, statistics, University of Texas, Harvard University; Janice Sofia Murgio, analysis, George Washington University, Berkeley; Sarah Elaine Triana, algebra, Stephen F. Austin State University, University of Texas; and Pamela Joy Williams, operations research, University of Kentucky, University of North Carolina.

Rageshree Ramachandran has received a third prize ($250) Karl Menger Memorial award at the 42nd International Science and Engineering Fair. The award was presented by the American Mathematical Society for her project "A Chaotic Model for the El Niño-Southern Oscillation." Ramachandran, 16, is a student at Rio Americano High School, Sacramento, CA. She won two other awards at the Fair and was also a tenth-place winner in the Westinghouse Science Talent Search.

Catherine A. Roberts has received an AWIS Educational Foundation Citation of Merit. Currently a graduate student at Northwestern University, she earned an A.B. in math and art history from Bowdoin College. Her thesis is entitled "A Class of Integral Equations Which Model Explosion Phenomena."

Dr. Lê Hồng Vân recently became the second woman in Vietnam to earn a doctorate in

mathematics. She earned the degree in Moscow; in December 1990, she was awarded the annual prize of the Moscow Mathematical Society, which was the first time the prize has been awarded to a foreigner. Pham Thi Hà Dương, another Vietnamese woman, won a bronze medal at the Mathematics Olympiad in Beijing.

Elizabeth Wilmer, one of last year's Alice T. Schafer Prize winners, was just awarded an AT&T Bell Labs Graduate Research Program for Women (GRPW) Fellowship to attend graduate school at the University of Chicago. The fellowship provides full tuition, an annual stipend of $13,200, books, fees, and related travel expenses. GRPW is designed to identify and develop research ability in women and to increase their representation in science and engineering. The program provides each participant with the opportunity to work with an established scientist, her mentor in her area of interest, at AT&T Bell Labs. Ron Graham will be Wilmer's mentor during her graduate career.

QUERY

For a four-week course next January, I would appreciate receiving suggestions of works of fiction and science fiction in which women mathematicians or computer scientists play a significant role. My list so far includes *Night and Day*, *Rough Strife*, *Hypatia*, *Presumed Innocent*, *The Mind-Body Problem*, *The Eight*, *Imperial Earth*, *Sweet Death Kind Death*, *First Light*, *A Matter of Numbers*, and *The Dispossessed.*

Joan P. Hutchinson, Math Dept., Macalester College, St. Paul, MN 55105, hutchinson@macalstr.edu

CORRECTION

The press release for Claudia Zaslavsky's book *Zero: Is It Something? Is It Nothing?* transposed two digits in the book-order number. The correct number is 1-800-843-3749.

LETTER FROM THE EDITOR

First, let me thank Cathy Kessel and Sally Lipsey for faithfully providing me with material every issue. I'll pass along a request from Cathy for more book reviewers: she's been writing most of the reviews lately (and does a fine job of it, I might add), and it would be nice to have both more reviews and different perspectives. Sally, of course, is always looking for more state reporters.

I frequently am asked in what form I prefer to receive submissions. If you are sending me original copy, e-mail is my absolute favorite. No formatting is necessary; I reformat everything for consistency, anyway, so I just have to strip out any TeX or other format instructions. Plain ASCII is just fine! It is helpful if you leave spaces between paragraphs; even though I remove most of them, I can then be sure of where you intend the paragraph breaks to fall. I can easily download files from either of my e-mail addresses now, so use whichever one is most convenient for you. Loyola is soon to be on Internet (the computer center is experimenting already), at which time my addresses will probably change (the dollar signs in one of my logonids is not compatible with some setups).

If you do not have access to e-mail or are sending me magazine or journal articles, announcements, etc., I happily accept hard copies. I use a hand scanner when possible (it's not always faster than typing, but it's less work). The following are not requirements (I do *not* want to discourage you from submitting me things), but they do make my life easier: clean, sharp copy (dot matrix is the worst, but not impossible; any laser font is good; monospace laser is excellent) and no folds in the pages (folds can create shadows in the scanner output). When you send me something that has been printed elsewhere, I must either stay within the bounds of fair use or request reprint permission. Thus it is very helpful if you send me the exact citation *and* the editor/permission desk address (Gerry is good about looking things up for me, but if you have the journal right there in your hand ...).

Anne Leggett
Chicago, IL
August 2, 1991

AWM WORKSHOP, ICIAM '91

On Sunday July 7, the second in the series of three NSF/ONR funded AWM Workshops was held at the Sheraton Hotel in Washington, DC in conjunction with ICIAM '91. The day was a great success, with attendance reaching 75 during the day-long program.

Ten postdocs (within five years of their degree) were selected to present 20-minute talks on their research. Joyce McLaughlin of Renssaelear Polytechnic Institute moderated the morning and afternoon sessions. Speakers were:

Martha Abell (Georgia Southern University)
"Symmetry and Semi-Symmetry Reduction: An Overview"

Helene Barcelo (University of Michigan)
"An Impression About Algebraic Combinatorics"

Mary E. Brewster (University of Colorado, Boulder)
"Stationary Flames"

Marie D. Dahleh (National Center for Atmospheric Research)
"Vortex Methods for Geophysical Fluid Applications"

Tylene S. Garrett (Transylvania University)
"Interpolation with Minimized Curvature"

Smadar Karni (University of Michigan)
"Nonreflecting Boundaries for Wave-like Equations"

Wen C. Master (California Institute of Technology)
"On Some Special Related Properties of Relativistic Schrödinger Operators"

Naomi Decker Naik (Vassar College)
"Multiple Semicoarse Grid (MSG) Methods: Enhanced Parallel Multigrid"

Norma G. Rueda (St. Lawrence University)
"Generalized Convexity in Nonlinear Programming"

Mary Lou Zeeman (Massachusetts Institute of Technology)
"Three-dimensional Competitive Lotka-Volterra Systems"

A luncheon and panel discussion on research funding was moderated by Richard Tapia of Rice University. Panelists were Julia Abrahams of the Office of Naval Research and Deborah Lockhart of the National Science Foundation, both of whom provided insight and information regarding opportunities for funding and the procedures by which this funding can be obtained. Professor Tapia led a discussion on pipeline issues and the graduate school environment, posing some stimulating questions on this important topic. He also proudly introduced a large contingent of graduate students and women from Rice University, which is renowned for nurturing mathematical talent in women and minorities.

The Graduate Poster Session was moderated by Pam Cook of the University of Delaware. All of the workshop participants took this opportunity to speak individually with the 12 graduate students selected to present their work. The poster session provided an excellent opportunity for lively interaction among graduate students, postdocs, and more established mathematicians. The following graduate students participated:

Karin Bennett (University of Kentucky)
"Parallel Matrix Decomposition Algorithms for Solving Orthogonal Spline Collocation Equations"

Danielle Carr (Duke University)
"A Mathematical Model for Fast Axonal Transport"

Suncica Canic (SUNY at Stony Brook)
"Admissibility of Shock Waves That Admit Viscous Profile"

Doris Hinnestroza (University of Cincinnati)
"Recovery of Transient Boundary Heat Transfer Coefficients for the Heat Equation Under Nonlinear Boundary Conditions"

Mary Ann Horn (University of Virginia)
"Boundary Control and Stabilization of Plate Equations"

Ying Sue Huang (Brown University)
"Spectral Properties of Periodic Differential Delay Equations"

Martha Nesbitt (University of Colorado, Boulder)

"The Geometry of Shooting Methods for Sturm-Liouville Boundary Value Problems"

Freda Porter-Locklear (Duke University)
"A Numerical Study of Propagation of Singularities for Semilinear Hyperbolic Systems"

Catherine Roberts (Northwestern University)
"A Class of Integral Equations which Models Explosion Phenomena"

Catherine M. Samuelsen (Rice University)
"The Diken-Karmarkar Principle for Steepest Descent: Avoiding the Curse of Short Steps"

Ann C. Smith (University of Virginia)
"Numerical Modeling Techniques For Stimulation in Dynamical Processes"

Mei Zhu (University of Washington)
"Nonlinear Effect on Spatial Pattern Formation"

After the scheduled talks, time was allotted for informal discussion, and many women took advantage of this opportunity.

The Workshop dinner was the final event on the program and brought together established mathematicians such as SIAM officials Mary Wheeler, Rosemary Chang, and Margaret Wright, as well as AWM representatives Alice Schafer, Judy Greene and Chandler Davis, to name a few. Senior people mixed with workshop participants throughout the evening.

AWM appreciates the efforts of Pam Cook, Workshop Chair, and Joyce McLaughlin for moderating the day's program. We are especially grateful to the committees whose difficult task it was to select the women who participated in the workshop. The Graduate Student Selection Committee was: Pam Cook; Jill Mesirov, Thinking Machines Corporation; and Kathleen Pericak-Spector, Southern Illinois University at Carbondale. The Postdoc Selection Committee consisted of: Joyce Anderson, Salem State College; Marsha Berger, Courant Institute; and Deborah Brandon, Carnegie Mellon University.

AWM wishes to thank the officers and staff of the Society for Industrial and Applied Mathematics (SIAM) for supporting the Workshop and looks forward to continued collaboration on programs that encourage women's participation in applied mathematics. Finally, AWM expresses gratitude to the National Science Foundation (NSF) and the Office of Naval Research (ONR), and particularly to Deborah Lockhart and Julia Abrahams, for their continued support of AWM programs.

The third AWM Workshop will take place in Baltimore, Maryland in January, 1992. For more information on the Baltimore Workshop see the announcement of the AMS/MAA Joint Mathematics Meeting elsewhere in this *Newsletter*.

Below is a sampling of comments from letters regarding the workshop received in the AWM office from participants and members of both of the sessions.

I am writing to tell you how much I enjoyed the AWM workshop in Washington. I hope these workshops will continue at the SIAM conferences.

I can't tell you how extremely impressed I was with the workshop and all of the participants! ... It was particularly helpful to meet everyone and then continue the contacts throughout the week and into the future.

I found the experience very fruitful. I had the chance to meet with several scholars who are working in my area of research, and we made plans to collaborate in our research in the future.

It was a very exciting day, and it continued into the week as I kept bumping into AWM participants during the ICIAM conference.

