AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 21, Number 2 NEWSLETTER March-April 1991

PRESIDENT'S REPORT

Our 20th Anniversary celebration provides an abundance of things to report, some of which I'll save for next time. It was a treat that many members attended the San Francisco meeting in January, although others were certainly missed, including two former presidents, Judy Roitman and Linda Keen. Many accounts will be given of the events in this and the next *Newsletter*, but it will be difficult to recapture certain moments. Perhaps some of the excitement and pride generated by the symposium may be found in the videotapes made possible by the generosity of an anonymous donor. The scenes at the banquet when laughter overtook everyone, including the speakers, are not however on tape, which may be just as well. After 20 years we still get the giggles!

As if that wasn't enough, we continued to a terrific party afterward, complete with dance floor, disc jockey, and music ranging from the 60's — before we (AWM) were born — to rap. There was considerable enthusiasm for dancing, and impressive skills displayed, especially among former AWM officers and among the students at the meeting. I have been assured that dancing ability is not a requisite of this office; your new president is allowed to stand in the corner, as long as the more talented members have music! (Any opinions on a dance floor charge?)

And now for some serious reporting about the recent meeting.

AWM Symposium on the Future of Women in Mathematics
Wednesday, January 16, 1991

Wow! It was already a true high to read the e-mail messages from the selection committee, with many powerful candidates from whom to select ten. The end result was a great day for mathematics, with a showcase of ten under ten (years since Ph.D.) providing the audience a variety of very beautiful, very classy mathematics. Thanks to our speakers, Carolyn Dean, Bernadette Perrin-Riou, Mei-Chi Shaw, Jiang-Hua Lu, Ruth Williams, Laurette Tuckerman, Lynne Butler, Joan Feigenbaum, Elise Cawley, and Jill Pipher. Thanks also to the

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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.

chairs of the sessions, Judy Sunley, Nancy Stanton, Linda Rothschild, Fan Chung, and Alice Chang, and more thanks to Jill, for co-chairing the program committee, and to its members, Lenore Blum, Alice Chang, Linda Keen, Maria Klawe, Susan Montgomery, Bhama Srinivasan, Karen Uhlenbeck, and Mary Wheeler. And thanks to NSF and ONR for funding the Symposium, and to an anonymous donor for his generosity and foresight in arranging that the Symposium be videotaped.

Emmy Noether Lecture

Alexandra Bellow of Northwestern University gave the 12th Annual Noether lecture, "Almost everywhere convergence: the case for the ergodic viewpoint," to a large audience at 9 A.M. on Thursday the 17th. Before beginning, she touched briefly upon a topic on the minds of all, by noting the onset of war and the difficult times others were experiencing, in contrast with our privileged status in attending a mathematics meeting. In her talk she elegantly illustrated the ergodic point of view as applied to a host of problems involving the interplay of ergodic theory, number theory, and harmonic analysis. The audience didn't want to let her go, with a small group encircling her after the close of the talk for further discussion.

AMS/AWM/MAA Invited Address

As part of our celebration, Christel Rotthaus of Michigan State gave the AMS/AWM/MAA invited address on Thursday at 11:10 A.M. on "Some nonstandard construction methods for local noetherian rings;" she was introduced by Jill Mesirov. At the close of the meeting, thanks to AWM were conveyed to me by several colleagues for whom Rotthaus' talk was a high point of the meeting. Enough said!

Graduate Student Workshop And Luncheon

On Thursday afternoon, short talks were given by the ten graduate students participating in the AWM Workshop: Andrea Bertozzi, Jill Dietz, Ellen Gethner, Milja-Riitta Hakosalo, Deanna Haunsperger, Kitty Holland, Diana Major, Susan Schwartz, Melanie Stein, and Julia Yang. Thanks to them and to Lenore Blum who chaired the program and the committee, with members Ruth Charney, Pam Cook, Leslie Federer, and Martha Nesbitt. This committee's task was made difficult by having about 70 applicants for the 10 slots, and efforts were made to encourage departments to find funding for students whom we could not support. On Friday, Lenore moderated a panel at a box luncheon, open to all but aimed at graduate students at the meeting, with Hugo Rossi (Utah) and Deborah Lockhart (NSF) offering very level-headed advice on the crucial years just after the Ph.D. Thanks to NSF and ONR for providing the luncheon.

AWM Everywhere Dense In San Francisco

Rebecca Herb gave an AMS/MAA invited address, Maria Klawe an AMS invited address, and Jill Mesirov an MAA invited address. Dusa McDuff was the first recipient of the Satter Prize of the AMS, established by Joan Birman in memory of her sister. Dusa's acceptance speech was moving and fascinating — highly recommended reading!

Congratulations and best wishes to Debbie Haimo as she assumes the presidency of MAA, and to Lida Barrett, whose term as President of MAA has just ended.

And I know I've forgotten many other events and persons!

Award to Mary Gray

I cannot wait for the banquet story to report that, while many were thanked and recognized at the banquet, we decided that one person earned special recognition. A certificate, an AWM mug, and our profound gratitude went to Mary Gray for her role in the founding of AWM.

Citation (delivered by Carol Wood):

> It is especially fitting that Mary Gray be honored at the Twentieth Anniversary meeting of the AWM, since she is the one person most responsible for the existence of this organization; for years her name was virtually synonymous with AWM. She ran the organization almost single-handedly for its first two and a half years, serving as chair during that period and producing the *Newsletter* for the first four years.
>
> During this same period, Mary was working to insure broader membership participation in the established mathematical societies. She worked to open AMS Council meetings to observers, as provided in the bylaws, and to make common practice the nomination by petition for certain AMS offices. In 1976, Mary became the second woman Vice President of the Society (nominated by petition) and the first in seventy years.
>
> On an even broader front, Mary has been active on Committee W, the Committee on Women of the American Association of University Professors, serving as its chair from 1973 until 1978 and again since 1986. She served as President of Women's Equity Action Leagues from 1982 to 1988. Her concern for the rights of all humans is evidenced by her involvement with Amnesty International, currently as Treasurer and member of the Board of Directors of Amnesty International USA.
>
> In addition to her background as a mathematician, Mary brings legal expertise to these activities, with a law degree earned in 1979. As an attorney she has also been involved in many successful academic discrimination suits.
>
> Mary remains active in AWM and has served as General Counsel. As a former president, she participates in the deliberations of the Executive Committee, where her advice and perspective are of abiding value to the Association.
>
> With gratitude for her vision and energy, AWM takes great pride tonight in honoring Mary Gray.
>
> *Note:* In response to her award, Mary expressed her surprise and added a detail to Lenore's and my account of her AMS activities: when told that the AMS Council meetings were held behind closed doors according to a "gentleman's agreement," Mary retorted that she was no gentleman!

Executive Committee And Business Meeting: Announcements And Actions

1. The AMS and MAA have joined AWM as Affiliate Members. Welcome!

2. The Executive Committee decided to include the Maternity Leave policy in a later issue of the *Newsletter*, along with a stamp of approval from our General Counsel, for two purposes: to provide a document which members in academia can carry to their administrations as a sample arrangement, and to invite comments and reactions from the membership. The task force chaired by Anita Solow has produced this document with careful and thoughtful work over several years, grappling as they did with a variety of thorny issues.

3. Bylaws changes will result in all changeovers of officers occurring on February 1st. This is consistent with other societies, and in particular results in having the same person plan and preside over the January meeting. Informally, this is what happened this year, although Jill presented me with the AMS Centennial bowl at the Business Meeting, to see if I could find room for it in my carry-on luggage, I suspect. I hope to provide my successor with a similar challenge.

4. As one more birthday event (the party's not over yet), AWM is sponsoring a special symposium at the annual meeting of AAAS on February 18, 1991 in Washington, DC, organized by Mary Beth Ruskai, Mary Gray, and Jill Mesirov, on "Mathematics in the Public Policy Arena." Panelists are Ingrid Daubechies, Mary Gray, Barbara Grosz, Fern Hunt, and Mary Wheeler.

The Executive Committee also agreed to join AAAS, if a check of the cost shows that it is within our means.

5. Other AWM programs in the planning stages include a second workshop for graduate students at ICIAM '91 and a second SIAM panel in summer '92, organized by Joyce McLaughlin. The first SIAM panel, organized by Jill, was a big hit; SIAM *News* has an excellent article on math in industry in a recent issue, highlighting Ann Stehney's presentation at our panel.

6. We approved a cooperative venture with MAA, to the benefit of both, in joining forces with WAM to arrange a speakers' bureau which will include lists of speakers which each group has provided separately in the past.

7. The Membership Committee, chaired by Sue Geller, has been asked to consider the future of the *Directory of Women in Mathematics* and/or a membership list. Sue and I welcome your opinions about what would be useful to the membership and to others.

8. The Resource Committee, chaired by Jenny Baglivo, was lauded for its work, resulting in very attractive materials, and Exxon and its own Mike Dooley were thanked for providing funding; details later.

9. The first Louise Hay Award for Contributions to Mathematics Education was announced at the Business Meeting and presented at the start of the Symposium to Shirley M. Frye. The timing of the presentation was dictated by Shirley's schedule, but in retrospect it was serendipitous to start our celebration and talks by outstanding young researchers by being reminded of Louise Hay and by honoring Shirley for her contributions to the care and nurturing of young mathematicians.

Citation (delivered by Rhonda Hughes, Bryn Mawr College):

It is an honor for me to present the first annual Louise Hay Award for Contributions to Mathematics Education.

In August of 1990, the AWM Executive Committee passed a resolution establishing the award, and stating that "while Louise Hay was widely known for her contributions to mathematical logic and her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secure her reputation as the consummate educator. The annual presentation of this award is intended to highlight the importance of mathematics education and evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being."

The Award Committee, consisting of Sylvia Bozeman, Chair, Spellman College, and Mary Ellen Rudin, UW Madison, and myself, considered many distinguished candidates, from classroom teachers, to authors of educational materials for children, to university administrators. Once we decided that the first award would recognize the tremendous national effort to improve mathematics education in the schools, our task was easy. It gives me great pleasure to present the first Louise Hay Award for Contributions in Mathematics Education to Shirley M. Frye.

Shirley Frye received her B.A. from Thiel College and a master's degree from Arizona State University. She has been a classroom teacher for more than twenty years and served as director of curriculum and instruction, grades K-12, for the Scottsdale, Arizona, school district. She is a contributing author to *An In-Service Handbook for Mathematics Education and Professional Development of Teachers of Mathematics* and has written numerous articles on mathematics education. She also served on the NCTM Commission on Standards for School Mathematics. Among her many honors are: Thiel College Distinguished Alumnus Award, Scottsdale Arizona Teaching Award, Phi Delta Kappa Award for Teaching, and the Glen Gilbert Award of the National Council of Supervisors of Mathematics.

As President of the NCTM 1988-1989, Shirley Frye gave strong leadership and boundless

energy to the introduction of the *NCTM Curriculum and Evaluation Standards for School Mathematics* to the nation.

For these impressive and invaluable achievements, the Association for Women in Mathematics honors Shirley M. Frye with the first Louise Hay Award for Contributions to Mathematics Education.

