AWM

ASSOCIATION
FOR WOMEN IN
MATHEMATICS

PRESIDENT'S REPORT

Julia Robinson Celebration of Women in Mathematics Conference

I am happy to report to you that NSA, MSRI and AWM will jointly support the Julia Robinson Celebration of Women in Mathematics Conference. This conference will be held in honor of the late logician, Julia Robinson, and is part of the 25th anniversary celebration of AWM. The goals of the celebration are: to showcase the recent achievements of women in mathematics, to facilitate networking among women in various fields of mathematics, to provide role models and offer mentoring for beginning women mathematicians, and to reach out to area teachers and students.

The Celebration will be a two and a half day conference to be held July 1–3, 1996, at the Mathematical Sciences Research Institute (MSRI) in Berkeley, California. All mathematicians are invited to attend.

Travel funds to attend the conference are available for women graduate students, postdoctoral mathematicians, and junior faculty. The deadline for applications is May 10, 1996. (Funding had not been obtained before the last issue went to press; we apologize for the compressed schedule. See page 4 for more information on the application procedure.) Up-to-date information can be obtained on AWM-Net or from the MSRI Homepage: http://www.msri.org/.

> Please note: the deadline for receipt of applications for travel funds is **May 10, 1996.**

25th Anniversary Fund Drive and AWM's Current Programs

AWM is now celebrating the successes and accomplishments of its first twenty-five years. As you know, the goal of AWM has always been to encourage women to enter and pursue active careers in mathematics and related fields. Currently we offer the following programs in aid of this goal:

IN THIS ISSUE

- AWM-ONR Workshops for women graduate students and postdoctoral mathematicians, one at the January Annual Joint Meetings and one at the annual meeting of SIAM, supported by ONR,

- The Julia Robinson Celebration Conference, supported jointly by NSA and MSRI,

- Travel Grants for women researchers offered three times per year in February, May and October, supported by NSF,

- Sonya Kovalevsky High School Mathematics Days held at colleges and universities for high school girls, supported by NSF and the Sloan Foundation,

- Publication of a bi-monthly *Newsletter*, a *Membership Directory* and a *Directory of Women Mathematicians*, directories fully supported and *Newsletter* partially supported by NSA,

- Efforts related to mathematics education, partially supported by the Exxon Education Foundation,

- The Alice T. Schafer Mathematics Prize for Undergraduate Women, supported by the Schafer Prize Fund,

- The Louise Hay Award for Contributions to Mathematics Education,

- The Noether Lecture series, panel discussions, and receptions at the January Meetings, and

- Publication of two brochures, *Profiles of Women in Mathematics: The Emmy Noether Lecturers* and *Careers that Count: Opportunities in the Mathematical Sciences*.

Since becoming the President of AWM a little more than a year ago, I have been amazed to find that we manage to continue all these programs with so little funding. However, many women mathematicians volunteer their time and expertise to set up and maintain these programs while the dedicated, shorthanded staff of AWM coordinates the volunteers and programs.

AWM has been successful in obtaining special-purpose grants because we have a excellent track record. Our outstanding principal investigators and organizers do not ask for personal support from the grants, so (except for overhead at the national office) the grant money goes to the participants in the program.

The AWM office also serves as a resource center for questions related to women in mathematics, and it receives many inquiries every day. Hence our staff often works overtime without compensation just to keep our programs running and to answer these inquiries. Because the staff is so overworked, it has insufficient time to support the volunteers adequately, who then often work many extra hours on their AWM projects.

We are grateful to the funding agencies that support the special programs outlined above. But we have been unable to obtain unrestricted operating funds for the office, nor to finance small projects

which volunteers might be willing to undertake. In the current funding climate, such funds are very difficult to obtain. Consequently, there is always a shortage of unrestricted funds.

To enable AWM to continue to provide encouragement to women to enter and pursue their careers in mathematics, I would like to ask for your help. At a recent meeting of the AWM Long-Range Planning Committee, we decided that AWM should hold a 25th Anniversary Fund Drive, chaired by AWM President-Elect Sylvia Wiegand. Sylvia's fund appeal appears on pages 4–5. Please respond!

AWM-ONR Workshops

The next Workshop will be held in conjunction with the Society for Industrial and Applied Mathematics Annual Meeting in Kansas City, Missouri, July 22–26. The workshop will consist of one poster session, four minisymposia, panels on careers and on government funding, and an after-dinner keynote speaker (see page 31 for more information).