I would like to express my deep appreciation to the AWM, the NSF, and the ONR for providing funding to assist me in participating in the AWM Workshop and ICIAM '91. The entire week was an invaluable experience. I especially appreciated the diversity of speakers at both the Workshop and ICIAM '91.

I want you to know how grateful I am for the opportunity to have attended the AWM Workshop and the ICIAM conference in Washington. I especially enjoyed meeting other women in mathematics and talking with them. The workshop was great — even more than I hoped it would be.

Thank you for sponsoring me. The AWM workshop was even more informative and affirming than I had anticipated.

ALMOST 100%

On Saturday, April 27, 1991, seventeen of the eighteen women attending the Illinois Sectional MAA meeting got up a little early to have breakfast together. This continental breakfast, sponsored by AWM, provided an opportunity for us to converse and share ideas with women that we might otherwise have met only in passing. Of special benefit was the chance for women students to meet practicing women mathematicians and question them about career options and opportunities in mathematics. Among the topics discussed were AWM's efforts to support women in mathematics; Expanding Your Horizons, a workshop to encourage young girls to take math and science courses in high school; and the pros and cons of programs that separate the sexes. The discussions were lively and informative. I think many, like me, left the breakfast with new friends and a lot of things to think about. Thank you, AWM!

Laura R. Van Zoest, graduate student
Illinois State University

EDUCATION COMMITTEE

The Institute of Electrical and Electronics Engineers (IEEE) is developing a database of volunteer opportunities in precollege mathematics and science education. This database includes locally operated programs as well as the more familiar nationally coordinated programs. IEEE believes that "it is particularly incumbent upon the technical professional societies to encourage their members to participate in ... precollege education-related volunteer activities." (See IEEE's *Directory of Volunteer Opportunities in Precollege Mathematics and Science Education.*)

Some of the volunteer programs described in IEEE's directory which have not already been described in this column may be of interest to AWM members. For instance, there is a Young Scientists and Engineers program in Arizona (YSE Foundation, 602-458-1560); volunteer participants provide K-12 students with hands-on enrichment activities. The New Jersey Odyssey of The Mind Association (609-881-1603) conducts a competition, organized by volunteers, challenging "school teams to solve a spontaneous problem and a long-term problem, with extra points given for style." In New York City, the Society of Women Engineers runs a Big Sister Program (212-705-7871) focussing on one-to-one mentoring of female minority students. Volunteers for the National Association for Industry-Education Cooperation (Buffalo, 716-834-7047) participate in upgrading curriculum, materials, and techniques for a program called Business/Industry/Education Joint Efforts in School Reform, Career Education, and Human Resources/Economic Development.

It is clear that, although an organization is based in a particular state, its volunteers may be active anywhere in the nation. A number of Local Alliances for Science and Technology Education exist outside Maryland, but they are coordinated in Maryland by the Triangle Coalition for Science and Technology Education (301-220-0889); these alliances facilitate the collaboration of local schools with volunteers from business, industry, and academia. As another example, information about the 4-H Club Sci-tech Program may be found by contacting not only the Extension Service, U.S. Department of Agriculture (202-447-5516), but also any local Cooperative, University, or Agricultural Extension Office. Also volunteers for the International Science And Engineering Fair, based in Washington, DC (202-785-2255), serve in the variety of activities required for the preliminary science fairs, held at hundreds of locations in the U.S. and overseas.

For those with a special interest in handicapped students, the Foundation for Science and The Handicapped (West Virginia, 304-293-5201) recruits volunteers to "serve as role models ... and provide career counseling." On behalf of blind students, the American Association for the Advancement of Science (Washington, DC, 202-326-6670) has a program called the Science, Technology and Disability Project.

For more details on these and other volunteer programs, or a copy of their directory, write to IEEE, United States Activities, 1828 L Street, NW, Suite 1202, Washington, DC 20036-5104, USA, or call (202) 785-0011.

by Sally I. Lipsey, Chair

CALL FOR INFORMATION ON VOLUNTEER EXPERIENCES OR REQUESTS

1. Are you:

   (a) A volunteer? See 2.

   (b) Looking for volunteers? Skip to 3.

   (c) Seeking a suitable volunteer activity? Skip to 4.

2. This part is intended for those with volunteer experience.

   (a) What is the nature of your volunteer activities?

   (b) How much of your time do you give?

   (c) How rewarding has the activity been?

3. This part is intended for those seeking volunteers.

   (a) What is the name of your organization?

   (b) What is the nature of the activities?

   (c) What qualifications do you seek?

4. This part is intended for those seeking volunteer activities.

   (a) What kinds of activity do you prefer?

   teaching demonstrating tutoring mentoring career information curriculum workshops

   counseling recruiting fund-raising evaluating exhibits tours panels role model

   apprenticeship science fair technical assistance collaboration coaching competitions

   field trips review of materials recording textbooks

   other:

   (b) What is your specialty?

Name:

Affiliation:

Address:

Please mail your responses to AWM Education Committee, c/o Sally Lipsey, chair, 70 E. 10th St, #3A, New York, NY 10002-5102. Thank you.

BOOK REVIEW

On the Shoulders of Giants: New Approaches to Numeracy. Lynn Arthur Steen, ed., National Academy Press, 1990, ISBN 0-309-04234-8.

According to the preface, this book "is the direct result of Shirley [Hill]'s persistence in emphasizing the importance of rooting curricular reform in the emerging practice of mathematics." It consists of five essays on five possible "strands" of mathematics education, from kindergarten through college, with an introduction by the editor. As I read, I was reminded of one of the points in Sheila Tobias's *They're Not Dumb, They're Different*: that we may lose some bright students to math and science by focusing exclusively on problems and details and not pointing out the general themes. This book could help remedy that tendency. Its chapters are not titled by the usual mathematical categories, but instead by themes running across the usual topics. The introduction points out still other ideas which run across the five features here as well as the usual categories.

The first chapter, "Dimension," by Thomas Banchoff, includes lots of goodies, from kindergarten investigations to Sierpinski gaskets to drawing cubes and hypercubes, and much more, intersecting algebra and combinatorics as well as geometry. "Quantity," by James Fey, interweaves the influences of technology, applications, and research on the psychology of learning mathematics in a strand running through arithmetic and algebra (in the broad sense). I especially liked his concept of "symbol sense," analogous to the better-known concept of number sense.

I especially appreciated David Moore's chapter, "Uncertainty." I've always felt quite statistically illiterate, yet I believe the subject is important. Moore's presentation of some of the basic ideas of statistics and probability as relating to data and chance is exceptionally well thought out and readable. I learned a lot from his discussion and recommend it highly.

"Shape," by Marjorie Senechal, is again chock full of goodies (ranging over classifications of geometry, combinatorics, geometry, and applications), discussed with many a nice turn of phrase. Ian Stewart ends the book with "Change," which does touch on calculus, but emphasizes other aspects of change, using examples ranging from population change to the origin of meteorites to the reasons tigers are striped.

The book is a good read. Mathematicians can learn a lot about teaching from it and teachers can learn a lot about mathematics from it. Both can learn new ways of thinking about their subject. It would probably be interesting and accessible to lots of scientists and engineers as well.

reviewed by Cathy Kessel, Book Review Editor
2523 Piedmont Avenue, Berkeley, CA 94704

1991 MATHEMATICAL SCIENCES DEPARTMENT CHAIRS COLLOQUIUM

The 1991 Mathematical Sciences Department Chairs Colloquium sponsored by the Board on Mathematical Sciences, National Research Council, will be held on October 18-19, 1991, in Arlington, VA. The theme of the 1991 colloquium is "Encouraging Talent into the Mathematical Sciences Pipeline." The program is designed to provide information and materials for the design of recruiting and nurturing programs.

Conferees will be provided with information about the mathematical sciences pipeline. On Friday, October 18, a panel presentation and floor discussion on these issues will be held. The next morning, workshops (divided according to whether primary institutional emphasis is teaching or research) based on the preceding day's material will be held.

The conference will include other panel discussions, a session for new department chairs, and other sessions. The keynote speaker for the colloquium is Mary Good, Chair of the National Science Board.

The registration fee is $160.00 and includes all colloquium sessions, materials, and related meals and social activities. For further information, write or phone: Board on Mathematical Sciences, National Research Council, 2101 Constitution Avenue, NW, Room NAS 312, Washington, DC 20418; (202) 334-2421.

SONIA KOVALEVSKY HIGH SCHOOL MATH DAY: Simmons College

On Thursday, April 4, 1991, two hundred twelve young women high school students and fifty high school teachers from thirty Boston area schools met at Simmons College to attend the sixth Sonia Kovalevsky High School Math Day. Sponsored by Simmons College with the backing of the Association for Women in Mathematics, this annual event aims to encourage young women to study mathematics and pursue careers in mathematics by giving students and teachers examples of exciting real-life applications and by presenting successful and inspirational women role models. Each year, more and more schools express interest in the program, and many schools must be turned away for lack of space. We were especially gratified that many inner-city public high schools (South Boston, Madison Park, Cambridge Rindge and Latin to name a few) were able to participate this year.

The morning part of the Sonia Kovalevsky Day consisted of separate, parallel programs for students and teachers. For students there were four workshops: "How to Get From Here to There" (Leader: Joyce Anderson, Salem State College), "Secrets, More Secrets and Everything You Never Wanted Your Mother To Know" (Leader: Virginia Balke, Simmons College), "Statistical Sleuthing: Tracking the Sources of Discrimination" (Leader: Arlene Ash, Boston University) and "Finding the Pieces of Pi" (Leader: Ethel Taloumis, Simmons College). In addition to the workshops, students also attended a morning panel discussion entitled "How I Got Into Math" (Moderator: Donna Beers, Simmons College). The participants, Linda Alger (Draper), Renu Chipalkatti (GTE), Jill Mesirov (Thinking Machines), Leslie Prescott (Mitre), and Marjorie Sullivan (NYNEX), talked and answered questions about their respective careers. Our goal in having the panel was for students to see real women doing exciting work. The following evaluations were typical:

> The women panelists were very interesting and I loved their enthusiasm toward math.

> The women on the panel made me consider math as a possible career.

The teachers participated in three morning workshops: "Probability and the Law (Leader: Robert Goldman, Simmons College), "The Math Section of the New SAT," (James Mantague, The College Board) and a roundtable discussion, "The Ideas That Work Come From Teachers" (Jo Ellen Hillyer, Newton North High School, and Eleanor Palais, Belmont High School).