Shirley M. Frye's Acceptance Remarks:

Thank you for this very special award. I am reminded about what Leo Buscaglia said in his book *Bus 9 to Paradise.* His view is that there is no need to seek paradise in the distant future. We find paradise in our work and in the people with whom we share our lives and work. Truly I am and have been on that Bus 9 to Paradise!

It has been my good fortune to be a representative of mathematics educators during these exciting years of reformation and new direction. Most importantly the emphasis of this time is to challenge and support women to be all they can and want to be.

I accept this honor believing that it recognizes all teachers of mathematics everywhere. I treasure your commendation in the name of Louise Hay, a renowned and beloved teacher, who had a lifelong commitment to nurturing the talent of women.

Thank you very much.

10. At the business meeting, Jill initiated a practice I hope to continue, that of presenting AWM Service Awards. Our first recipients were Anne Leggett and Bettye Anne Case. Despite our mature age of twenty, the AWM depends as much as ever on the dedication, judgement, and energy of key people. Our 20th anniversary seemed an especially appropriate moment to acknowledge these two women. To make sure their caffeine supplies and AWM are close by, each received a brand-new AWM mug!

Citations (delivered by Jill Mesirov):

Bettye Anne Case has served AWM as our Meetings Coordinator for 8 years formally, 15 actually. As we have grown, so has the job, and Bettye Anne has continued to see to every detail, from the early days when our parties were small and we passed the hat, to the more elaborate occasions we now host. But perhaps even more importantly, Bettye Anne has served as a valuable link from one President to the next; she has been our institutional memory. She is frequently consulted to find out "how it used to be" and has helped us preserve as much of the early spirit of AWM as possible. We are deeply grateful for the time, energy, and dedication that Bettye Anne Case has given to AWM and are pleased to honor her on the occasion of our Twentieth Anniversary.

To most of our members, the *Newsletter* IS AWM. Our link to those members unable to attend our meetings or other activities, it determines how our organization is perceived by the mathematics community. For 13 years, Anne Leggett has been the sole editor of the *Newsletter*, carrying the responsibility for presenting AWM to the outside world. Her broad knowledge of women's issues and the literature relating to them has enriched our own knowledge and made our *Newsletter* publication of interest to a much wider audience. She has done this work selflessly, with relentless dedication and energy, good judgment and taste.

On behalf of AWM, I express my deep gratitude and appreciation to Anne Leggett for her lasting contributions as Editor of the *Newsletter*.

11. And speaking of service, our Treasurer Jenny Baglivo, who has been doing double duty as Resource Committee chair as well, plans to relinquish the purse strings this year, and so the nominating committee has the awesome task of selecting her successor. I'm sure they would appreciate members' advice on this!

12. At the business meeting, a lively discussion ensued from an observation that we should endeavor to focus on issues of education in future activities, not just research. It was pointed out (correctly) that the Symposium should have included a speaker whose research area was mathematics education. Jill remarked that all our activities are determined and shaped by those members who are willing to be involved at that moment in our history. There was general agreement that AWM should and does define its role very, very broadly, to include mathematicians whose professional situation can be identified with any of the CBMS societies. [Ed. note: see the letter on page 10 for views relevant to this issue.]

13. At the business meeting we also recalled the tragedy in Montreal in December 1989, as a savage reminder that some struggles are far from ended. Members mentioned ways in which their institutions had addressed issues of harassment and hatred, and also ways the students' deaths had been remembered on campuses. [Ed. note: The University of Colorado has been especially active in this regard. Please send any information about such activities to: Dr. Miriam Maslanik, Coordinator, Women in Engineering Program, Campus Box 422, University of Colorado, Boulder, CO 80309. Canadian feminists are trying to get December 6th declared as a day of remembrance.]

Life after San Francisco

The Nominating Committee has been appointed by Jill, as her last official act as President; she has selected Rhonda Hughes, Linda Keen, and Ruth Charney (Hughes and Keen to serve as co-chairs). Offices to be filled are president-elect, treasurer, and two members-at-large of the executive committee. Please send suggestions for nominees to me by April 1 for forwarding to the committee.

The renewal proposal for the NSF-AWM Travel Grants has been submitted, with thanks to Rhonda Hughes and Patricia Cross for all the pieces.

Tricia called me last week, with palpable joy in her voice, as she announced that John Porter of IBM's University Relations had confirmed that we will receive *all* the office equipment we need. **Thank you Big Blue**, and also thanks to Maria Klawe for initiating our contact with IBM and to Shmuel Winograd for advising us on how to proceed to apply for this invaluable support.

And a Few More Thanks

* to everyone who helped with the arrangements for the meeting, especially Hope Daly and the rest of the AMS meetings staff

* to Exxon and Mike Dooley for enabling us to do so many things

* to NSF and ONR for the workshop and symposium

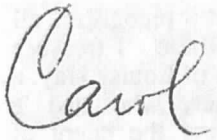
* to Joan Hutchinson for arranging an AWM meeting in Brookings, SD, last fall, meeting with graduate students from SDSU

* to Jill for many things, not the least of which was her continuing as President for a spectacular extra month, with great results

and

* to Tricia for her perfect combination of professionalism and charm.

When I was asked to serve as President of AWM, I thought about the help I would need and of the persons to whom I would turn for advice. High on my list was Louise Hay; the sad irony, however, was that her terminal illness prevented her from becoming our next president. Louise should have been writing this letter now. As things are, I must depend on the members to keep me going, in some approximation of the wise path Louise would have chosen. On the brighter side, a delight I've already enjoyed as President-Elect is the opportunity to work with fantastic women. I look forward to meeting with and learning from many more of you in the coming two years.



Carol Wood

IN MEMORIAM

Miss Margaret E. Grimshaw who was elected a member of the London Mathematical Society on 12th December 1929, died on 21st January 1990 at the age of 85. [*LMS Newsletter*, no. 174, July 1990]

Mary Kenny Landers, professor emeritus of mathematics at Hunter College, died on Sunday at Rhode Island Hospital in Providence. She was 85 years old and lived in Forest Hills, Queens.

She died of cancer of the colon, said her son-in-law, John Savage.

Professor Landers taught at Hunter for almost 50 years, retiring in 1975. She was a fellow of the American Association for the Advancement of Science and the New York Academy of Sciences.

An early advocate of academic collective bargaining, she was secretary of the Legislative Conference, an organization representing the professional staff at the City University of New York, from 1959 to 1972. At that time, the conference merged with the United Federation of College Teachers to form the Professional Staff Congress.

Professor Landers was born in Fall River, Mass., and graduated from Brown University in 1926. She received an M.A. from Brown and a Ph.D. from the University of Chicago.

A widow, she is survived by two sons, Robert J., of Arlington, Va., and Richard B., of Loudonville, N.Y.; a daughter, Patricia L. Savage of Providence; two sisters, Margaret Rowell of Queens and Rita Hitchinson of Hyde Park, Mass., and seven grandchildren.

from the New York Times, *Nov. 21, 1990*

CALL FOR NOMINATIONS! ALICE T. SCHAFER MATHEMATICS PRIZE

The second annual Alice T. Schafer Mathematics Prize in the amount of $1000 will be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize, to be awarded in April 1991.

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

Supporting materials should be enclosed with the nominations. Nominations should be postmarked no later than March 29, 1991 and sent to: Schafer Prize Committee, AWM, Box 178, Wellesley College, Wellesley, MA 02181.

In 1990, there were two Schafer Prize winners: Linda Green, University of Chicago, and Elizabeth Wilmer, Harvard University. The winners and Honorable Mention recipients were presented their awards at the Joint Mathematics Meetings in Columbus, Ohio in August 1990.

NSF-AWM TRAVEL GRANTS FOR WOMEN

The objective of the NSF-AWM Travel Grants is to enable women to attend research conferences in their field, thereby providing a valuable opportunity to advance women's research activities, as well as to 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 grants will support travel and subsistence to a meeting or conference in the applicant's field of specialization. A maximum of $1000 for domestic travel and of $2000 for foreign travel will be applied.

Eligibility. Applicants 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 two due dates for applications are May 1 and August 1.

Applicants should send a description of their current research and of 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.

AWM TWENTIETH ANNIVERSARY CELEBRATION

Jill Dietz and Deanna Haunsperger

Judy Green and Lenore Blum

Rhonda Hughes and Shirley Frye

Anne Leggett

Jill Mesirov and Bettye Anne Case

Mary Gray

Alexandra Bellow

LETTERS TO THE EDITOR

To AWM on its twentieth anniversary:

Greetings and congratulations to AWM on its twentieth anniversary on behalf of myself and the group of high school teachers who are members of AWM. I remember well the small group of women in the Boston area who in 1969 or 1970 began to meet to discuss discrimination against women in mathematics. In that group were Alice Schafer, Linda Rothschild, Kay Whitehead, Bhama Srinivasan, Bernice Auslander, Linda Almgren Kime, Helen Wang, Caroline Series (Helen and Caroline then graduate students at Harvard), and myself. We all met together in the living rooms in our respective homes in Cambridge, Belmont, and Newton to talk, laugh, complain, and share together our concerns and our needs. Out of these first meetings was born a support organization for women in mathematics in the Boston area. Many members of this group became early members of AWM. I joined as a student who had not completed my doctorate and had opted instead to follow my husband's career path and raise my children. It all seems so dated in these days of the 1990's, yet even then I wanted to share with others what I knew: that once one drops out of a degree program it is almost impossible to pick it up years later. I wanted to encourage women students to stick with their studies and not to stop until they had completed their degrees and had launched their own careers.

I wanted to encourage women students to stick with their studies and not to stop until they had completed their degrees and had launched their own careers.

Since those days I have served on the AWM Council; I was the first fund-raising chair and continued in that post for many years. More recently I have worked on using some of those funds we raised on the now well-established Sonia Kovalevsky High School Math Day here in Massachusetts. During the tenure of twenty years it has consistently been, under the leadership of Alice Schafer, that AWM has reached out to include a few high school teachers in leadership roles as active and important members of AWM.

Today there is no doubt that AWM is to be congratulated for its growth and its accomplishments and for its continued focus on the successes of women in mathematics, while also alerting the public to the continued discrimination which exists and causes gross inequities in hiring practices and in the granting of tenure positions to women.

But now as AWM looks into the new decade, I would encourage it to reach out more to include in its ranks a greatly untapped resource of new members who are also mathematicians — those from the high school population. Certainly an organization such as ours should be sensitive to "elitism" in teaching. AWM has in reality up to the present been a group of mainly academics. I believe it must now play a vital role by including teachers in a shared leadership role so that we may have a continued dialogue across the high-school – university boundary. AWM should be a place for women in mathematics from high school to find support as well. Many of our problems are the same as yours.

It is to the benefit of the academic community that we turn over to you in the colleges and universities, students who are sensitive to the excitement and to the beauty of mathematics ... students who wish to continue their studies with you. We as secondary school teachers are often their role models at an early and impressionable time of their lives. Further we are also privy to new academic trends which may be being formulated, often these days from the "bottom up" (no longer "top down" as in the days of new math). We need your input and ideas and support *before* changes are made over which we have little control.