Following the morning session, students and teachers joined each other for lunch and were officially welcomed by Professor Anne Coglan, Dean of Sciences, Simmons College. This year's keynote speaker was Dr. Harriett Fell, Professor at Northeastern University. Her address, "One Mathematician's Attacks on New Fonts for Printing, Navigational Instruments, Software for the Handicapped and Cryptography" was educational as well as inspirational.

The student evaluations best sum up the day:

> The program showed me that there are many more possibilities for careers in math than I had thought before.

> It was good to see so many women interested in math.

> There were actually applications for what we learn in school.

> Listening to how women apply mathematics to various careers, not only teaching math and solving equations all day long, was extremely interesting.

> I never realized how important math was in technology until today. For example, using functions to discover why it takes a few seconds to relay a telephone call.

> Before today, I thought of math as being rote and boring. Now that I learned about some of its applications, I am more interested in it.

Support for this year's Sonia Kovalevsky High School Day was provided by the Association for Women in Mathematics, Arthur D. Little Inc., AT&T, Charles Stark Draper Laboratory Inc., Mitre Corporation, New England Telephone, and Raytheon.

THE NON-PROFESSIONAL ACTIVITIES OF THE WOMEN-IN-MATHEMATICS DELEGATION TO CHINA

The goal of People-to-People International, sponsor of the June, 1990, Women in Mathematics Delegation to the People's Republic of China, is to build global peace and understanding through direct one-on-one personal contact. The question "Was this goal met?" receives a resounding affirmative response. The Delegation, led by Dr. Alice T. Schafer, visited universities and computer centers in Beijing, Xi'an, Fuzhou, and Guangzhou. The professional itinerary has been reported in the AWM *Newsletter* (Volume 21, Number 1, January-February, 1991). The purpose of this article is to describe some of the more personal experiences and tourist activities of our adventure in the Orient.

One of the most important things gained from the trip was a sense of the realities of China. It truly is a sea of humanity, but the sea consists of flesh-and-blood students and teachers, each with his or her own personality and perceptions. The commitment to education and the resolve of these individuals has been made even more manifest through the letters we have received since returning home.

One woman has written that her husband is in the United States studying mathematics. She misses him very much and wants to find a way to study mathematics here also. Another wrote that she attended a conference outside China, " ... and now my eyes are opened and I want to learn about the world." A brilliant female student wrote, "I am the only student out of more than one hundred senior students in the Physics Department who has met the requirements for admission to graduate studies without the need to take entrance examinations ... but have lost the chance due to bureaucratic reasons."

Please contact Dr. Alice T. Schafer (Department of Mathematics, Marymount University, Arlington, VA 22207) if your department can support a Chinese graduate or postgraduate student. She will forward these very hopeful, determined letters and resumes to you.

Although People-to People International provided us with copious preparatory information, even the simplest query could lead to a startling reply. When we couldn't find students to talk with during our lunch break, for example, we were informed that people go to their homes to eat and rest from about 11:30 a.m. until 2 p.m., and then work late into the evening. (Teachers and students are provided tenement style housing on campus. Workers tend to be housed near their factory. People who lose their employment, therefore, also lose their home.)

Teaching and research positions are assigned at graduation, and a husband and wife may be separated. Changing jobs is very difficult and timing is everything. The desired position must be available, you must have permission to take it, and you must have permission to leave your current job. My several teaching jobs on both coasts produced a mixture of envy and sympathy: "It must be wonderful to be able to move around like that, but we hope you soon will find a job that will make you happy."

Undergraduate girlfriend/boyfriend liaisons are discouraged, and the average age for marriage is in the late twenties. The government wants serious attention placed on the education it is paying for. This also controls population, since having one child later in life can result in one less generation per hundred years.

We were enthusiastically greeted by students and faculty, with the women mathematicians especially delighted to see us. Through the insight and kindness of our hosts, protocol was maintained despite some naivety on our part. There was, for example, the time when I insisted on handing a commemorative plaque to the female interpreter. (Perhaps the "women in mathematics" theme was too deeply ingrained.) The mathematics department chair intercepted and firmly pulled the plaque out of my hand. The university president behind him leaned around, grabbed my hand and shook it. I was irritated until I realized that the two men had saved my face!

China hummed with energy. People were everywhere, from early in the morning when the elders took brisk walks and did exercises in the park, to late in the evening when groups gathered on the street to sing popular opera. Considering how very slender the people were, their energy was sometimes amazing. An extremely thin young student attended one of the mathematics lectures, and one wondered how he managed to concentrate.

The Hong Kong Chinese were much fatter, although still slender by our standards. There were scales at our hotels, and the Chinese workers would urge us to stand on them, and then break into peals of giggles at how large we were.

We stayed in elegant, five-star hotels designed for tourists. Only the Foreign Exchange Certificates (FEC's) used by tourists were accepted at the hotels, not the renminbi, the people's money. The Beijing Jing Guang New World Hotel was so new that it had its grand opening the day after we arrived, with red carpets over marble floors, bouquets of flowers, musicians in the lobby, and TV newscasters. (The joint-venture chain had just purchased Ramada Inns and Trailways, and our hotel manager was a Canadian from Vancouver.) The hotel room key fit into an energy-saving slot that enabled the room lights to be turned on (and automatically turned off when the key was taken out.) Direct calls to the United States could be made from the room, and there was a weight room, sauna, pool and a masseuse.

In the evening, several of us went up to the top, the 59th floor. It was amazing to look out over one of the largest cities in the world, about nine million people, and see almost no lights below, no neon, only a few streets dimly outlined.

It was difficult to know how to interpret what was seen or experienced. Many people in Beijing appeared to be living in hovels, connected with dirt footpaths, the poverty screened from view by brick walls. The walls were being painted with beautiful colors and designs in honor of the forthcoming Asian Games. The English language newspaper said that the many homeless in Beijing were being routed out in preparation for the Games. It was especially important to China that it host the Asian Games, since much ill-will had been fostered by the 1989 tragedy of Tiananmen Square.

The one-year-anniversary of Tiananmen Square had people nervous. People on the streets of Beijing seemed to ignore us, and we were told that the new motto was "When you see a foreigner, avert your gaze and walk a little faster." Still, we were encouraged to ask questions on any subject, and we received what seemed to be immediate, frank, straightforward responses.

Our Beijing hosts, members of the Institute of Applied Mathematics, The Chinese Academy of Sciences, Peking University, Tsing Hua University, and CAST, welcomed us with a lavish banquet at the Beijing Roast Duck Restaurant, a huge building of private dining rooms. They sat among us to chat one-on-one and put us at ease. Watermelon, which was in season, was served as one of our rare desserts. Pyramids of watermelons were piled high under red, white and blue tarps next to the sidewalks, chewed rinds thrown to the side. A small cot under the tarp was home for the farmer until the melons were sold.

The Great Wall was as breathtaking as one imagines it to be, but the tee-shirt and trinket hawkers at the bottom were a surprise. The wide highway leading tourists to the Great Wall had its side roads and shoulders covered with a layer of grain, the breeze lifting away the chaff and the heat drying the grain. Vehicles were donkey- and horse-pulled carts; motorized three-wheeled bicycles carrying coal, building materials or vegetables; a few private cars and lots of bicycles, which had their own lane.

The vast (over 100 acre) Tiananmen Square has Chairman Mao's Memorial Hall on one side and the immense Great Hall of the People on the other. Beautiful, strong looking female figures grace Communist worker-style statues. An ancient gate and tower on the north lead to the Imperial City and the Old Forbidden City within, where we spent several hours, but could have spent weeks. There were many Chinese tourists, grouping together for photographs just like us.

An acrobatic show at Chao Yang Theatre was the highlight of our final Beijing evening. Exquisite balance and excellent choreography by acrobats, who looked no older than children, contrasted with threadbare seats in an almost empty auditorium. In the warm, summer evening outside, adorable toddlers "drove" small, mechanical cars around a play area before the watchful eyes of proud parents.

From Beijing we flew to Xi'an, the ancient capital and the largest city in northwest China. Lying on the southern bank of the Wei River and protected by mountains, its location has afforded it immunity from attack.

We visited the Big Goose Pagoda, a temple or library where the pilgrim monk Xuan Zang translated hundreds of Buddhist texts which he brought to China from India. This building has survived many severe earthquakes, is seven stories high, and was once connected by the Tang road to the emperor's palace.

The area around Xi'an was populated by Neolithic settlements as far back as 6000 B.C. Evidence from excavations, especially the burial practices, have convinced anthropologists that this was a matriarchal society. We noted what looked like triangular numbers and other mathematics at the Banpo Museum.

The alert, lifelike legions of terra-cotta warriors, part of the two-thousand-year-old tomb of the first emperor of China, Zin Shi Huang Di, are grouped in battle order, with weapons and horses. These 6,000 figures are only a small part of the tomb and funeral vaults. Only Chinese archaeologists are allowed to work here for fear foreigners will take away some of the treasures.

Beautiful concubine Yang Guifei was the inspiration for Tang Emperor Gao Zong to develop the Hua Qing Hot Springs, graced by a large pond with a marble dragon-boat. We wandered up the mountain-side in the rain and were tempted to follow the Chinese into small lodges, presumably baths, but didn't have the time or the nerve.

Chinese children are adorable, and it was a treat to visit a kindergarten and an elementary school. In a charming manner the little children took our hands and became our guides. The elementary school children put on an outstanding dance performance with what seemed professional choreography.

We were told that pre-school has become mandatory in an effort to correctly socialize what could otherwise become a country of independent-minded, spoiled children. Both sets of grandparents, the aunts, uncles and parents had been devoting attention to the one child allowed per family, and keeping him or her out of school.

Next we went to Fuzhou. This old trading town, mentioned even by Marco Polo, was declared an "open port" in 1842, allowing European nations to establish trade buildings in the town. It is on the coast, south of Shanghai, and across from Taiwan. We could see the straits from Drum Mountain.

We visited jade carving, lacquerware and cloisonné factories. Workers were allowed to develop and produce their own designs, which were often exquisite. But the unconditioned rooms were hot and sweaty and the work was tedious, often minute, hand-work.

Because Fuzhou is an open trade city, the people seemed more relaxed and used to foreigners. In fact, while we were in Fuzhou, a Chinese doctor, friend of the musicians in the lobby of our elegant hotel, invited us to experience a typical Chinese nightclub. We were invited to visit his house on the way. As was typical, he shared the house of his parents. To get there, we walked through a dark maze of tiny narrow twisting alleys. (A quick peek into one dimly lit doorway revealed an active video-arcade.)

The nightclub looked similar to one in the States with dim lighting and comfortable chairs, but we were served hot tea when we asked for it, and there were a few little children dancing with their parents. We appeared to be the only non-Chinese. The singer was presented with a bouquet of paper flowers by whoever made a song request. Soon the stage had a mountain of colorful paper flower bouquets. During fast songs, everyone danced, men with men, women with women, couples, it didn't matter. Slow songs elicited an arm's length, rather formal, sort of waltz. There was no close body contact. At one point our host exclaimed, "Here is a popular song!" It was "Auld Lang Syne."

We walked back from the nightclub about midnight and were surprised to find the sidewalks along the boulevard lined with tables covered with food, shiny vegetables, fruits, a variety of seafoods — fish, some with heads on, octopus, squid, and sea cucumbers. People were up and about, eating late, perhaps because of the heat and humidity.

The hotel doctor in Fuzhou made room-visits and provided a snake bile cough medicine to the few members of the delegation who acquired head colds, one of whom claimed it also induced snake nightmares.

From Fuzhou, we flew to Guangzhou, where the sightseeing high point was the panda bears in the zoo at West Lake Park. Also at West Lake Park was a pile of beautiful old Chinese robes, headdresses, make-up, and accessories, where for a fee, one could dress in the ancient style and be photographed. For an additional fee, our wardrobe expert arranged us in traditional poses.

The characteristics of the people we met were ready smiles and outgoing friendliness. These, and what seemed an earnest desire to make our stay pleasant and rewarding also characterized our guides, members of the Chinese Association of Science and Technology (CAST). From presenting one of us with a magnificent birthday cake, to including us in the dedication festivities of their new Guangzhou building, CAST did an admirable

job of keeping twenty-one independent-minded travellers (15 women mathematicians, two men mathematicians, two women computer scientists, and one non-mathematical husband) on track and together.

Footnote:

NorthWest Airlines allowed stopovers in Japan, Hong Kong and Macao, Korea, and Hawaii, for a modest additional fee. A Japan Rail Pass (similar to the Eurail Pass) is available. Youth Hostels, available to any age, in all these countries are clean and comfortable, reasonably priced, and afford the opportunity of joining other travelers for day trips. Local people are friendly and anxious to practice their English with you. I showed photographs of family, friends, home and university, which elicited an invitation to at least one private home in every country I visited. I carried a small notebook to record names and addresses, and was impressed by an elderly Chinese scholar who produced her own small notebook and carefully copied from it her name in English.

Our first stop was an overnight in Narita, Japan, a sizeable town near the airport, about one and one-half hours from Tokyo. Barb-wire and heavy security marked local resistance to taking rural land for the airport. We were surprised to see Coca-Cola machines on almost every corner, and even alongside a field. In addition to small, 250 ml cans of coke, dispensers offered cans of coffee, tea, beer and saki!

From Narita to Beijing, we all received seats in the smoking section, in spite of the fact that only one member of the Delegation was a smoker. Many of us had been apprehensive about this aspect of the trip. Perhaps it was the excitement, or perhaps people smoked less than anticipated, but cigarette smoke was not a major problem anywhere on the trip.

by Frances Rosamond, National University, San Diego

ICME-7 CONGRESS: AUGUST 1992 IN QUEBEC CITY

The Seventh International Congress on Mathematical Education (ICME-7) will be held at Université Laval in Quebec City, Canada, from August 17 to 23, 1992. The Second Announcement is now available from: Congres ICME-7 Congress, Université Laval, Quebec, QC; phone, (418) 656-7592; fax, (414) 656-2000; e-mail, ICME-7@VM1.ULAVAL.CA. It contains information on all aspects of ICME-7, including registration and accommodation, and an application form to make a short presentation.

ICME-7 will provide the opportunity to learn about recent developments in mathematics education around the world and about innovations and recent research on the learning and teaching of mathematics at all levels. The central feature of the scientific program is a set of 23 working groups designed to involve participants in the active study of a selected aspect of mathematics education and to provide an international up-to-date context for study of that aspect. Each working group will meet for four 90-minute sessions.

Other activities will include several plenary talks, lectures, topic groups, study groups, national presentations, short presentations in the form of posters or videotapes or computer software, projects, workshops, films, as well as exhibitions of textbooks, software and other types of materials. A special half-day Miniconference on Calculators and Computers will be held at the beginning of the congress. Finally, various social and cultural events are planned for the duration of the congress.

Early registration is encouraged. The schedule of registration fees provides for significant savings for those who preregister by December 15, 1991. The deadline for those applying to make a short presentation is January 31, 1992. Accommodation requests will be received up to July 1, 1992, although it is advisable to make reservations much earlier.

Full program details will be listed in the Third Announcement which will be available in April 1992 and will be sent to those whose registration forms and payment are received by June 15, 1992. Participants who register after this date will receive the program during on-site registration.

ARTICLES OF INTEREST

As Carol mentioned in her report, the September issue of the AMS *Notices* is the "women's issue." It contains five feature articles: Lenore Blum's history of the first twenty years of AWM, Claudia Henrion's article about the sometimes nontraditional timelines of women mathematicians' careers, Jenny Harrison's on role models, Lynne Billard's survey of some studies of tenure and promotion of women mathematics and statistics faculty, and Allyn Jackson's analyzing why some schools produce higher numbers and percentages of women Ph.D.'s than others. Both Judy Roitman and Alice T. Schafer have written Forum pieces.

In her letter to the editor, Charity Hirsch refers to the article "Does the Harrison Case Reveal Sexism in Math?" in the June 28th issue of *Science* [by Paul Selvin, pp. 1781-1783]. Well worth reading, the article is a thoughtful summary of the positions on both sides of the case; there are many quotes from both her supporters and her critics. An excerpt follows.

> Harrison's supporters (including some eminent mathematicians) say she measures up well against the men who received tenure in Berkeley's math department in recent years. Her critics — including one of two tenured women in the department — think Harrison is a sore loser who doesn't meet the standards of the Berkeley department, which hires, they say, only "the best in the world." This sharp clash of opinions is likely to persist for a while. One reason, of course, is the suit. Another is that, in a remarkable new twist, Harrison has been invited to reapply for tenure by the current chairman of the department. Whether Harrison's supporters or her detractors are correct, her case provides a window onto the complex politics and high emotions unleased as women enter the realm of higher mathematics.
>
> Even the staunchest defenders of Berkeley's math department acknowledge the problems it has had in the past in relation to women. Alberto Grunbaum, the department's current chairman, admits to the math department's "terrible reputation" in the past as a place for women to work (though he argues that things have changed dramatically). Berkeley's biggest embarrassment came in 1975, when Julia Robinson was elected to the National Academy of Sciences. Robinson had worked as an occasional math lecturer at Berkeley for more than 25 years — but was never offered a job until immediately after being elected to the academy.
>
> ...
>
> Eventually Harrison's case will be settled. By itself, of course, it won't resolve the problems faced by women in academic mathematics. But the lessons of the case will be instructive for more than one department of mathematics. And if Harrison does accept Grunbaum's offer and wins tenure the second time around, her struggle will have raised the total number of women tenured in the top ten mathematics departments by 25 percent: from four to five.

The Mind and Matter column by Stephen Strauss in *The Globe & Mail*, Toronto, June 15, 1991 is entitled "Funding research on basis of gender will inevitably taint the winners." Strauss discusses the gender imbalance in a number of fields, both in the 1970's and now.

> By way of explanation, some mention the lack of female role models. Others decry teachers who suggest that science and engineering aren't suitable professions for women. Boys are accused of dominating classroom discussions.
>
> But I would argue that exactly the same reasons would have been given 20 years ago to explain the paucity of women in medicine, law and commerce. And that the gender revolutions in those domains came about despite the stereotypes and barriers. Women collectively said: We are going to do those things. And they have.
>
> ...
>
> But, most emphatically, I know what the wrong thing to do to attract women to science is: This year [the Natural Sciences and Engineering Research Council] has set up a special awards category that only women researchers are eligible for. It is paying most of the salary and guarantees a research grant for up to five years to 20 women.
>
> While its intentions might be good, NSERC is now an avowedly sexist institution sanctioning the same stupid gender-bias that fair-minded people everywhere have learned to hate.

> Moreover, the awards' parochialism inevitably taints the award winners, no matter how excellent. Rightly or wrongly, it will now be rumoured that they play in a different league, one in which you don't have to hit the major-league curve to make it to The Bigs.

Lee Lorch, long-time member of AWM, took exception to the views expressed in the article. His letter to the editor appeared in the same paper on July 2, 1991. The letter is headed: "Centuries of active discrimination, not yet gone, have created the need for special support: To say that 'women have not barged in' is not good enough." Here are a few quotes from Lee's letter:

> To cover all bases, Mr. Strauss claims that "the awards' parochialism inevitably taints the award winners." Wrong again. The winners will be judged in the usual fashion by the quality of the research they produce while supported by whatever awards they hold.
>
> The need for special encouragement and support for women (also for First Nation Canadians and other minorities) is broadly accepted at long last (Mr. Strauss excepted), although often only by way of lip service.
>
> Real obstacles are still there, in the educational process and social atmosphere. Real encouragement and support, even when present, are still inadequate for women and minorities. ... These are the problems, not the minuscule number of grants NSERC reserved for exceptional women, grants that can help attract, support and profile talented women to the Canadian scientific community, which badly needs their abilities.

The Cross Current column by Morris Wolfe of July 18, 1991 [also in the Toronto *Globe & Mail*] is entitled "Why does a scholarly journal publish prejudice passed off as science?" Gordon R. Freeman, Professor of Chemistry, University of Alberta, Edmonton, wrote a letter to the editor to the *McGill News*, the McGill University alumni magazine. He was disturbed by an editorial, "In Praise of Feminism" by Harvey Schacter; the editorial was written shortly after Marc Lépine killed 14 women at Montreal's École Polytechnique. Freeman said, "It is a bitter truth that Marc Lépine's desperate act was an extreme example of the damage that feminists do to their children. Marc Lépine's mother was a feminist, ambitious in her career, destructive to her children."