In return AWM will get from teachers a talented and enthusiastic addition to its membership. Never mind that some do research and some do not. We are all mathematicians, and we should be working and learning from and for each other. Too many teachers who have joined AWM eagerly have found no solid base there. Why for instance is there not active support for us to have travel grants to attend MAA and other meetings, as you have to

travel to AMS meetings? Had there been such funding, I would have been delivering this in person. When there has been close interaction of academics and high school teachers, such as was the case at Simmons College on the Sonia Kovalevsky Day, it produced a successful and exciting high school experience at college. AWM should solicit and recruit its sister mathematicians from high school and from industries all over the country. It should in the 1990's grow to truly be an Association for *All* Women in Mathematics. Congratulations and thank you.

This letter was written by Eleanor Palais, Belmont High School, Belmont, MA. Alice Schafer read part of this letter at the San Francisco meeting. We present it in its entirety here.

Dear AWM:

I was very pleased to receive the certificate you sent me regarding the 1990 Alice T. Schafer Prize, and I want to let you know how much I appreciate your selecting me for special recognition. Besides encouraging me in my mathematical studies, this honor has opened up some new opportunities for me; both the National Security Agency and the Institute for Defense Analysis have invited me to apply for summer positions, based solely on my nomination for the Alice T. Schafer Prize.

Just to keep you up to date, I will be leaving next month to study mathematics in Budapest for a semester. I am really excited about this program, and I know that I will gain a lot both mathematically and culturally. The support that I have received from friends, professors, and organizations such as yours has been just wonderful.

Sincerely, Julie Kerr, Bellevue, WA

Productivity of Older Mathematicians

Many mathematicians (and other professionals) have continued their inventive contributions through their entire adult lifetimes. A reading of Scribner's *Dictionary of Scientific Biography* will confirm this. My files contain 150 or more names of mathematicians whose top-flight publications appeared in their middle and late years. Each of Philip Hall's 24 papers opened a new field of mathematics. H. Wente's recent work (at age 49) was spectacular, as was that of L. deBranges (at age 55 or so).

Even more astonishing, in view of some popular canards to the contrary, is the fact that some mathematicians did not even begin to produce until age 40 and beyond — J.E. Littlewood, H. Möbius. Others changed fields rather abruptly — L. Pontrjagin, G. Pólya.

It is amusing to note the varied reactions to these statements. One mathematician told me, "My important work was done when I was very young. All after that was just built on my previous discoveries." Of course! What else would it be built on? This man was like the hostages who come to believe what the terrorists say.

Another great man (H. Lewy, dead at age 80), whose paper on partial differential equations surprised the world, told me before his death that he had to admit that he disintegrated after he retired. However, he had told me the opposite several years earlier: "My ability to think improves with age." He had also been intimidated by the terrorists.

In a population like ours that is growing exponentially, it is a tautology that most research, and hence most seminal research, is accomplished by the young. Also, older mathematicians have a higher morbidity rate; an ill person can still think but can produce very little on paper.

When I mention the middle- and old-age productivity, some friends say, "Those examples are exceptional." Perhaps they mean to say, "There is a folk theorem that all mathematics is done by young people. If you eliminate the exceptions to that theorem, the theorem cannot be contradicted."

Sincerely, J.L. Brenner, 10 Phillips Rd., Palo Alto, CA 94303

Happy Ending

Claudia Zaslavsky received a positive response to her letter [reprinted in the September-October 1990 issue] to IBM about the treatment of Emmy Noether in an exhibit of theirs. The errors she referred to have been corrected. In particular, Noether will no longer be referred to just as "Emmy" in the display.

Thanks to Claudia for pursuing the issue.

TREASURER'S REPORT: JUNE 1, 1990 through NOVEMBER 30, 1990

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	$18,858.00
Family	1,400.00
Institution	10,565.00
NSF Travel Grant transfer	20,000.00
Exxon Grant for AWM	7,500.00
Raytheon Grant for AWM-Simmons Summer Institute	10,000.00
ATSchafer Prize Contributions	3,245.00
Advertising, Purchases, and Tax Refund	730.57
Contributions	1,837.23
Interest on operating funds and dividends	1,693.87
TOTAL RECEIPTS	$75,829.67
OTHER INTEREST INCOME:	
Reserve fund interest	$848.92
ATSchafer fund interest	$649.46
EXPENSES:	
Wages and FICA for Executive Director (1)	$5,996.91
Office Assistance and Accounting (1)	2,510.00
Other Operating Expenses (1)	3,433.11
Newsletter Expenses	3,643.23
Bulk Mailing	1,025.00
AWM National Meetings (1)	1,024.24
Dues and Fees: Massachusetts Incorp. Fees, CBMS	250.00
Exxon Grant Expenses: Meetings, SKHSDay Awards, ATSchafer Prize II	4,664.21
NSF Travel and Workshop Grant Expenses	11,692.78
Exxon Resource Center Expenses	8,195.26
AWM-Simmons Summer Institute	10,000.00
ATSchafer Prize	1,000.00
TOTAL EXPENSES	$53,434.74
BALANCES as of November 30, 1990	
Operating Funds	$66,384.06
Reserve Funds	$20,891.26
ATSchafer Prize Fund	$15,997.97

(1) Amounts are less expenses charged to NSF and Exxon grants.

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

NSF/AWM TRAVEL GRANT AWARDS

Congratulations to the women who have earned recent NSF/AWM travel grants.

August 1, 1990:

Deborah Brandon, VPI & SU, Blacksburg, VA
Microstructure and Phase Transition
Minnesota, November 1990

Nancy Lyons, University of Georgia
Advanced Research Conference on
Frontiers of Statistical Ecology
Madras, India, Fall 1990

Lauren Rose, Ohio State University
Oberwolfach, July 1990

November 1, 1990:

R. Jang Lewis, Texas Tech University
Joint Mathematics Meetings
San Francisco, January 1991

Françoise Seillier Moiseiwisch,
University of North Carolina – Chapel Hill
International Meeting on Bayesian Statistics
Spain, April 1991

Gisele Ruiz Rieder, Louisiana State University
Differential Equations in Banach Spaces
Italy, July 1991

Julie Simon, Middlebury College
6th International Conference on Geometry
Tel Aviv, March 1991 [Conference cancelled]

Antoinette Trembinska,
John Jay College of Criminal Justice
Joint Mathematics Meetings
San Francisco, January 1991

SAT CHANGES: The College Board, bowing to decades of pressure, will revise the SAT, the most widely used college entrance exam in the U.S., to eliminate math multiple choice questions and let students use calculators. [*Ms.*, January/February 1991]

SCIENCE CAMP FOR GIRLS

For the fourth year, Access to the Careers in the Sciences (ACES) Camps will be offered at Texas Woman's University in Denton for girls in grades six to nine. The summer camps will focus on career opportunities for women in the nontraditional fields of science and mathematics through classes, "hands-on" experiences, field trips, and visits from women who are professionals in these important fields.

The student will have a choice of cell biology, marine biology, environmental biology, problem solving, probability and statistics, and anatomy and physiology for her classes. Each camp will feature daily female guest speakers whose careers relate directly to science or mathematics. The women will discuss their job experiences, the rewards and costs of careers in a given field, and the future of that field.

Session I of ACES will be for girls currently in grades 6 or 7 and will be held June 9-21. Session II will be for girls currently in grades 8 or 9 and will be held July 14-26. Sixty participants will be accepted for Session I, while 40 participants will be accepted for Session II. Both two-week sessions begin on a Sunday evening and conclude with awards presentations on the last Friday night, which families are encourage to attend. The students will stay in one of the dormitories at Texas Woman's University and will be supervised by female counselors.

To be eligible, a student must have a B+ average in her academic courses and submit the following items: two letters of recommendation from her science or mathematics teachers, a transcript of grades, a short handwritten essay (100-200 words) presenting her reasons for wanting to participate in the ACES Camps, and a $125 deposit.

The registration fee is $525, which includes room and board, tuition, lab fees and all transportation for field trips. Students must provide transportation to and from TWU's campus in Denton; however, arrangements can be made for transportation to and from the Dallas/Fort Worth Airport.

For more information, contact the Science and Mathematics Center for Women at (817) 898-2769, or write the Center at TWU, Denton, TX 76204.

BOOK REVIEWS

Get Smart!: A Woman's Guide to Equality on Campus, Montana Katz and Veronica Vieland, The Feminist Press 1988, ISBN 0-935312-86-2, ISBN 0-935312-87-0 (paper).

Recently I was auditing a non-mathematical course in which the instructor discussed Gödel's Theorem. His statement of the theorem was wrong, which caused serious flaws in the ensuing discussion, and I attempted to explain that to him tactfully after class. Despite the fact that I'd told him earlier that my Ph.D. was in mathematical logic, he didn't seem to want to listen to me and never told the class that he'd given them the wrong statement of Gödel's Theorem.

There are all sorts of explanations for this behavior (math anxiety, embarrassment, illness, insufficient tact, etc.). I didn't think of it as sexist until I started noticing that the instructor seemed to treat women and men differently; unlike men's comments and questions, women's tended to be dismissed as trivial or ignored. When, after several weeks of discussing Locke, Hume, Descartes, Kant, Carnap, Popper, the first woman's name appeared on the blackboard — Vanna White — together with a "humorous" description of her job, I stopped auditing.

The first chapter of *Get Smart!* discusses problems like these and why they are indeed problems (some readers may think I was just oversensitive about the situation I described), as well as other forms of differential treatment of women and men in classroom interactions like those in the skits presented by the Committee on the Participation of Women at the recent AMS meeting. The rest of the book treats one-to-one relationships between faculty and students, possible bias in decision-making procedures (grading, hiring student assistants), university policies, and women's legal rights as students, giving examples of difficulties encountered by women and methods to detect, change, and possibly prevent them. It is "designed to help women get the best college education they can, unhampered by problems that would not affect them if they were men." Part of the inspiration for this book is the work of Bernice Sandler and her associates on the "chilly climate" experienced by women in higher education, and part, I suspect, is from the authors' own experiences in education (both have Ph.D.'s. and have done college teaching). Although the book is a handbook for women undergraduates, it is a useful guide for those who teach and counsel them, both in alerting us to differential treatment that we should all (women and men) avoid and to give us a sense of difficulties that we may yet encounter. If you haven't read any of the literature on inequities experienced by women in higher education, this book might be a good place to start; it is short, interesting, and very readable.

Reviewer: Cathy Kessel

Thinking Through Mathematics by Edward A. Silver, Jeremy Kilpatrick, and Beth Schlesinger. The College Board, New York, 1990. ISBN 0-87447-382-9, 53 pp. Single copies $8.95 from College Board Publications, Box 886, New York, NY 10101-0886.

This is one in a series of publications intended to discuss how thinking can be incorporated throughout the secondary school curriculum. The monograph starts with a discussion, based on recent research, of how students learn mathematics, and makes a case for activities such as open-ended problems and conjecturing as important parts of classroom activity. The second chapter discusses the importance of communication in learning mathematics. The third gives examples of how to incorporate the ideas of the preceding chapters into existing classrooms using existing curricula and textbooks. The final chapter offers sound advice for getting started on introducing communication and inquiry into mathematics classrooms: expect initial resistance from students; emphasize quality rather than quantity; start slowly and with modest hopes.