The end note identifying the author mentioned an article written by Freeman which appeared in the *Canadian Journal of Physics*. Wolfe then checked out the article, which was titled "Kinetics of non-homogeneous processes in human society: Unethical behaviour and societal chaos." Freeman argues that cheating and unethical behavior among students has increased as a direct result of feminism; evidently day care does not promote the development of ethical behavior. Wolfe is outraged both by the article and by the fact that it appeared in a scholarly journal.

> ... [W]hen Professor Gordon Freeman passes off his prejudices and ignorance as science, and his academic peers review his work and approve it for publication in a scholarly journal supported by public funds, one has to wonder what the hell is going on. If this is what peer review means at the *Canadian Journal of Physics*, can one trust *any* of the articles that appear in this journal?

An article from *USA Today*, June 10, 1991 by Salle Richards Crooks explains that "Women + college math = better pay." From the article:

> Women who take more than eight credit hours in math not only achieve [pay] equity in some occupations but surpass men in some, shows a study that tracked a group of men and women for nearly 20 years.
>
> A look at what's happening to 12,332 members of the high school class of 1972 who went on to college (due out later this year) by the Department of Education shows women:
>
> Surpassed men in educational achievement, winning more scholarships and getting higher grades (3.07 vs. 2.92).
>
> Completed degrees faster.
>
> Are more enthusiastic and potentially productive workers. More women said they were satisfied with working conditions (2.1% higher) and developing new skills (2.8%).

No doubt you have seen some of the many articles on the results of the national mathematics assessment test administered to fourth, eighth, and twelfth graders in 37 states, Guam, the Virgin Islands, and the District of Columbia. The

headline on the front page of *Newsweek* read "America Flunks Math: How Does Your State Rank?" The story itself is titled "A Dismal Report Card" and begins "Rich and poor, North and South, black, brown and white, eighth graders flunked the national math test. What can be done about this scandal?" It ends with "[t]he nation is still at risk and time is running out."

The results indicate that very few eighth graders have the problem-solving skills which are appropriate to their grade level (I saw somewhere a quote in which the standards were blamed, rather than the students or the educational system). "Only 46 percent of 12th graders can do seventh-grade work and only five percent can do precalculus work." A student gave an interesting defense in a letter to the editor: she said that because the test "doesn't count," many students do not take the exam seriously and, in fact, may just choose answers at random without reading the questions. Given the skills I see in calculus classes, however, I think I believe the test results.

The short articles are reprinted from *On Campus With Women*, published by the Project on the Status and Education of Women, Association of American Colleges, 1818 R St., NW, Washington, DC 20009.

Scholarship Programs Still Unfair to Women?

The New York Public Interest Research Group (NYPIRG) has charged New York educators with not complying with a federal court order to rid two state scholarship programs of bias. NYPIRG says that despite changes, the scholarship programs still discriminate against women. They pointed out that in 1989-90, although young women comprised 54 percent of the candidates, they received only 40 percent of Empire State Scholarships of Excellence and 51 percent of the New York State Regents College Scholarships.

Until 1990, New York state based these awards solely on SAT scores. Following a 1990 federal court ruling, *Sharif v. New York State Education Department*, in which Judge John Walker declared that the SAT is not an accurate measure of high school performance, New York began considering grades as well as SAT results in awarding the above-named scholarships.

NYPIRG believes that the new formula does not eliminate bias from the programs and suggests that the state avoid relying on test scores, allocate scholarships by high school, and select the winners based on class rank. Data about scholarship allocations for women and minorities appear in *Stopping the Scholarship Scam*, available for $5 from NYPIRG, 9 Murray St., New York, NY 10007.

More Women Earn Doctorates

The number and proportion of doctoral degrees awarded to women — especially minority women — increased dramatically in the past decade. However, according to an analysis of the status of women receiving doctorates from 1978 to 1988 by the Division of Policy Analysis and Research of the American Council on Education (ACE), women remain significantly underrepresented among those receiving doctorates in the physical sciences and engineering.

The study found that the share of doctoral degrees awarded to women grew from 27 percent to 35 percent over the ten-year period. Minority women showed the greatest progress: the number of minority women receiving Ph.D.'s in 1988 was 45 percent higher than a decade ago. The number of American Indian, Asian, and Hispanic women receiving doctorates rose by at least 70 percent, and the percentage of Black women who were awarded doctorates increased by 14 percent.

As is the case with men, more women Ph.D.'s are turning away from teaching as their primary vocation after graduation. Although teaching in academe is still the most common occupation for Ph.D. recipients, the proportion of women who hold doctorate degrees who teach declined from 53 percent to 42 percent during the study years. The most dramatic declines were among those who received degrees in the social sciences, engineering, and biosciences. The only field in which the percentage of women pursuing academic careers increased was in the physical sciences.

Although the number of women receiving doctorates in technical fields is growing, Ph.D.'s in education, social sciences, and the humanities still account for two-thirds of all such degrees granted to women. Between 1978 and 1988, the number of women earning Ph.D.'s in engineering increased fivefold, and the number earning doctoral degrees

in the physical sciences doubled. However, in 1988, women received only seven percent of all doctorates in engineering and 19 percent of Ph.D.'s in the physical sciences.

The analysis, *A Decade of Change: The Status of U.S. Women Doctorates, 1978-1988*, is part of the ACE Research Brief Series, a collection of papers exploring issues in higher education. Individual reports are available for $7 (prepaid). The series is available for $50 for one year or $95 for two years from the American Council on Education, Division of Policy Analysis and Research, One Dupont Circle, NW, Washington, DC 20036.

A Look at Model Programs

The American Association of State Colleges and Universities (AACSU) recently issued a report that describes more than two hundred programs designed to encourage women and minorities to enter and stay in science and engineering fields. A limited number of free single copies of *Formula for Reform, The Role of the Comprehensive University in Science and Engineering Education* are available from AASCU, One Dupont Circle, NW, Suite 700, Washington, DC 20036.

BRIEF NOTES

The Association for Women in Science Educational Foundation has received a bequest from The Estate of Ruth Satter for $10,000, the interest from which is to provide an award for women scientists whose education is interrupted to raise a family. Ruth Satter was Joan Birman's sister, in whose memory Joan established the Satter Prize of the AMS.

from AWIS Magazine, *"Precollege Career Guidance Exchange" by Betty Preece, July/August 1991, p. 6:*

A new three-part math program has been developed by AAAS to produce math power and math self-confidence in all students. "Math Power in School" gives hands-on activities to teachers; "Math Power at Home" and "Math Power in the Community" provide activities that coordinate with school work. Here is a great opportunity for AWIS chapters and individual members to use these tools to enrich and expand math learning for all students, especially at-risk students. "Math Power" books are $9.95 each or $19.95 for the set of three plus $4 shipping and handling. Order from AAAS Books, Box 753, Waldorf, MD 20604 or 301-645-5643.

Bernice R. Sandler has left the Association of American College's Project on the Status and Education of Women. She has been its director for twenty years, a time of many changes. PSEW produced the newsletter *On Campus with Women* and over one hundred papers and reports on a wide range of issues. She has recently joined the Center for Women Policy Studies as a Senior Associate. CWPS will be seeking to continue some of the work PSEW has done in the past. She says, "AAC plans to continue PSEW with different staff and activities; nevertheless it is an end to an era."

A number of publications produced by the Project on the Status and Education of Women (PSEW) of the Association of American Colleges are now available exclusively from the Center for Women Policy Studies. Topics include: Federal laws and sex discrimination in educational institutions, Title IX, women in traditionally male fields, peer harassment, sex harassment, and rape. For more information, write: CWPS, 2000 P St., NW, Suite 508, Washington, DC 20036. Phone: 202-872-1770.

The latest report from PSEW is "Hispanic Women: Making Their Presence on Campus Less Tenuous" by Sarah Nieves-Squires. The report discusses the current situation for Hispanic women on campus and gives recommendations for improving their experience there. To order, write the Publications Desk, Association of American Colleges, 1818 R St., NW, Washington, DC 20009; 202-387-3760. Send a self-addressed stamped envelope for prices and a complete list of publications.

Books of interest: *The Popularization of Mathematics*, edited by A.G. Howson and J.-P. Kahane, Cambridge University Press, 1990; *Ethnomathematics: A Multicultural View of Mathematical Ideas*, Marcia Ascher, Brooks/Cole Publishing Company, 1991.

NSF NEWS

Change in Deadlines for Certain NSF programs

1) The Research Experiences for Undergraduate – Sites, has changed its deadline from October 10 to October 1. For further information on this program, contact Jack Ryff, by phone (202-357-3455) or by e-mail [jryff@note.nsf.gov (internet); jryff@nsf (bitnet)].

2) Anticipated Changes in the Mathematical Sciences Postdoctoral Research Fellowships: The deadline has been mid November. There is a possibility that the deadline will be changed to October 15. In addition, the program may change the eligibility requirement to citizens, nationals or permanent residents. For further information on this program, contact the Office of Special Projects by e-mail [msprf@nsf.gov (internet); msprf@nsf (bitnet)] or by phone (202-357-3453).

Workshop on Statistical Methods in Molecular Biology

As part of its 1991-92 yearlong program on Statistics, MSRI will host a five-day workshop on Statistical Methods in Molecular Biology from March 30 to April 3, 1992. The workshop is being organized by Michael Waterman.

The discovery by Watson and Crick in 1953 of the double helical structure of DNA began the modern era of molecular biology. This revolution in biology has created a large body of fundamental data by directly reading DNA sequences. Protein sequences are often inferred from the DNA sequence. Partly as a consequence of reading the genetic material, molecular biologists have made an astounding number of fundamental discoveries about biology. Biologists now plan to map and sequence entire genomes. The workshop will focus on statistical problems in this new area of biology. Topics include DNA and protein sequence data analysis, genetic and physical mapping, evolutionary trees, and molecular evolution.

It is planned to have four talks per day, two in the morning and two in the afternoon (9:30 am, 11:00 am, 2:00 pm, 4:00 pm). This will leave ample time for scientific discussions.

The scientific community is warmly invited to attend. There are no fees or applications forms. A limited amount of funding is available for partial support of people wishing to attend. Students, recent Ph.D.'s, women and minorities are encouraged to apply. Requests for financial support should be received by **November 15, 1991** and should be accompanied by some information (such as vita and/or bibliography); it is suggested that students should solicit a letter from a faculty adviser. Shortly after November 15 there will be a mailing which will include hotel information, whatever program information is available at that time, and replies to requests for funding. Requests to receive this mailing and requests for funding should be addressed to: Molecular Biology Workshop, Mathematical Sciences Research Institute, 1000 Centennial Drive, Berkeley, CA 94720.

Funding for the workshop is provided by the National Science Foundation through MSRI and through the Program in Mathematics and Molecular Biology administered from the University of California, Berkeley.

Summer Program in Mathematical Physiology

In the summer of 1992 the Mathematical Sciences Research Institute will sponsor a six-week program focusing on the applications of mathematics to cell biology and integrative physiology. The program will be organized into one-week and two-week workshops with two workshops running concurrently. The workshops, dates, and organizers are as follows:

July 6 – July 10: "Neurons in Networks I: Cellular Neurophysiology," J. Rinzel and "Neurons in Networks II: Emergent Properties of Networks of Neurons," N. Kopell

July 13 – July 17: "Neurons in Networks III: Neural Development," K. Miller and "Neurons in Networks IV: Auditory Neural Processing," M. Reed

July 20 – July 24: "Mathematical Models of Cellular, Circadian, and Hormonal Rhythms," J. Keizer and "Mathematical Models of Excitable Tissues," J. Keener

July 27 – July 31: "Mathematical Modeling in Immunology I," A. Perelson and "Mechano-chemical Engines," G. Oster

August 3 – August 7: "Mathematical Modeling in Immunology II," A. Perelson and "Biological Fluid Dynamics I," L. Fauci and C. Peskin

August 10 – August 14: "Molecular Structures and Dynamics," T. Schlick and "Biological Fluid Dynamics II," L. Fauci and C. Peskin

The purpose of the workshops is to support existing collaborations between mathematicians and biologists, to encourage new collaborations, to train young mathematical biologists, and to bring mathematicians with no previous experience into the field. Each workshop will have 15 participants: 10 researchers in the topic of the workshop, two mathematical biologists working in other fields, and three mathematicians (undergraduate students, graduate students, or Ph.D. mathematicians) with little or no previous experience in mathematical biology. In addition to the workshop participants, there will be 15 places for long-term participants, students or researchers who wish to attend several or all of the workshops.

To apply for financial support or to obtain more information about the topics of the workshops, please write to: Nancy Kopell and Michael Reed, Summer Program in Mathematical Physiology, MSRI, 1000 Centennial Drive, Berkeley, CA 94720.

Applicants should state clearly whether they wish to be long-term participants or workshop participants and which workshops they wish to attend. Students should send a letter explaining their background and interests and arrange for one letter of recommendation to be sent. Researchers should indicate their interest and experience in mathematical biology and include a current vita and bibliography. Women and minorities are encouraged to apply. Applications for participation and/or support should be received at MSRI by **January 10, 1992**. Funding for the program is provided through MSRI by NSF Division of Mathematical Sciences. Additional support has been requested from the NSF Division of Instrumentation and Resources.

NSA Mathematical Sciences Program

The NSA Mathematical Sciences Program (MSP) continues its efforts at funding high quality mathematical research in the areas of Algebra, Number Theory, Discrete Mathematics, Probability, Statistics and Cryptology. During the course of the last four years, the program has evolved and currently offers four distinct categories of funding: Young Investigator Grants for untenured and promising new investigators (two months of summer support and some travel, plus a university payment in lieu of indirect cost of an amount not to exceed 15% of direct costs); Standard Grants; Senior Investigators Grant (for support of graduate students, no salary support); and Conference, Workshop and Special Situation Grants.

There will typically be one deadline of **October 15** each year. For more details, and/or a copy of the brochure *The NSA Mathematical Sciences Program, Grants for Research in Mathematics and Cryptology*, please contact Dr. Charles F. Osgood, Director, NSA Mathematical Sciences Program, National Security Agency, Attention: RMA, Ft. George G. Meade, MD 20755-6000; 301-859-6659; msp@titan1.math.umbc.edu.

The Science & Technology Information System (STIS)

STIS is an electronic information dissemination system which provides easy access to the National Science Foundation publications.

The full text of publications can be searched online and copied from the system. Electronic publications will supplement the wide distribution of printed material from NSF. There is no charge for connect time and no need to register for a password. The service is available 24 hours a day, except for maintenance periods. Up to ten people can be on the system at the same time.

Some of the available publications are the NSF *Bulletin*, the *Guide to Programs*, grants booklets and forms, program announcements, press releases, the NSF telephone book, reports of the National Science Board, descriptions and abstracts of NSF-funded research projects, and analytical reports and news from the International Programs Division.

STIS is one of many emerging information services on the data superhighway of the Internet that will remove geographic and cost barriers to the rapid exchange of research information. STIS is also available by dial-in.

For more information, contact: Dr. STIS, National Science Foundation, Office of Information Systems, Room 401, 1800 G. Street, NW, Washington, DC 20550; Internet: stis@nsf.gov; Bitnet: stis@nsf; Phone: (202) 357-7555; Fax: (202) 357-7745; TDD: (202) 357-7492.

DEADLINES: 24th of January, March, May, July, September, November
AD DEADLINES: 5th of February, April, June, August, October, December
ADDRESSES: Send all **Newsletter** material **except ads and book review material** to Anne Leggett, Dept. of Math. Sci., Loyola University, 6525 N. Sheridan Rd., Chicago, IL 60626; email: cantor!borel!alm@gargoyle.uchicago.edu LMA24@LUCCPUA.BITNET
Send all material regarding **book reviews** to Cathy Kessel, 2523 Piedmont Avenue, Berkeley, CA 94704.
Send everything else, **including ads**, to Patricia N. Cross, AWM, Box 178, Wellesley College, Wellesley, MA 02181. phone: (617) 237-7517 email: PCROSS@LUCY.WELLESLEY.EDU

ADVERTISEMENT GUIDELINES

AWM will accept advertisements for the AWM 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 Executive Director, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. All institutions and programs advertising in the Newsletter must be Affirmative Action/Equal Opportunity designated.

Institutional members of AWM receive two free ads per year. All other ads are $20 each for the first eight lines of type. Ads longer than eight lines will be an additional $15 for each eight lines or fraction thereof (i.e., $35 for 9-16 lines, $50 for 17-24 lines, etc.)

BOEING DEFENSE & SPACE GROUP, Helicopters Division located south of the Philadelphia Airport is seeking two statisticians to join the CQI organization. Overall responsibilities will be to assist in the implementation and application of statistical methods in a Total Quality environment. Candidates should possess an MS (PhD preferred) in Applied Statistics/Mathematics plus 3-5 years directly applicable work experience which includes training, application and implementation in a manufacturing environment. Interested applicants should reply to: Boeing Helicopters, P.O. Box 16858, #QUG21, Philadelphia, PA 19142-0858.

CARLETON UNIVERSITY, Dept. of Mathematics and Statistics invites applications for a six month term appointment at the level of Assistant Professor, to commence January 1, 1992. Applications are invited form outstanding candidates with a PhD degree in the area of Modern Applied Mathematics, with an emphasis in linear programming, optimization, combinatorics. There is a possibility of this position becoming a tenure track appointment. The successful candidate will be expected to be active in research, supervise graduate students, and support the Department's tradition of excellence in teaching. In accordance with the Canadian immigration requirements, this advertisement is directed first to Canadian citizens and permanent residents. Applications including curricula vitae should be addressed to: Dr. John Dixon, Chairman, Dept. of Math./Stats., Carleton University, Ottawa, Ontario K1S 5B6. Candidates should also arrange for three letters of reference to be sent to the same address. The closing date for applications is October 1, 1991.

CARLETON UNIVERSITY,Dept. of Mathematics and Statistics invites applications for a tenure track position (subject to budgetary approval), at a rank commensurate with the applicant's qualifications, to commence July 1, 1992. Applications are invited from outstanding candidates whose research interests are in the area of Modern Applied Mathematics, namely: combinatorics, optimization, operations research. The successful candidate will be expected to be active in research, supervise graduate students, and support the Department's tradition of excellence in teaching. In accordance with the Canadian immigration requirements, this advertisement is directed first to Canadian citizens and permanent residents. Applications including curricula vitae should be addressed to: Dr. John Dixon, Chairman, Dept. of Math./Stats., Carleton University, Ottawa, Ontario K1S 5B6. Candidates should also arrange for three letters of reference to be sent to the same address. The closing date for applications is January 7, 1992.

DUKE UNIVERSITY, Dept. of Mathematics invites applications for a tenure track position in applied mathematics starting Sept. 1, 1992. Rank and salary are open. Applicants should

send a curriculum vitae, a research plan, and should arrange for three letters of recommendation to be sent. Complete applications received by Nov. 15, 1991 will be guaranteed full consideration. Address correspondence to: Applied Mathematics Search Committee, Dept. of Math., Duke University, Durham, NC 27706.

JOHNS HOPKINS UNIVERSITY, Dept. of Math. Sciences invites applications for a faculty position in Operations Research or Optimization to begin in Fall 1992. Within these areas, either a stochastic or a deterministic emphasis is of interest. Applicants at all levels will be considered. Selection is based on demonstration and promise of excellence in research, teaching, and innovative application. Applicants are asked to furnish a curriculum vitae, transcripts (junior applicants only), reprints (if available), a letter describing professional interests and aspirations, and to arrange for three letters of recommendation to be sent to: John C. Wierman, Chair, Dept. of Math. Sci., 220 Maryland Hall, Johns Hopkins University, Baltimore, MD 21218-2689.

MACALESTER COLLEGE, Mathematics/Computer Science, St. Paul, MN 55105. Applications are invited for a tenure track position in Mathematics to begin in the fall of 1992. Candidates must have the PhD, and a strong commitment to teaching and research in an undergraduate liberal arts college. Located in a pleasant residential neighborhood of the culturally rich Twin Cities of St. Paul and Minneapolis, Macalester has a student body of 1750, 11% of whom are international and 10% of whom are American minorities, reflecting a long-standing desire to maintain a multi-national, multi-ethnic community. Part of a strong science program, the Math and CS Department has the largest total course enrollments on campus. Applicants should send a resume and a statement giving reasons for interest in a liberal arts college having no graduate program; also arrange for three letters of reference to be sent to Wayne Roberts at the address above. Evaluation of applications will begin on November 1 and will continue until the position is filled. Macalester is an Affirmative Action/Equal Opportunity employer and encourages applications from women and minority-group members.