Throughout, the book uses "case studies" extensively. These provide specific examples of classroom activities, but also provide models of how to develop activities to exercise thinking and communication skills. These models can be instructive to people teaching at higher or lower levels than the focus of the book. For this reason, I recommend the book to anyone who teaches

mathematics. I especially recommend it to anyone who teaches preservice or inservice secondary teachers — to help you model good teaching, and to recommend to your students to read.

Reviewer: Martha K. Smith, Department of Mathematics, University of Texas at Austin, TX 78712

Women and Minorities in Science: An Interdisciplinary Course by Anne Fausto-Sterling and Lydia L. English. Working Paper No. 154, Wellesley College Center for Research on Women, Wellesley, MA 02181. $4.00.

This is a report on a course developed at Brown University by Professor Anne Fausto-Sterling together with student assistant Lydia L. English. In the report, they summarize the content and format of the course, and then provide an extensive bibliography including the course readings as well as many other sources. In addition, the report discusses how the students reacted to the readings and what the students got out of the different parts of the course.

The course was divided into three parts. The first part was devoted to learning about the biographies and discoveries of the African American and/or female scientists from the 18th century to the present. The second part of the course focussed on the role that institutional racism and sexism have played historically in making it difficult for African Americans and women to be successful scientists. In the concluding part of the course they explored alternative views of science.

Anyone considering teaching a course which involves issues of gender or race/ethnicity in science (or math) will find this pamphlet worth reading. Even if you are planning to teach a course with a different emphasis or point of view than the one they describe, their comments and resources will be helpful. In particular, I found the list of books and articles about African American scientists quite valuable. I was disappointed only by the sparse selection of resources about the experiences of other minorities in science. Overall, I am extremely pleased to find reports like this one which make it easier for more of us to develop courses in such an important area.

Reviewer: Erica Flapan, Pomona College, Claremont, CA 91711

Book Review Editor:

Cathy Kessel
2803 Parker, Apt. 2
Berkeley, CA 94704

1992-1993 FULBRIGHT SCHOLAR AWARDS

The Fulbright Scholar Program for 1992-93 includes some 1,000 grants for research, combined research and lecturing, or university lecturing. Opportunities range from two months to a full academic year; many assignments are flexible to the needs of the grantee. There are openings in over 100 countries and, in many regions, multi-country research is possible.

Virtually all disciplines and subfields participate. Scholars in all academic ranks are eligible to apply, from junior faculty to professor emeriti. Applications are also encouraged from professionals outside academe and from independent scholars. Fulbright seeks good teachers as well as active researchers.

The basic eligibility requirements for a Fulbright award are U.S. citizenship and Ph.D. or comparable professional qualifications. For lecturing awards, university or college teaching experience is expected. Language skills are needed for some countries, but most lecturing assignments are in English. There is no limit on the number of Fulbright grants a scholar can hold, and former grantees may reapply.

Deadlines are June 15 for Australasia, South Asia, most of Latin America, and the U.S.S.R. and August 1 for Africa, Asia, Europe, the Middle East, Canada, and lecturing awards in the Caribbean, Mexico, and Venezuela. Other deadlines are in place for special programs.

Application materials are available. Call or write the Council for International Exchange of Scholars, 3007 Tilden Street, N.W., Suite 5M, Box NEWS, Washington, DC 20008-3009. Telephone: 202/686-7877.

MORE COMMENTS ON THE MATH SAT GENDER GAP

Two recent articles [1,2] in the AWM *Newsletter* have raised questions about the significance of the difference in average male and female scores on the math SAT. Ross [2] is technically correct when he concludes that the difference is statistically significant; however, that difference is meaningless as a measure of "gender difference" because these two groups (i.e., males and females who took the math SAT) are extremely disparate when factors other than gender are considered. Although it is well-known that many women take less mathematics in high school, it does not seem to be appreciated that the socioeconomic distribution of female students is very different from that of male students and that these differences have a significant effect on SAT scores. Therefore, it seems worth citing some data.

Unless otherwise stated, the data given below are taken from College Board's *1990 Profile of SAT and Achievement Test Takers* [3]; these statistics should be typical of students who took the test in recent years. In interpreting this data, it should be noted that the average math SAT score was 476 for all students, 499 for male students, and 455 for female students; and that 52% of all students who took the SAT in 1990 were female. (Thus, for example, the 50/50 distribution which occurs for the 7% of students whose parents had annual incomes in the $60,000 – $70,000 range actually shows a slight male bias in the sense that 7.3% of the male students fall into this category as opposed to only 6.7% of female students.)

Women are substantially over-represented (59%) amongst students whose family income is less than $10,000 per year, a group which constitutes 5% of the total and whose average math SAT score (419) is 57 points below average; they are also over-represented (57%) in the $10,000 – $20,000 per year range, a group which constitutes 12% of the total and whose average math SAT score (437) is 39 points below average. However, women are under-represented (49%) amongst students whose family income is more than $70,000 per year, a group which constitutes 17% of the total and whose average math SAT score (527) is 51 points above average. Women are also over-represented amongst both students whose parents did not finish high school (57% female), a group which constitutes 5% of the total and whose average math SAT score (412) is 64 points below average; and students whose parent(s) had only a high school diploma (55% female), a group which constitutes 38% of the total and whose average math SAT score (445) is 31 points below average. Clearly, these subgroups are not independent. Thus, although women are also over-represented amongst blacks (58% female) and Hispanics (55% female), it seems likely that the low SAT scores of these ethnic subgroups are also correlated with low family income and education (although the data in [3] does not give sufficient detail to verify this). By contrast, men are significantly over-represented (55%) amongst students who attended (non-religious) private high schools, a group which constitutes 5% of the total and whose average math SAT score (523) is 47 points above average.

Although separate male and female average SAT scores are not given in [3] for students within the socioeconomic subgroups cited above, comparative data is available for students matched by years of high school mathematics for the period 1974-83 [4]. The difference of 51 points between the male (499) and female (448) averages for students in this period is larger than that for any subgroup matched by years of math studied. In fact, the "gender gap" drops by over half to 24 or 25 points for students who studied 2 or 3 years of high school math respectively. Unfortunately, this is a good news/bad news story. The bad news is that, although both male and female scores rise with the number of years of math studied, the "gap" is actually largest (49 points) for students who have studied more than 4 years of math. It seems likely that this is associated with another perplexing phenomenon — the fact that the male:female ratio of high-scorers (750-800) is over 4:1 (at least in 1990) [3]. I do not understand either the reasons for, or the significance of, this phenomenon. However, it appears to be related to another anomaly — the fact the standard deviation for male math SAT scores is consistently 10-12 points higher than for female scores [3,4] — a much larger difference in variance than occurs for either the verbal SAT [3,4] or for standard IQ tests [5].

In any case, it is evident that some, but not all, of the "gender gap" on the math SAT is due to

differences in math education. One would expect the "gap" to diminish further if subgroups were matched for ethnicity and economic factors as well as education. Although the reports [3,4] I cited do not contain sufficient detail to determine this, some information can be gleaned from a "meta-analysis" by Hyde, Fennema and Lamon [6] of over 100 other studies of gender difference in mathematics. While I have some reservations about the technique of meta-analysis, in which evidence from different studies is combined and analyzed statistically, their results do seem to allow some general conclusions. As expected, many types of mathematics tests and groups of students show no significant gender difference, and those differences which occur are most pronounced for tests involving "problem-solving" with students of high school age or older. However, the most relevant result for this discussion of SAT scores was measured using the "effect size," defined as the difference of the male and female means divided by the mean of the male and female standard deviations. (Sociologists seem to use the "effect size" rather than the "standard error of difference" as a measure of the significance of differences between subgroups.) The effect size of the math SAT gender difference (0.35 to 0.4 in recent years) is much larger than for all other types of mathematics tests (an average effect size of 0.15 if the SAT is excluded). Their work [6] suggests to me that, if male and female subgroups were matched for education and socioeconomic factors, there would still be a "gender gap" on the math SAT, but it would be much smaller than that currently reported.

This paper is an outgrowth of a guest comment [7] that I wrote for the *American Journal of Physics* in response to a letter asserting that there are innate gender differences in mathematical ability. In reviewing some of the literature, I found a good deal of poor-quality work alleging gender differences. Unfortunately, some of the rebuttals were not much better. If we are ever to succeed in burying the myth of male mathematical superiority, we will have to take care that the data we cite is above criticism. Therefore I think that Ross [2] has made a very important and valid point — that the previous article [1] obscured essential issues by blurring the distinction between differences between individuals and between groups.

One of the conclusions of my guest comment [7] is that the evidence for gender differences in mathematical ability has been distorted by the news media. Moreover, Eccles [8] has found that this publicity may actually contribute to the gender gap because it lowers parents' perceptions of their daughters' mathematical ability. In view of that, and the documented disparity between the male and female students taking the math SAT, the attention given to the gender gap in the annual widely publicized announcement by the College Board of the latest trends in SAT scores strikes me as exceedingly irresponsible. It is also unfortunate that some groups who have attacked the SAT for gender and/or ethnic bias have contributed to the distorted publicity by emphasizing the existence and size of gender differences as evidence of bias without noting the disparity of the groups involved.

Finally, I would like to mention one piece of non-gender related information in [3]. The number of students reporting some computer course work or experience has been steadily increasing to include 80% of students by 1990. However, from 1987 to 1990 the percentage of students studying computer *mathematics* declined from 25% to 16% and the percentage studying computer programming declined from 44% to 40%, while the percentage studying word processing increased from 15% to 51%. Despite the deficiencies of the SAT tests, the College Board's associated data collection procedures do yield a good deal of useful information which is worth our attention.

Further Information

Most of the data I cited is from a brochure [3] (#207062) available at no cost from College Board Publications, Box 886, New York, NY 10101. Another useful brochure, the *ATP Guide for High Schools and Colleges* (#200649) can also be requested without charge, while reference [4] (#001834) costs $19.95. If anyone wishes to investigate these matters in more detail, additional compendia of annual data are available under the titles *19-- National Ethnic/Sex Profiles for the SAT*; for price and ordering information, call 212-713-8000.

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by Mary Beth Ruskai, Department of Mathematics, University of Lowell, Lowell, MA 01854
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KOVALEVSKY HIGH SCHOOL DAY

Society is well aware of the underrepresentation of women in the mathematical and scientific fields in this country. It is imperative that capable women be encouraged to consider occupations in these fields and be given every opportunity to further explore these areas as viable career paths. In an attempt to address this issue, the First Annual Greater Cleveland Sonia Kovalevsky Mathematics Day was held in 1989. Because of its success, the event was repeated this year. The purpose of this one-day conference was to provide female high school students from the Greater Cleveland area, and their mathematics teachers, with an opportunity to meet professional women from a variety of math-related careers. Furthermore, in order to increase these students' interest in mathematics, we planned to provide them with the chance to investigate some of the latest discoveries in mathematics and related areas.

The Second Annual Sonia Kovalevsky High School Mathematics Day was held on Saturday, November 17, 1990 in the Mather Mansion of Cleveland State University. It was co-sponsored by the Martha Holden Jennings Foundation, the Thomas H. White Charitable Trust, and the College of Arts and Sciences of Cleveland State University. The organizers were Drs. Paula Gnepp and Pratibha Ghatage of Cleveland State University and Dr. Janeal Oprea of NASA-Lewis Research Center.

Approximately 200 people participated in this event, more than twice as many as last year. There were 30 math teachers and 140 female students from 28 area high schools, including eight Cleveland public schools. The schools represented ranged from parochial to suburban to inner-city schools. There were also three mothers who knew about this event through different channels attending with their daughters. Based on the information from the returned evaluation forms, there were 58% white, 32% black, and 10% Asian students.

The day began with a warm welcome by Professor Mareyjoyce Green, Interim Vice President for Minority Affairs and Human Relations at Cleveland State University. Her opening remarks were extraordinary and gave the students a very positive career direction. Later, students and faculty from each school attended two assigned career panel discussions and two assigned presentations of mathematical applications.

Career Panel Discussions: There was a wide range of careers among the fourteen panelists: six engineers, three physicians, one accountant, one architect, one business manager, one mathematician, and one mathematics professor. The panelists were divided into four groups, where each group consisted of panelists in each of the business, medical, and scientific fields. This was to ensure that the attendees had chances to learn of all career opportunities, regardless of which panels they were assigned to. Each panelist spent 5-10 minutes talking about her job and her educational and mathematical background. All panelists emphasized how the most basic mathematical training would equip the students with problem-solving skills and the ability to retrain themselves to cope with the ever-changing world of science, business

and industry. The young women in the audience and their teachers were curious to know how some of the panelists had overcome prejudices against female advancement in different environments and had managed to balance family commitments with career. Judging from the student and teacher evaluations, most participants found the panel discussions interesting and enlightening.

Mathematical Applications: There were six presentations on mathematical applications such as chaos, civil engineering, computer graphics, computer science, computer simulation, and fractal geometry. The assignments were made so that each participant would be challenged by different aspects of mathematical applications. Students felt the level of mathematics used was within their reach and understanding. The presentations were fascinating and stimulating.

After the mid-morning coffee break, a short talk on Sonia Kovalevsky and other important female mathematicians was given by Dr. Pratibha Ghatage. The talk was very informative. The event ended after lunch.

We were extremely pleased with the outcome. It was especially heartwarming to see those three mothers who cared so much about their daughters' future. It seemed that students and teachers felt very enthusiastic about sharing this mathematical experience. To obtain better feedback we handed out evaluation forms to students and teachers. All participants who filled out the evaluation form indicated that they were glad they had attended. It evidently was a worthwhile and valuable experience to them. We received many compliments about the event from students and teachers. We should definitely repeat this annual workshop.

by Dr. Paula Chan Gnepp, Department of Mathematics, Cleveland State University

ICME-7: QUEBEC 1992

The Seventh International Congress on Mathematical Education (ICME-7) will be held in the city of Quebec (Canada) from August 16 to 23, 1992. It will be the seventh in a series of congresses of the International Commission on Mathematical Instruction (ICMI), following those of Lyons (1969), Exeter (1972), Karlsruhe (1976), Berkeley (1980), Adelaide (1984) and Budapest (1988).

In an effort to meet the diverse needs and interests of the 3000-3500 expected participants, the program will cover all of the major areas of mathematics education at the elementary, secondary and post-secondary levels. Activities will include lectures, working groups, topic groups, workshops, short communications, posters, project presentations, and films as well as exhibitions of textbooks, software, and other types of materials. Here are a few examples of themes that will be discussed during the congress: improving students' attitudes and motivation, mathematics for early school leavers, innovative assessment of students in mathematics, students' misconceptions and inconsistencies of thought, the impact of calculators on the elementary school curriculum, the role of geometry in general education, probability and statistics for the future citizen, modeling activities in the classroom, students' difficulties in calculus, undergraduate mathematics for different groups of students, preservice and inservice teacher education, and methodologies for research in mathematics education.

The city of Quebec, capital of the Canadian province of the same name, is the cradle of French civilization in North America. The ICME-7 congress will take place on the campus of Université Laval, which offers facilities and services making it a most convenient place to hold such an international event.

The Second Announcement will contain detailed information about the program, as well as forms for registration, accommodation, and submission of short communications or posters. In order to receive it, please write to: Congrès ICME-7, Université Laval, Québec QC, Canada, G1K 7P4; phone: (418) 656-7592; FAX: (418) 656-2000; email: ICME-7@LAVALVM1.BITNET.

adapted from IOWME Newsletter, *Vol. 6, No. 2, November 1990, pp. 2-3*

EDUCATION COMMITTEE

Regina Brunner (Cedar Crest College, PA) is the author of the following report. She compiled information received from the U.S. Department of Education, the Pennsylvania Department of Education (PDE), and various Intermediate Units (IUs) in Pennsylvania. Her report also includes details about MathConn 90 and MathConn 91, Mathematics Awareness Days held annually in April for seventh and eighth grade girls.

Two PDE funded projects that addressed females were held at Alvernia College in Reading and at Slippery Rock University in Slippery Rock. *The Mathematics and Science Teacher Scholarship Program* at Alvernia involved training in the use of research-based teacher-student interactions that encourage females to experience success. The *Integrated Science and Math: Activities and Strategies for Optimizing the Learning of Female Students Project* at Slippery Rock emphasized maximizing females' participation and achievement in science and mathematics classes. Part of the project involved the use of guest lecturers; I was one of the guest lecturers. Contact person at Alvernia is Dr. Olivia S. Reusing; contact person at Slippery Rock is Dr. Patsy Ann Giese.

PDE funded projects addressing minority participation included those at Allentown College of St. Francis de Sales and at Drexel University. The Allentown *College Access to Mathematics and Science Project* includes a mentor program in which teachers guide minority girls and boys in independent mathematics and science projects to be presented at the Pennsylvania Junior Academy of Science Region Three Competition at Allentown College in January 1991. Contact person at Allentown College is Dr. Karen Doyle Walton, Academic Dean. The *Scholarship Program for Minority Interns in Mathematics and Science* at Drexel provides supportive environments for learning and scholarships for outstanding minority students. Contact person is Dr. Fredricka Reisman.

The Learning Research and Development Center at the University of Pittsburgh shared information concerning two projects. The *Mathematical Reasoning in Primary School Project* in expanded form has received funding from the U.S. Department of Education. This project for teachers in grades K-3 has as purposes the development of students' critical reasoning skills in mathematics, the development of their ability to communicate mathematically and to approach mathematics inventively, and the linkage of students' informal out-of-school math learning to their formal in-school math learning. Contact person is Dr. Lauren B. Resnick. Dr. Barbara W. Grover reported on the *Disseminating New Knowledge about Mathematics Instruction and Learning Project* developed for a Congressional Symposium presentation in May 1990. The main goal of this project is to develop and demonstrate a form of communication between researchers in mathematics learning and the teaching profession to yield stronger research programs.

The Allentown School District and Cedar Crest College Alliance to assist and encourage female students in science and mathematics was funded by the *Dwight D. Eisenhower Mathematics and Science Education Act (PDE)*. This cooperative effort involved teachers from basic education and higher education. Consultant for the project was Dr. Jane Butler Kahle, Condit Professor of Science Education at University of Miami (Ohio). Contact person is Dr. Regina Brunner at Cedar Crest College.

Two interesting summer programs were a *Mathematics and Computing Summer Program for Mathematically Talented Middle School Students* at Penn State, University Park Campus, and a *Summer Camp for Girls* at Bethlehem Area Vocational-Technical School. The Penn State Summer Program included a choice of one of the following interest areas: Exploring Mathematics Using the Computer, Problem-Solving Techniques with Computer Applications, and Patterns in Geometry. Contact person is Dr. M. Kathleen Heid. The Bethlehem Area Vo-Tech Summer Camp for Girls included hands-on activities and workshops on self-esteem, leadership, and survival. Contact person is Sandra E. Rinehart.

MathConn90, held on April 4, 1990, involved girls from 46 schools in a five county area in the Lehigh Valley. Included among the distinguished guests were Frank Reardon (Mathematics Supervisor, Pennsylvania Department of Education), Edward Bruchak (President, Pennsylvania Association of Elementary School Principals), Dr. Carroll O. Wilde (Program Director, Science and Engineering Education, National Science Foundation), and Paul Poister (Legislative Assistant for Senator John Heinz). There were two separate programs,

one for the girls and one for the teachers, designed to stimulate interest in math-related careers for girls in seventh and eighth grade and to help teachers in these grades enhance their teaching skills and deal with the current technology. The girls, who were mixed in teams across schools, enjoyed solving problems in groups. They rated the Mary Ellen Rudin Problem Discovery Session and the Hands-on sessions as favorites.

MathConn 91, the third *Mathematics Awareness Day* for seventh and eighth grade girls and their teachers at Cedar Crest College in Allentown, will be held on April 10, 1991. MathConn 89 and 90 have been recognized as successes by U.S. Senator John Heinz (PA) in testimony before the Governmental Affairs Committee on the Crisis in Science and Math Education and by the Joint Policy Board for Mathematics. Keynote speakers for girls at MathConn 91 include Dr. Joan S. Birman of Columbia University and Dr. Anita Mayo of IBM Thomas J. Watson Research Center. Contact person is Dr. Regina Brunner.

The Philadelphia Region of Women and Mathematics provides a program to encourage students to study mathematics throughout high school. Under its sponsorship and that of Penn State Ogontz, a Math and Science Career Day for seventh grade girls called *Math Options '91* will be held in March 1991. Math Options '91 used MathConn 89 and 90 as models, so Math Options '91 is a daughter of MathConn. Contact persons are Dr. Gloria Dion and Deborah Simon.

The School District of Philadelphia has been involved in many fine projects. The goal of the *Algebra Project* is to increase enrollment of students in higher level mathematics. Using Dwight D. Eisenhower Title II Mathematics/Science Funding (PDE), the School District of Philadelphia, Division of Educational Technology, Office of Curriculum Support, and the Philadelphia Math Science Collaborative/PRISM sponsor an annual *Mathematics, Science, and Technology Conference* in November to emphasize the interconnections of these disciplines. Additionally, the *Algebra Transition Project* provided a summer pre-algebra experience for 270 exiting eighth grade students to ease their transition into high school. Contact person for all these projects is Sue Stetzer.

Luzerne County Community College in Nanticoke has a *Single Parent Program* that supplies support services for single parents so they can obtain their Associate degrees. Contact person is Vel Shearer.

Special thanks to all the IUs that provided information and contacts, to Linda J. Benedetto (Higher Education Coordinator, Eisenhower Mathematics and Science Improvement Program), and to Dr. D. Kay Wright (U.S. Department of Education, Secretary's Regional Representative, Region III).

Dr. D. Kay Wright reports:

> Support for the Dwight D. Eisenhower Mathematics and Science Education program will be increased by 70 percent — from $136 million in 1990 to $230 million in 1991. $5 million has been included for the first-year costs of a National Science Scholars program. A $12.5 million initiative will be included in the Upward Bound program to fund 50 regional mathematics and science projects for disadvantaged high school students.