NORTHERN ARIZONA UNIVERSITY. Anticipated positions for 1992-93: (1) Department Chair, starting 7/1/92. We seek an energetic scholar with a record of high quality teaching and research, proven skills in or demonstrated potential personal skills, and broad knowledge of national trends and academic programs in mathematics, statistics and mathematics education. Initial screening is expected to begin in early December. (2) Two assistant professorships: Ordinary Differential Equations, especially the geometric analysis of dynamical systems, planar systems with polynomial right-hand sides and bifurcations; Mathematical Statistics.

Qualifications include an earned doctorate in the area; evidence of high quality teaching, communication skills and interpersonal skills; demonstrated potential for a productive research program. Initial screening is expected to begin by January 1, 1992. The starting date is 7/24/92. To apply, send letter and vita and direct three letters of reference to: Screening Committee, Dept. of Math., PO Box 5717, Northern Arizona University, Flagstaff, AZ 86011.

NORTHWESTERN UNIVERSITY, Dept. of Mathematics, 2033 Sheridan Rd., Evanston, IL 60208-2730. Applications are invited for one or more anticipated tenure-track positions starting Sept. 1992. Priority will be given to young exceptional research mathematicians (no more than several years after PhD). However, more senior candidates with very exceptional credentials may be considered for a tenured position. Fields of interest within the department include Algebra, Analysis, Dynamical Systems, Probability, Partial Differential Equations, and Topology. Candidates should arrange that at least three letters of recommendation be sent to Prof. D. G. Saari, Chair, Personnel Committee, Dept. of Math., Northwestern University, Evanston, IL, 60208-2730. Alternatively, applications and supporting documentation can be sent via e-mail to "hiring@math.nwu.edu" . In order to receive full consideration, applications should be received by February 15, 1992. Hiring is contingent upon eligibility to work in the United States.

OBERLIN COLLEGE, Dept. of Math. announces a full-time, tenure-track position beginning 1992-93. Responsibilities include teaching undergraduate courses (5/year) including abstract algebra, academic advising, work with honors students, service on committees and sustained scholarly production. All specialties considered but preference given to algebraists. Qualifications required include the PhD degree (in hand or expected by Sept. 1, 1992). Candidates must demonstrate potential excellence in teaching. Please send a letter of application, curr. vitae, academic transcripts, and 3 letters of reference to Michael Henle, Dept. of Math., Oberlin College, Oberlin OH 44074 by Nov. 4, 1991. Applications received afterwards may be considered until the position is filled.

ONR (Office of Naval Research) is seeking a highly qualified individual to plan and manage sponsored basic research programs in new areas of applied analysis. The sponsored research is conducted principally at U.S. universities and industrial laboratories. This is a Civil Service position at the GM-13/14/15 level ($44,348-$80,138), depending on qualifications. The individual selected will establish goals for and conceive, organize, and direct basic research programs in applied analysis with a special emphasis on partial differential equations, inverse problems and other areas related to Navy applications. Because of the Navy's

unique interest in waves and flows, special emphasis is on convection-diffusion with particular interest in shock-capturing, inetial manifolds, vortex-flow surface interaction, and control of fluids. Acoustics, electromagnetics, modeling the ocean bottom and the ocean medium, and nondestructive evaluation motivate research in inverse scattering and mathematical inverse theory. The incumbent will identify new research opportunities, evaluate and select research proposals for funding, manage funding resources, communicate ONR's interest to the scientific community and represent the program within the Navy and DoD. This position provides the challenge and opportunity to have a creative and significant impact on the direction and quality of research conducted at the national level. Additionally, the opportunity exists to establish or maintain an individual research program at an academic institution or government laboratory. Applicants must have one year of specialized experience although a PhD or equivalent training in mathematics or a related field and one year of specialized experience is preferred. To be qualifying, this experience must have been at a level of difficulty and responsibility equivalent to that of the next lower grade level in the Federal Service. Demonstrated research experience in the disciplines listed above is desired. Interested persons should send a resume, list of publications and a Standard Form 171, Application for Federal Employment (available at Federal Job Information Centers or from the address below), to: Office of the Chief of Naval Research, Civilian Personnel Division, ONR Code 02142, Attn: Announcement #91-33 (AWM), 800 North Quincy Street, Arlington, VA 22217-5000. Applications will be accepted through November 4, 1991 and must be received by that date. Applicants are requested to complete the appropriate supplemental forms. For further information and supplemental forms, please call (703) 696-4705 or TDD - (703) 696-2681. U.S. Citizenship Required.

PURDUE UNIVERSITY, Dept. of Math., West Lafayette, IN 47907. Several regular or research assistant professorships beginning in August 1992. Exceptional research promise and excellence in teaching required. Applicants MUST mention at least on Purdue faculty member with whom they expect to have interests in common. Send resume and three letters of recommendation, one of which addresses teaching.

SOUTHERN CONNECTICUT STATE UNIVERSITY, Dept. of Mathematics, New Haven, CT 06515. Tenure track position (subject to funding) at asst/asso rank beginning 8/21/92 to teach undergraduate/graduate mathematics courses, especially those involving applications. Teaching load: 12 hours/sem. Qualifications: doctorate in mathematics with appropriate specializations, e.g., discrete mathematics, numerical analysis, differential equations. Evidence of quality teaching, potential for scholarly growth; experience in business and/or industry desirable. Salary is competitive.

Send letter of application, vita, transcripts, three letters of recommendations to Dr. Helen Bass, Chair. Full consideration given to applications received by 12/12/91 or until position is filled.

SOUTHERN CONNECTICUT STATE UNIVERSITY, New Haven, CT 06515 Dept. of Math. Tenure track position (subject to funding) at asst/assoc rank beginning 8/21/92 to teach undergraduate/ graduate statistics and mathematics courses. Teaching load: 12 hours/sem. Qualifications: doctorate in statistics, evidence in quality teaching, potential for scholarly growth. Salary is competitive. Send letter of application, vita, transcripts, three letters of recommendations to Dr. Helen Bass, Chair. Full consideration given to applications received before 12/13/91 or until position is filled.

SPRINGER-VERLAG, an international science publisher, has a permanent interest in maintaining a network of freelance (copy) editors. This work is ideally suited to persons working at home. We are looking for candidates with at least a master's degree or equivalent in mathematics, physics, chemistry, or engineering, who are willing to work at least 5 hours per week, are native speakers of English, and have good writing skills. The starting salary is $10.00/hr. (It is quite possible to increase the work to near - fulltime.) For further information, interested persons should contact: Mark Seymour, Springer-Verlag, Tiergartenstr. 17, 6900 Heidelberg, Germany.

UNIVERSITY OF ADELAIDE is currently advertising its Chair of Pure Mathematics (closing date Sept. 27, 1991) and is seeking outstanding women applicants. The University is seeking applicants with a capacity for leadership who can make a major contribution to excellence in teaching and research in pure mathematics. This is a senior position and criteria include high international standing in research. Contact: Dr. Jane Pitman, Head, University of Adelaide, Dept. of Pure Mathematics, South Australia.

UNIVERSITY OF MARYLAND, COLLEGE PARK, Dept. of Math., College Park, MD 20742. Applicants are invited for possible tenure or tenure track positions to begin in August 1992. Rank and salary depend on qualifications. Joint appointments with other units, in particular with the Institute for Physical Sciences and Technology, are possible. Exceptionally strong research program necessary. Deadline for full consideration is Feb. 1, 1992. Vita, description of current research and at least three letters of recommendation should be sent to Professor Raymond L. Johnson, Chairman.

UNIVERSITY OF PITTSBURGH, Department of Mathematics and Statistics invites applications for the following positions, which will be available for September, 1992 if funding permits. 1. Assistant Professor in pure mathematics. We

have a significant preference for someone in algebra, topology, or geometry. 2. Visiting Assistant Professor in mathematical biology. Here we have a preference for an individual with a strong computational aspect to their research. There is a possibility that the person appointed to this position will be considered for a tenure track position for the following year. Requirements include outstanding research accomplishment and potential commensurate with experience, and ability and interest in excellent teaching. Applicants should send resume and arrange to have at least three letters of recommendation sent to: S. Hastings, Chairman, Department of Mathematics and Statistics, University of Pittsburgh, Pittsburgh, PA 15260.

YALE UNIVERSITY. Applications accepted for Gibbs Instructorships for PhDs with outstanding promise in research. 2-yr. appointments starting July 1, 1992. Light teaching load. Applications and supporting materials must be received by January 1, 1992. Offers will be made about February 1. Salary at least $36,000. Request application from: Ms. Caroline Curtis, Administrative Assistant, Gibbs Committee, Dept. of Mathematics, Box 2155, Yale Station, 10 Hillhouse Ave., New Haven, CT 06520.

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Donate $25 to AWM to support programs and activities and receive your own AWM mug sporting the new AWM Logo!

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

Programs of Interest

BUNTING INSTITUTE of Radcliffe College, Fellowships Office, 34 Concord Ave., Cambridge, MA 02138 invites applications for the Science Scholars program. It is a fellowship program for women who have had their doctorate for at least two years prior to Sept. 92. It provides a decent post-doc level salary, an office, complete freedom to work to work and a chance to interact with an interesting community of women in many fields (not just the sciences). It also encourages affiliations with labs elsewhere in Boston, e.g., at MIT, Harvard, etc., for computer scientists. Application deadline is October 15, 1991. For application materials, write the above address or call (617) 495-8212.

COLUMBIA UNIVERSITY. There will be a new seminar at Columbia University to provide research stimulation and interaction for the women mathematicians in the New York area. If you want to renew your interest, hear what is currently going on in mathematics, or if you are already active and want to share your knowledge and experience with others, you are very welcome to attend. The meetings will begin in October. For further information please contact Julia Mueller, Math. Dept., Columbia University, New York, NY 10027. Telephone: (212) 854-3950.