Additional information about Pennsylvania projects should be sent to Regina Brunner, Department of Mathematics and Computer Science, Cedar Crest College, Allentown, PA 18104-6196. Thank you very much for your help.

Chair: Sally I. Lipsey
70 E. 10th, #3A, New York, NY 10003

FELLOWSHIPS IN INDIA

The Indo-U.S. Subcommission on Education and Culture is offering awards for 1992-93 research in India, both short- and long- term. Applicants must be U.S. citizens and hold the Ph.D. or equivalent. As the fellowship program seeks to encourage a wider range of research activity between the two countries than now exists, scholars and professionals with limited or no prior experience in India are especially encouraged to apply. Application deadline is June 15, 1991. Application forms and further information are available from the Council for International Exchange of Scholars, Attn: Indo-American Fellowship Program, 3007 Tilden Street, NW, Suite 5M, Washington, DC 20008-3009. Telephone: 202/686-4017.

ARTICLES OF INTEREST

"Precollege Career Guidance Exchange" by Betty Preece appears in *AWIS Magazine*, Vol. 20, No. 1, p. 14. It mentions a number of interesting programs and resources. The Society of Women Engineers has a NASA grant to, among other things, help minority girls enter science fairs to get a chance to apply for Space Camp. [Contact Sara Jane Spaulding, SWE, 345 E. 47th St., NY, NY 10017; 212-705-7871.] A "Directory of Volunteer Opportunities in Precollege Math and Science for Engineers and Scientists" can be ordered from IEEE US Activities Board, 1828 L St., NW, #1202, Washington, DC 20036, 202-785-0017.

"Daring Steps Are Needed to Increase Women's Role in Science" by Marcel C. LaFollette [*The Chronicle of Higher Education*, October 3, 1990, p. A56] has two interrelated themes: the lack of women in science, especially in positions of power, and the General Accounting Office findings that the National Institutes of Health continue to exclude women from study populations.

> The presence of women also insures vigilance against bias: In the laboratory, women can shape projects directly and therefore guard against bias in the research process; if they're allowed into the hierarchy of research management, women can guard against insidious, systemic bias, such as the repeated failure to appoint more than token numbers of women to crucial scientific advisory committees.
>
> Would science be different if all scientists were female? When the feminist philosopher Evelyn Fox Keller and other scholars challenged scientists to consider just such a provocative idea some years ago, they forced us to acknowledge how masculine the prevailing image of science really was. Popular culture presents science as the ultimate father figure, wise in mysterious ways, strong beyond comprehension, kindly and concerned for our interests, and unquestionable in its authority. That such images can affect what research is supported and how research is conducted is obvious.
>
> Today, the problem for scientific research lies not so much in the presence of overt discrimination as in the lack of active vigilance against it. In the case of N.I.H.'s policy, it will not be enough to say women should not be excluded. Officials must spell out ways to include women and let researchers know they expect immediate change. At other research institutions and in undergraduate and graduate science programs, we must be willing to take more than token steps forward; it is time to make daring appointments and to encourage middle-level women to plunge into administration and seize positions of power. And for those scientific and political leaders engaged in reassessing U.S. science policy for the next century, the N.I.H.'s recent embarrassment should prompt them to develop a more inclusive, socially responsive research enterprise.

"Critical Math Network Convenes at Cornell" by Paul Ernest appears in *ISGEm Newsletter*, Vol. 5, No. 2, Nov. 1990 [membership is $5; send a check payable to ISGEm to Anna Grosgalvis, 3830 N. Humboldt Blvd., Milwaukee, WI 53212]. The conference considered the three broad themes of epistemology and philosophy of critical mathematics education, mathematics in its cultural context, and political, economic and social issues in mathematics education. An international collection of scholars engaged in extensive discussion of and debate over issues related to these themes.

The November 1990 issue of the *Communications of the ACM* is entitled "Women and Computing." The two lead articles are "Women and Computing" by Karen A. Frenkel and "Becoming a Computer Scientist" by Amy Pearl, Martha E. Pollack, Eve Riskin, Becky Thomas, Elizabeth Wolf, and Alice Wu. Both articles are well worth reading. I quote here the first paragraph from each article, in the order above.

> There is mounting evidence that many women opting for careers in computing either drop out of the academic pipeline or choose not to get advanced degrees and enter industry instead. Consequently, there are disproportionately low numbers of women in academic computer science and the computer industry. The situation may be perpetuated for several generations since studies show that girls from grade school to high school are losing interest in computing.
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> It is well known that women are significantly underrepresented in scientific fields in the United States, and computer science is no exception. As of 1987-1988, women constituted slightly more

than half of the U.S. population and 45% of employed workers in the U.S., but they made up only 30% of employed computer scientists. Moreover, they constituted only 10% of employed doctoral-level computer scientists. During the same time period, women made up 20% of physicians and, at the doctoral level, 35% of psychologists, 22% of life scientists, and 10% of mathematicians employed in the U.S. On the other hand, there are some disciplines in which women represent an even smaller proportion at the doctoral level: in 1987-88, 8% of physical scientists, and only 2.5% of engineers were women. The underrepresentation of women in computer science is alarming for at least two reasons. First, it raises the disturbing possibility that the field of computer science functions in ways that prevent or hinder women from becoming part of it. If this is so, those in the discipline need to evaluate their practices to ensure that fair and equal treatment is being provided to all potential and current computer scientists. Practices that exclude women are not only unethical, but they are likely to thwart the discipline's progress, as potential contributors to the field are discouraged from participation.

Ellen Goodman's column "Outsiders — even in the inner sanctum" [*The Boston Globe*, Thursday, September 27, 1990] tackles the issue of the glass ceiling. Her inspiration came from the outrageous behavior of Senators Thurmond and Simpson at the Souter confirmation hearings toward the leaders of women's rights organizations after they had delivered their testimony.

> This is ... what it's like being a successful woman in America. You get to be treated as the second sex by an ever-more-elite class of men.
>
> I offer this dour thought as a member of the generation of women which has broken through several concentric circles approaching the center of power. Time and again, we have played the first woman and the only woman in a more rarefied strata.
>
> Whenever one of our number achieves a new status, others are convinced that at last and at least she is now immune from second-sexism. Then it turns out that she is just an outsider in an ever-more-inner circle and a newcomer in an ever-more-inner sanctum. The treatment may be more subtle, more difficult to assess or to admit, but it is there.
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> ...
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> We can see the top. Some can almost touch it. But even the most powerful female voices are still bouncing off the glass ceiling.

"Year of change for Canadian engineers" by Don McGillivray appeared in the *San Francisco Examiner*, November 18, 1990, pg. A-8. The subtitle "Profession re-examines attitudes after November '89 massacre of women" refers to the soul-searching of Canadian engineers after the shameful event.

> A good example is Patrick Quinn, a principal partner in a Toronto structural engineering firm.
>
> He didn't know any of the Montreal victims. But when he read of the killings he thought about the image of engineers.
>
> "You have to ask yourself why it was engineers, why this guy picked an engineering school," Quinn told a reporter. "If there was nothing in the public consciousness that gave the image of engineers as anti-female, we could pass the question away. But there are buckets of stuff in the public consciousness that give that image, and so there is a significance that has to be faced up to."
>
> He became a major voice within the profession demanding that the incident couldn't be written off as the act of a madman. He demanded that women be made not only equal in the profession but welcome.

The newly resurrected *Ms.* is a wonderful magazine again; with no advertising, it has lost the yuppie flavor it had acquired in the years before it died. In the transformation it has acquired the price of a journal, but I think it's worth it.

"Conflict in Academia: Why Was Bunny Sandler Sacked" by Peggy Simpson appears in the November/December 1990 issue. Bernice Sandler, as head of the Project on the Status and Education of Women, under the Association of American Colleges, has been responsible for many important publications, including the "classroom climate" series and the newsletter *On Campus with Women.*

> Late last spring, the climate turned chilly for Sandler herself. With no warning, the AAC board gave her a year's notice that she'd be replaced. The project's issue agenda and future direction were left ambiguous.

...

> Sandler's sacking has caused a fire storm within the academic feminist community — partly because it was done at all, partly because of the way it was done.
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> ...
>
> Sandler, who will be 63 when she leaves the project next June, has agreed to affiliate as a senior associate at the Center for Women Policy Studies. The center's executive director, Leslie Wolfe, said that Sandler's studies were controversial because they "cut close to the bone, on sexual harassment, on fraternity boys raping women. Her work was too threatening. She was writing about hostility toward women before it became chi-chi to talk about hate crimes on campus. That's part of her always being on the cutting edge and enabling women to confront what they could do to help themselves."

In the January/February issue, the *Ms.* quiz by Marylou DiPietro is "Marie Curie's U.S. Sisters." The multiple-choice quiz presents some interesting facts about American women scientists, physicians, and inventors. Did you know that Mrs. Catherine Littlefield Green, a southern belle, appears to have invented the cotton gin?

BRIEF NOTES

The National Summit on Mathematics Assessment will be held April 23-24, 1991 under the auspices of the Mathematical Sciences Education Board. Consensus on specific directions for change in assessing mathematics will be forged among leaders in mathematics education, the education and public policy arena, the assessment industry, business and industry, and parent and community groups.

The purposes of the Summit are to develop national goals for mathematics assessment, goals which will guide the development of national assessment standards; to design a basic plan for pursuing these goals, a plan which delineates roles for mathematics educators, for national, state and local public policy leaders, and for the assessment industry; to reach consensus among key constituencies on both the goals and the plan; to gain commitments of Summit participants and their organizations to the implementation of the national plan; and to produce and widely disseminate a document describing Summit outcomes.

To request further information about the Summit, contact Dr. Mary Harley Kruter, Project Director, MSEB, 818 Connecticut Ave., NW, Washington, DC 20006.

In addition to the New Jersey FAMILY MATH program mentioned in the September-October *Newsletter*, there are also FAMILY MATH programs in many other states as well as in Australia, New Zealand, Canada, Costa Rica, and Sweden. FAMILY MATH sites in these locations provide inservice to prepare parents and teachers to present FAMILY MATH courses for parents and their children. Materials are available in Spanish and Swedish as well as English. For further information about the program and its sites, contact: FAMILY MATH, Lawrence Hall of Science, University of California, Berkeley, CA 94720. (415) 642-1823.

International Study Group on the Relations Between History and Pedagogy of Mathematics Newsletter available from: Victor Katz, Dept. of Math, University of the District of Columbia, 4200 Connecticut Ave., NW, Washington, DC 20008.

The October 15, 1990 issue of *The Scientist: The Newspaper for the Science Professional* is devoted to women in science. Contact *The Scientist*, 3501 Market St., Philadelphia, PA 19014. [Math/Science Network *Broadcast*, Winter 1991]

Ventures in Education, sponsored by the Josiah Macy, Jr., Foundation, offers services to public schools and school systems to encourage excellence: assistance in planning and implementing local high school programs; ongoing teacher training; testing programs; data collection. Contact Ventures in Education, 3 East 28th St., New York, NY 10016. (212) 696-5717. FAX (212) 696-5726. [Math/Science Network *Broadcast*, Winter 1991]

"R_x for Success: Improving the Climate for Women in Medical Schools and Teaching Hospitals" by Julie Kuhn Ehrhart with Bernice R. Sandler is the latest in the "climate" series of

PSEW. Individual copies are available for $6 (prepaid) from the Project on the Status and Education of Women, Association of American Colleges, 1818 R Street, NW, Washington, DC 20009. Bulk rates are available. Write the same address for the entire publication list of PSEW.

Books

The hardcover edition of Claudia Zaslavsky's *Africa Counts: Number and Pattern in African Culture* is now out of print, but the paperback edition is still available from Lawrence Hill Books, 230 Park Place, Suite 6A, Brooklyn, NY 11238.

Her new book *Zero: Is It Something? Is It Nothing?* is now available from Franklin Watts, Inc., 387 Park Avenue South, New York, NY 10016. Designed for grades K-4, it includes riddles, games and hands-on activities that further explain the concept of zero. To order: call 1-800-843-3794 outside Connecticut; in Connecticut, call 1-203-797-3508 collect.

Zaslavsky's recent article "Symmetry in American Folk Art" [*Arithmetic Teacher*, 9/90] discusses "women's work" — early American quilts and Navajo rugs — and has color illustrations.

Lynne Welch, editor, *Women in Higher Education: Changes and Challenges*, Prager, 1990.

Stephanie Witt, *The Pursuit of Race and Gender Equity in American Academe*, Prager, 1990.

Florence Howe, Suzanne Howard, and Mary Jo Boehm Strauss, editors, *Everywoman's Guide to Colleges and Universities*, The Feminist Press, 1982.

to appear: David Noble, *A World Without Women: The Evolution of a Masculine Culture of Science*, Knopf, 1991.

Andrea Nye, *Words of Power: A Feminist Reading of the History of Logic*, Routledge, 1990.

Winnie Hazou, *The Social and Legal Status of Women: A Global Perspective*, Greenwood Press, 1990.

Helen Longino and Valerie Miner, editors, *Competition: A Feminist Taboo?*, The Feminist Press, 1987.

Women's Research and Education Institute, 1700 18th St., NW, #400, Washington, DC 20809, *The American Woman 1990-91: A Status* Report, W.W. Norton & Company.

Lynn Steen, editor, *On the Shoulders of Giants*, National Academy Press, 1990.

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 Univ., 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, 2803 Parker, Apt. 2, 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

Short Courses on Fourier Analysis

Innovative short courses on discrete and continuous Fourier analysis will be given at Southern Illinois University at Carbondale, August 4-9, 1991 and March 15-20, 1992 as part of the NSF's Undergraduate Faculty Enhancement Program. Lectures will discuss representation, validity, finding transforms and series, operator identities, the FFT, distributions, and numerous applications of these ideas.

Lecture notes, problem sets, hands on instruction in using the software package FOURIER, and a participant seminar will help participants prepare undergraduate courses in Fourier analysis. For application materials, contact David W. Kammler, Math Dept., Southern Illinois University, Carbondale, IL 62901-4408

Program in Mathematics for Young Scientists (PROMYS) June 30 - August 10, 1991

PROMYS offers a lively mathematical environment in which ambitious high school students explore the creative world of mathematics. Through their intensive efforts to solve a large assortment of unusually challenging problems in numbers theory, the participants practice the art of mathematical discovery -- numerical exploration, formulation and critique of conjectures, and techniques of proof and generalization. More experiences participants may also study algebra, combinatorics, and the theory or algebraic curves. Problem sets are accompanied by daily lectures given by research mathematicians with extensive experience in Professor Arnold Ross's longstanding Summer Mathematics Program at Ohio State University. In addition, a highly competent staff of 18 college-aged counselors lives in the dormitories and is always available to discuss mathematics with students. Each participant belongs to a problem-solving group which meets with a professional mathematician three times per week. Special lectures by outside speakers offer a broad view of mathematics and its role in the sciences.

PROMYS is a residential program designed for 60 ambitious high school students entering grades 10 through 12. Admission decisions will be based on the following criteria: applicants' solutions to a set of challenging problems included with the application packet; teacher recommendations; high school transcripts; and student essays explaining their interest in the program.

The cost to participants is $1,150 for room and board. Books may cost an additional $100. Financial aid is available. PROMYS is dedicated to the principle that no student will be unable to attend because of financial need.

PROMYS is directed by Professors Glenn Stevens and David Fried. Application materials can be obtained by writing to PROMYS, Department of Mathematics, Boston University, 111 Cummington Street, Boston, MA 02215, or by calling (617) 353-2560. Applications will be accepted from March 1 until June 15, 1991.

ACADEMIC POSITIONS

Correction: BOWLING GREEN STATE UNIVERSITY, Dept. of Math. & Stats., Bowling Green, OH 43403-Chair. Tenure track position in Math. Education at the Assistant Prof. level, starting in Fall 1991. Teaching load: two courses per semester; candidates should show a commitment to research. Closing date is March 15, 1991. Salary depends on qualifications. Send curriculum vita, three letters of rec. and an official transcript.

BROCK UNIVERSITY. Dept. of Math. invites apps. for a tenure track pos. at the Asst. Prof. level, beginning July 1, 1991. Appointment to a higher rank will be considered under exceptional circumstances. Apps. must have a Ph.D., w/ a strong research record, or at least demonstrated research potential. Duties include teaching both major and service courses. Apps. from all areas welcome, prefer specialization in stats. Canadian citizens and permanent residents. Send applications, including a curriculum vitae and the names of 3 refs. to Dr. H. E. Bell, Dept. of Math., Brock University, St. Catharines, Ontario, Canada L2S 3AI, for receipt by March 22, 1991.

BUCKNELL UNIVERSITY. Dept. of Math. invites apps. for a 1-or possibly 2-year temp. pos. in stats. or math. Apps. from all areas welcome, prefer specialization in stats. Qualifications include a Ph.D., strong commitment to teaching and high potential for research. Send curriculum vitae, 3 letters of rec. discussing your scholarship, research potential and general qualifications (one to comment on teaching) to: Search Committee, Dept. of Math., Bucknell University, Lewisburg, PA 17837.

CASE WESTERN RESERVE UNIVERSITY. Tenure track pos., possibly senior, in applied statistics will be available in the Summer 1991. Outstanding research record or proven research potential and teaching excellence is req. Initial appts. will be in Dept. of Math. and Statistics. Since the Univ. has made the reestablishment of Statistics a priority for future development, it is expected that these positions will eventually be in an independent Statistics Dept. Send vitae plus 3 letters of rec. to: Dr. C.A. Cullis, Dean, Faculty of Mathematics and Natural Sciences, Crawford Hall, Case Western Reserve University, Cleveland, OH 44106.

CLARK UNIVERSITY. Dept. of Math./Computer Science. Non-tenure track pos. for 1 to 3 years to start in Sept. 1991. Ph.D. in math. or computer science, good teaching and strong research credentials desired. Pref. given to research areas relating to current interests in the dept. Applications must be received by April 1, 1991. Send to: John F. Kennison, Chair., Clark University, Dept. of Math./Computer Science, 950 Main St., Worcester, MA 01610-
1477.

HAMILTON COLLEGE. Dept. of Math. Two-year tenure track pos. Ph.D. and prior teaching exp. desirable. Duties involve teaching 5 courses/yr. Send c.v. and 3 letters of recommendation (1 about teaching), to: Richard Bedient, Chair., Dept. of Math. and Comp. Science, Hamilton College, Clinton, NY 13323. (315) 859-4138.

LEHMAN COLLEGE. Math. Dept. Tenure track pos. in math. or computer science. Candidates must have Ph.D. with several years of post-doc. exp., a strong commitment to teaching and an outstanding research record in Math. or Computer Science. Rank and salary commensurate with qualifications and exp. Send resume and names of 3 references to: Prof. Robert Feinerman, Chairman, Dept. of Math. and Computer Science, Lehman College, Bronx, NY 10468.

MASS. INSTITUTE OF TECHNOLOGY. C.L.E. Moore Instructorships in Mathematics. Open to mathematicians with Ph.D. who show definite promise in research. Teaching loads are 6/hrs. week 1 semester; 3/hrs. per week the other, or other combinations totalling 9 hrs. Appts. are for 1 year, renewable for 1 additional year. Please sent vitae, description of research in your thesis, and research which you plan for next year to: Dept. of Math., MIT, Room 2-263, Cambridge, MA 02139.

MASS. INSTITUTE OF TECHNOLOGY. A limited number of Applied Math. Instructorships are available for recent Ph.D. of any age. Appts. will be made on the basis of superior research potential for a period not exceeding two years. App. are considered and final decisions announced on or before Mar. 15, 1991. For further info., write to: Committee on Applied Mathematics, Room 2-345, MIT Cambridge, MA 02139.

MASS. INSTITUTE OF TECHNOLOGY. Dept. of Math. may make several appts. at the Asst. Prof. level for the 1991-92 year. These appts. will be for 3 years, and the teaching load will be 6 hrs./week in one semester, and 3 hrs./week in the other, or other combinations totalling 9 hrs. Open to mathematicians with doctorates who show definite promise in research. Apps. send vitae, description of your research, & your research plans for next year to: Pure Math. Committee, Room 2-263, or Applied Math. Committee, Room 20345, Dept. of Math., MIT, Cambridge, MA 02139.

MOORHEAD STATE UNIVERSITY. Math. Dept. 1-year pos. as instructor or asst. prof. of math. beginning Sept. 1991. Master`s degree in math., math. ed. or stats. required for instructor; Ph.D. for asst. prof. Prefer Ph.Ds. College teaching exp. desirable. Duties include teaching math. and/or stats. and other professional activities as appropriate. Teaching load: 12 hrs/quarter. First screening: April 1, 1991; applications accepted until filled. Apply to Milton Legg, Chair, Math. Dept., Moorhead State University, Moorhead, MN 56563.

NORTH CAROLINA STATE UNIVERSITY. Dept. of Stats. Assistant/Assoc. Prof. of Biomath. (tenure track). Evidence of research strength expected in mathematical biology, either in areas of relevant math. theory or biological application. duties include research, teaching and graduate student direction. Send, by April 1, 1991, letter of application, CV and 3 letters of ref. to: Dr. R. E. Stinner, Biomathematics Graduate Program, North Carolina State University, Campus Box 8203, Raleigh, NC 27695-8203.

RUSSELL SAGE COLLEGE. Dept. of Math. invites apps. for tenure track pos. to begin 9/91. Apps must hold Ph.D. and be able to teach undergrad. courses including those in math. ed. Dept. is looking for one to continue its tradition of excellent, innovative teaching. Review of apps. to begin 3/15; all considered until position is filled. Send a brief statement setting for your thoughts about undergrad teaching, together with transcripts, vita, and 3 letters of ref. to: Thomas F. Sweeney, Chair., Dept. of Math., Russell Sage College, Troy, NY 12180.