INSTITUTE FOR MATHEMATICS AND ITS APPLICATIONS announces a program on Control Theory and its applications, a one year program with three parts: (1) Fall: September 8 - December 30, 1992, Linear and Distributed Parameter Systems; (2) Winter: January 2-March 30, 1993, Nonlinear Systems and Optimal Control; (3) Spring: April 1-June 30, 1993, Stochastic and Adaptive Systems. All requirements for a doctorate should be completed by September 1, 1992. Applicants must show evidence of mathematical excellence, but they do not need to be specialists in the field. The following materials must be submitted (all material should arrive by January 15, 1992): (1) Personal Statement of scientific interests, research plans and reasons for wishing to participate in the Control Theory program. (This is an essential part of the application.); (2) Curriculum Vitae and a list of publications; (3) Three letters of recommendation, to be sent directly to the IMA. Preference will be given to supplementary support for persons with sabbatical leaves, fellowships, or other stipends. IMA also announces at least one-to-two year positions in Industrial Mathematics, effective September 1, 1992. These appointments are in addition to the regular IMA postdoctoral program and are funded jointly by the NSF and participating industries. They are designed to prepare mathematicians for research careers involving industrial interaction. Applicants should have fulfilled all the requirements for a PhD in Mathematics or Applied Mathematics by September 1, 1992. Familiarity with pde and/or numerical analysis is desired, but no knowledge in engineering is required. Postdoctorates will spend 50% effort working with industrial scientists on the following

topics: (1) Signal processing and computational ocean acousitics; (2) Diffractive optics; Maxwell equations in periodic structure; (3) Computational fluid mechanics; viscous free-surface flows; (4) Scattering of electromagnetic waves from complex objects; (5) Magneto-optic recording media; the writing process; (6) Semiconductors; (7) Solid state physics & computational chemical physics; (8) Problems in mathematical photography, both traditional and electrophotography; (9) Air quality modeling; (10) Control theory; and 50% effort in the regular IMA program. Requirements and application procedure are the same as for the postdoctoral memberships listed above. All correspondence should be sent to either Visiting Membership Committee or Industrial Mathematics Postdoctorate Membership Committee, Institute for Mathematics and its Applications, University of Minnesota, 514 Vincent Hall, 206 Church St., Minneapolis, MN 55455-0436.

Association for Women in Mathematics

Individual Membership Form 90-91

Date.....19.....

Please complete this form and return it as soon as possible. Your membership will be updated immediately. See reverse side to determine what membership category you are eligible for. Subscription to the **AWM Newsletter** is included as part of your membership. Thank you for taking the time to complete this new form.

Please indicate below how your name should appear in the AWM Membership List.

_____

Last Name First Middle Initial

Address for all mail:

_____

_____

_____

Family member name (if applicable):

_____

Last Name First Middle Initial

Electronic Mail Address (if any): _____

New Member _____ **Renewal** _____

Address Change? _____

Telephone numbers: Home: ( )_____

Office: ( )_____

Degrees, with institutions and dates:

_____

_____

_____

Present position: _____

Firm or institution: _____

_____

City State Zip/Country

Primary Fields of Interest. Select up to five from the list on page 2.

_____ _____ _____ _____ _____

The **AWM Directory of Women in Mathematical Sciences** will be updated and published bi-annually beginning in 1991. Please indicate below if you would like your name, address and areas of interest included in the 1991 Anniversary Edition.

Check one: _____yes _____no

Signature: _____

Membership Categories

Please read the following to determine which membership category you are eligible for, and then indicate below the appropriate category. AWM membership year is October 1 to October 1.

For **individual members joining for the first time,** the dues are $15 for the first two years. **Renewing individual members** pay $20 dues. **Family membership:** $25. **Contributing members:** $45. **Students, retired individuals, and unemployed individuals:** $5. Contributions of any size very welcome.

Dues Schedule

Please indicate amount enclosed.

Individual member ..... ____ $15 (first 2 years) ____$20

Family membership ..... ____$25

Contributing member ..... ____$45

Student, retired or unemployed ..... ____$5

Foreign members, other than Canada or Mexico ..... +$8 for postage

Total Enclosed: _____

Fields of Interest

Please consult the list of major headings of the 1980 Math Subject Classification and the categories specific to AWM.

00 General
01 History and biography
03 Mathematical logic and foundations
04 Set theory
05 Combinatorics
06 Order, lattices, ordered algebraic structures
08 General mathematical systems
11 Number theory
12 Field theory & polynomials
13 Commutative rings and algebras
14 Algebraic geometry
15 Linear and multilinear algebra; matrix theory
16 Associative rings and algebras
17 Nonassociative rings and algebras
18 Category theory, homological algebra
19 K-theory
20 Group theory and generalizations
22 Topological groups, Lie groups
26 Real functions
28 Measure and integration
30 Functions of a complex variable
31 Potential theory
32 Several complex variables and analytical spaces
33 Special functions
34 Ordinary differential equations
35 Partial differential equations
39 Finite differences and functional equations
40 Sequences, series, summability
41 Approximations and expansions
42 Fourier analysis
43 Abstract harmonic analysis
44 Integral transforms, operational calculus
45 Integral equations
46 Functional analysis
47 Operator theory
49 Calculus of variations and optimal control; optimization
51 Geometry
52 Convex sets and related geometry topics
53 Differential geometry
54 General topology
55 Algebraic topology
57 Manifolds and cell complexes
58 Global analysis, analysis on manifolds
60 Probability theory and stochastic processes
62 Statistics
65 Numerical analysis
68 Computer science
70 Mechanics of particles and systems
73 Mechanics of solids
76 Fluid mechanics
78 Optics, electromagnetic theory
80 Classical thermodynamics, heat transfer
81 Quantum mechanics
82 Statistical physics, structure of matter
83 Relativity
85 Astronomy and astrophysics
86 Geophysics
90 Economics, operations research, programming, games
92 Biology and behavioral sci.
93 Systems theory; control
94 Information and communication

001 Education: K-8
002 Education: 9-12
003 Education: Undergraduate
004 Education: Graduate
005 Gender issues
006 Affirmative action
007 History of women in math sciences
008 Other (please specify):

_____

_____

Association for Women in Mathematics
Box 178 Wellesley College
Wellesley, MA 02181
(617) 237-7517

Association for Women in Mathematics

Institutional Membership
Date.....19.....

Please fill out this application and return it as soon as possible. Your institution will be updated on our membership list upon receipt of the completed application and payment of member dues or receipt of postal order. See below to determine which membership category you wish to choose. Subscription to the AWM **Newsletter** is included as part of the membership. Institutional members receive two free advertisements per year. All institutions advertising in the **AWM Newsletter** are Affirmative Action/Equal Opportunity Employers.

Indicate below how your institution should appear in the AWM Membership List.

_____

_____

_____

_____

Address change? _____

Department Telephone Number: _____

Chair: _____

Last name First Middle initial

Telephone number: _____

Electronic mail address: _____

Membership Categories

Please read below and indicate the category for which you are applying. AWM membership year is October 1 to October 1.

Dues Schedule
Indicate amount enclosed.

_____ **Sponsoring, Category I** (may nominate 10 students for membership): **$100**

_____ **Sponsoring, Category II** (may nominate 5 students for membership): **$75**

_____ **Regular: $50**

List names and addresses of student nominees on opposite side of this form.

Institution: _____

Student Nominees: **Please list name and mailing address.**

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Name: _____

Each student will receive notification of her/his membership and begin receiving the **AWM Newsletter.**

Association for Women in Mathematics
Box 178 Wellesley College
Wellesley, MA 02181
617-237-7517

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

Attention AWM Members!

Watch for your membership renewal notice in the mail.

Remind your department to join AWM if they are not Institutional Members.

Pending NSF approval.....

AWM will continue to sponsor the **NSF-AWM TRAVEL GRANTS FOR WOMEN**. The objective of the NSF-AWM Travel Grants is to enable women to attend research conference in their field, thereby providing a valuable opportunity to advance women's research activities, as well as increase the awareness that women are actively involved in research. If more women attend meetings, we increase the size of the pool from which speakers at subsequent meetings are drawn and thus address the problem of the absence of women speakers at many research conferences.

The Travel Grants. The grant will support travel and subsistence to a meeting or a conference in the applicant's field of specialization. A maximum of $1000 for domestic travel and of $2000 for foreign travel will be applied.

Eligibility. Applicant's must be women holding a doctorate in a field of research supported by the Division of Mathematical Sciences of the NSF (or have equivalent experience). A woman may not be awarded more than one grant in any two-year period and should not have available other sources of funding (except possibly partial institutional support).

Target Dates. The next due date (pending NSF Approval) is November 1, 1991.

Applicants should send a description of their current research and how the proposed travel would benefit their program, a curriculum vita, and a budget to Association for Women in Mathematics, Box 178, Wellesley College, Wellesley, MA 02181.

Women Graduate Students and Postdocs in Mathematics

The Association for Women in Mathematics is pleased to announce an AWM Workshop on Tuesday, January 7, 1992 at the AMS/MAA Joint Mathematics Meetings in Baltimore, Maryland. The Joint Mathematics Meetings will be held from January 8-11, 1992.

FUNDING AVAILABLE

The National Science Foundation and the Office of Naval Research are providing funds for travel and subsistence and registration fees for 10 women graduate students and 10 women postdocs [received their PhD within approximately the last five years] to attend the AWM Workshop and the Joint Mathematics Meeting. The Workshop will provide opportunities for women to discuss their research and to participate in a number of other events during the day. There will be a panel to discuss research funding, the graduate school environment, and pipeline issues, a luncheon, and a special program and dinner where participants will have the opportunity to meet established women mathematicians.

All mathematicians (female and male) are invited to attend the entire program even though only 20 women will be funded. Departments are urged to help graduate students and postdocs obtain some institutional support to attend the workshop and the Joint Mathematics Meetings that follow.

APPLICATIONS PROCEDURES

Graduate Students: To be eligible for funding a graduate student must have begun work on a thesis problem. Send a brief (1 page) letter describing the research area and problem. This letter should be accompanied by a letter of recommendation from the thesis advisor or department chair, and a curriculum vita.

Postdocs: To be eligible for funding a woman must have received her PhD within approximately the last 5 years. Send a letter describing the area of research and a curriculum vita.

All applications must be postmarked by October 15, 1991 and sent to AWM, Box 178, Wellesley College, Wellesley, MA 02181. Direct any questions regarding funding or the AWM Workshop program to Patricia Cross at the AWM office (617) 237-7517.

AWM
ASSOCIATION
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AWM

Newsletter

Volume 21, Number 5, September-October, 1991

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

Box 178, Wellesley College, Wellesley, MA 02181

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