SAINT XAVIER COLLEGE. Dept. of Math. and Computer Science seeking Associate Chair. Exp. teacher w/ admin. exp. is preferred. Pos. requires teaching, curriculum work, grant writing, general admin. assistance for Chair. Tenure track, 3-year renewable term. Requires Ph.D. in Computer Science (or related field w/ Master's in Computer Science). Review of apps. begin March 15, 1991. Send letter of application, resume, and 3 letters of rec. to: Dr. Susan Beal, Chair, Dept. of Math. and Computer Science, Saint Xavier College, 3700 W. 103rd St., Chicago, IL 60655

ST. CLOUD STATE UNIVERSITY. Tenure-track position at asst/assoc/full rank beginning 8/28/91 to teach 12 hrs/qtr undergrad/grad math ed and math. Salary to $52452. Qualifications: doctorate (or near completion) in math education and a masters in math or the equivalent, evidence of quality teaching, strong potential for scholarly and professional activity in math education. Send application letter, vita, SCSU Application Form, transcripts, three letters of reference by 4/15/91 to: Dr. Charles Ernst, Chair of MATH ED Search Committee, Dept. of Mathematics and Statistics, St. Cloud State University, 720 4th Avenue South, St. Cloud, MN 56301-4498.

SAINT XAVIER COLLEGE. Dept. of Math. and Computer Science seeking Assistant/Assoc. Prof. Anticipated position depending on budget and program approval. Teach wide range of math. courses, advise students. Ph.D. in Math. or Math. Ed. preferred, ABD considered. Tenure track position. Send letter of application, resume, transcripts and 3 letters of rec. to: Dr. Susan Beal, Chair, Dept. of Math. and Computer Science, Saint Xavier College, 3700 W. 103rd St., Chicago, IL 60655

SAN DIEGO STATE UNIVERSITY. Dept. of Math. Science. Apps. invited for 1 tenurable faculty position in Computer Science. Rank is open, w/ Asst. Prof. candidates preferred. Duties include teaching graduates and undergrads, curriculum dev., directing Master's research, and own research. Should have a strong research background and good teaching references. Ph.D. in Computer Science, Computer Engineering, or related field required. Pref. candidates who can teach and conduct joint research w/ existing faculty in areas such as computer architecture and system software for microcomputers. Closing date: March 15, 1991. All apps. considered until pos. is filled. Send vita, and have 3 letters of ref. sent to: Computer Science Search Committee, Dept. of Math. Sciences, San Diego State University, San Diego, CA 92182. (e-mail: cssearch.sdsu.edu)

SIMON FRASER UNIVERSITY. Dept. of Math. and Stats. invites apps. for tenure track pos. in Actuarial Math. at the Assistant Prof. level starting ASAP. Ph.D. and strong potential in teaching and research required. Appointee will be expected to place a high value on and contribute regularly to advances in actuarial research. Send application and CV (and arrange for 3 letters of ref. to be sent direct from the referees) to Allen R. Freedman, Chair. Dept. of Math. and Stats., Simon Fraser University, Burnaby, BC V5A 1S6.

SIMON FRASER UNIVERSITY. Dept. of Math. and Stats. invites apps. for Laboratory Instructor w/ specialty in stats. Masters in stats. or related degree and several years teaching exp. in stats. required. Appointee will be coordinator for the Open Workshop in Stats. (containing networked

computer lab); knowledge of statistical computing is highly desired. Pos. begins immediately. Submit CV and arrange to have 3 letters of ref. sent to: Allen R. Freedman, Chair Dept. of Math. and Stats. Simon Fraser University Burnaby, BC V5A 1S6 Canada.

SIMON FRASER UNIVERSITY. Dept. of Math. and Stats. invites apps. for a Computer Laboratory Instructor. Masters in math. or stats. as well as teaching and computing exp. in one or both of these fields req. Appointee will coordinate the undergrad computer teaching lab (Macintoshes) used by all 4 of the Open Workshops in Math. and Stats.; knowledge of math. computing is essential. Pos. begins Sept. 1, 1991. Submit CV and arrange to have three letters of ref. sent to: Allen R. Freedman, Chair Dept. of Math. and Stats. Simon Fraser University Burnaby, BC V5A 1S6 Canada.

STATE UNIVERSITY OF NEW YORK, INSTITUTE OF TECHNOLOGY AT UTICA/ROME. 2 Math. tenure track pos. will be filled effective Sept. 1, 1991. Ph.D. in any area of applied math. or theoretical physics is required. Duties include teaching 3 undergrad courses each semester (12 contact hours/semester) and involvement in scholarly activity. Teaching exp. in math. and ability to teach both intro. math. courses for technical and engineering students and more advanced courses supporting math. minor. Advanced courses may include linear algebra, calc. III (multivariate), applied. stat. analysis, differential equations, series and boundary value problems, discrete math. for computer science, complex variables and their application, probability models. Rank and salary commensurate with qualifications and exp. Send letter of interest, CV, and the names of 3 refs. to : Anthony F. Panebianco, Dir. of Personnel/Affirmative Action, SUNY Institute of Technology at Utica/Rome, Drawer 9109, P.O. Box 3050, Utica, NY 13504-3050. Review begins March 1, 1991; continues until positions are filled.

UNIVERSITY OF CALIFORNIA, BERKELEY. Dept. of Math. Several temp. pos. beginning in Fall 1991 are anticipated for new and recent Ph.D.'s in areas of algebra, analysis, applied math., foundations or geometry and topology. Terms may range from 1 to 3 years. Applicants for NSF or other postdoctoral fellowships are encouraged to apply; combined teaching/research appointments may be made up to 3 years. Mathematicians whose research interests are close to those of regular dept. members will be given some preference. Applicants should send a resume, reprint (preprints), and/or dissertation abstract, and ask 3 people to send letters of rec. to: Vice Chair for Faculty Affairs, Dept. of Math., University of California at Berkeley, Berkeley, CA 94720. Deadline for materials: April 1, 1991. (Apps. received for our Jan 15 deadline will automatically be considered.)

UNIVERSITY OF CONNECTICUT. Math. Dept. invites apps. for anticipated full-time Assistant Prof. at the Avery Point Campus. Ph.D. in Math., exp. in teaching at college level, demonstrated talent in teaching undergrads, and evidence of ability to contribute to the research mission of the Dept. are required. Rank and salary will be competitive, commensurate w/qualification Screening begins March 1, 1991, and continue until position is filled. Send CV and have at least three letters of ref. sent to: Prof. Howard Roberts, Associate Head, Dept. of Math., University of Connecticut, U- 9, 196 Auditorium Rd., Storrs, CT 06269-3009.

UNIVERSITY OF IOWA. Faculty position in Computer Science. Tenure Track Asst. of beg. Assoc. Prof, Senior Faculty appointment, One or more Visiting. For junior level: Parallel and Distributed Computing; Programming Languages and Methodology; Artificial Perception and Intelligence; Algorithms and Theoretical Foundations of CS; Software Engineering. For Senior position we prefer these, but will consider all areas. For junior level, selection based on outstanding research accomplishments or potential, and teaching ability. Within that level of excellence, we favor candidates whose interests interact well with current faculty. In evaluating teaching ability, we consider breadth of CS background, teaching interests, communication skills. For Senior position selection will be based on outstanding research accomplishments and teaching ability. For visitors selection based on teaching ability, Dept. needs, likelihood of research interactions. All positions require PhD in CS (or closely relate field) University welcomes highly qualified couples. Applications considered as received, until positions filled. Please send resume, recent pubs. or reports, and have three letters of recommendation sent directly to: Hiring Committee; Dept. of Computer Science; University of Iowa, Iowa City, Iowa 52242. More info: J. Simon, Dept. Chair 319-335-0713, jsimon@cs.uiowa.edu.

UNIVERSITY OF PITTSBURGH. Department of Mathematics and Statistics The department invites applications for the following positions, which will be available for September, 1991 if funding permits. 1. Assistant Professor in the area of partial differential equations. 2. Assistant Professor in some branch of pure mathematics other than differential equations. Applicants are especially encouraged in algebra and geometric or algebraic topology, but all areas will be considered. Requirments 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.

UNIVERSITY OF TEXAS AT ARLINGTON. Dept. of Math. expects to fill several pos. beginning Fall 1991. Salary and rank are commensurate with qualifications. The selected cands. must have excellent credentials in research and teaching. The desired areas of expertise are Differential or Algebraic Geometry, Computational Geometry, Partial Differential Equations, Functional Analysis, Statistics and Applied Math. Send resume, 3 letters of rec. to: Dr. Danny Dyer, University of Texas at Arlington, Dept. of Math., Box 19408, Arlington, TX 76019. Attn: Recruiting Chairman.

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY. Dept. of Math. Apps. are invited for a tenure track appt., subject to budgetary approval, at Asst. Prof. level beginning 1991-92 academic year. A Ph.D. and strong research potential are required. Pref. will be given to cands. with post-doc exp. Primary areas of interest are algebraic and differential geometry, discrete math., dynamical systems, and computationally oriented math. Apps. will be accepted until March 15, 1991 or until pos. is filled. Apps. should be sent with vitae, 3 letters of ref. to: Chair, Search Committee, Dept. of Math., Virginia Tech, Blackburg, VA 24061-0123.

WAYNE STATE UNIVERSITY. Dept. of Math. Apps. are invited for an anticipated tenure track pos. in statistics or applied math. Also possible visiting positions. Ph.D. in math. req. Excellence in research and teaching expected. Apps. should incl. a signed, detailed vitae; description of current research interests; 3 letters of rec. to: Wayne State University, Dept. of Math., Detroit, MI 48202. Attn: Pao-Liu Chow, Chair.

WAYNE STATE UNIVERSITY. Dept. of Computer Science invites apps. and nominations for the pos. of Computer Science Dept. Chair. Candidates must exhibit a distinguished research record as well as a commitment to teaching and strong administrative skills. A Ph.D. in Computer Science or a related field is expected. Letters of application including names of three professional references should be sent to: Dr. L.D. Favro c/o Maureen Schore, Wayne State University, Dept. of Computer Science, 431 State Hall, Detroit, MI 48202.

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Dean, College of Science, Texas A&M University

The College of Science is comprised of the Departments of Biology, Chemistry, Mathematics, Physics and Statistics, and the Cyclotron Institute. The College has 270 faculty, 2,330 undergraduate majors, 778 graduate students, and a total research and teaching budget of approximately $39,000,000. Ph.D. programs are offered in all departments.

Texas A&M University is a major teaching and research institution and ranks in the top ten nationally in research funding, number of national merit scholars, total student enrollment (41,000), and value of its permanent endowment. The successful applicant will have an outstanding record of achievement in teaching and research and have demonstrable administrative skills. Effective communication with multiple constituencies, a talent for management of complex organizations, and a sense of visionary leadership will be especially important.

Applications, consisting of a resume and the names of five persons from whom we may request letters of reference, will be accepted until April 15, 1991, or until the position is filled.Respond to: Dr. John A. Shadduck, Chair Search Committee, Dean of Science Texas A&M, University College Station, TX 77843-4468 Phone: 409/845-3517 FAX: 409/845-6739

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.

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

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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.

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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):

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

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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

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AWM

Newsletter

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AWM
ASSOCIATION
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MATHEMATICS

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