Many participants at the past January workshops told us that they would like to have the titles of their talks listed in the AMS programs. In order to make this possible, we are moving the deadline for applications of the 1997 January Workshop to September 1, 1996 (see page 9 for more information).

Rochester University

I am pleased to report to you that the Rochester University graduate program has been restored. See pages 19–22 for more information (this information was obtained from the Web site http://www.math.rochester.edu/renaissance/newplan). We should thank Professor Jaffe for leading a successful Task Force and congratulate the Rochester Department of Mathematics. It has been a constructive learning experience for the whole mathematics community.

Thanks to Exxon

The Exxon Education Foundation has recently awarded us another grant for $5000, to be used in projects related to mathematics education.

Thanks to Anne Leggett

Finally, I would like to thank our Newsletter Editor, Anne Leggett, for her excellent work and many sound suggestions. In particular, as a result of

many travels I have been late in submitting my reports, and Anne has always been very patient and helpful to me.

Chuu-Lian Terng
April 1, 1996
Boston, MA

JULIA ROBINSON CONFERENCE

The celebration of the 25th anniversary of the Association for Women in Mathematics will culminate in the Julia Robinson Celebration of Women in Mathematics Conference, as detailed in the President's Report. All mathematicians are invited to attend the conference, to be held July 1–3, 1996 at the Mathematical Sciences Research Institute (MSRI) in Berkeley, CA. When available a detailed program will appear on the MSRI homepage: http://www.msri.org.

Approximately 40 grants to attend the conference will be available. In awarding these grants, preference will be given to women graduate students and recent Ph.D.'s. Applicants should include a cover letter, a research outline (maximum two double-spaced pages) of their work and a curriculum vita. Each graduate student applicant should also include a letter of recommendation from her advisor. All non-U.S. citizen applicants must have a current U.S. address.

Send **five** complete copies of the application material by **May 10, 1996** to:

Robinson Travel Grants
Association for Women in Mathematics
4114 Computer & Space Sciences Building
University of Maryland
College Park, MD 20742-2461.

AWM, 25 YEARS OLD, NEEDS YOUR HELP

Dear AWM members and friends,

I look forward to serving as AWM president beginning next year; thank you for electing me. I will do my best to continue the outstanding tradition established by our presidents, past and present.

Meanwhile, during this 25th birthday commemoration for AWM, let us all join in celebrating the successes and accomplishments of AWM. The mathematical world has radically changed for women since AWM was founded twenty-five years ago. Because of the efforts of AWM and the resulting rise in the number of women in mathematics, women mathematicians are more visible, get more jobs, win more prizes, give more talks, and are taken more seriously. Twenty-five years ago, things were different. Many of us notice that our lives are infinitely better, thanks to AWM and her pioneers.

At this time, in addition to your enthusiasm, congratulations and moral support, AWM needs another kind of help from you. The AWM is at a critical point in its existence. We've grown up from our humble beginnings to a substantial organization with major impact. On the other hand, we are still operating on a shoestring budget, which hampers our effectiveness. Presidents, Executive Committee, and staff have been constrained by the level of financial support available. We need more funds for our day-to-day operations.

At the Orlando meeting this past January, the Long-Range Planning Committee discussed funding for AWM. We decided to run a fund drive in conjunction with our 25th anniversary year. We hope to raise a reasonable endowment to ensure that AWM projects continue, to encourage younger women in mathematics, to help recent Ph.D.'s get established, and to support our profession.

For many years I have reaped the benefits of AWM's efforts. As I have become more intimately involved with the organization as President-Elect, I was shocked to learn the reality of our funding situation. To keep accomplishing more for women, we must have more funds; an endowment fund will start us down the road to greater financial stability. Please do as much as you can. This fund drive gives us all the chance to return something to AWM for all it has done for us and other women.

Our presidents have each accomplished a great deal for AWM and for our profession, while continuing to achieve at high levels in their own careers. They are willing to reinforce their commitment with generous contributions to AWM's future. In addition to their support and leadership, they have established a special president's fund to kick off the endowment campaign. Four of the presidents have already pledged to give or raise a total of at least $4000 this year to the presidents' fund.

Together we twelve past, present and future presidents challenge you, the membership and friends: Can you give or raise five times what the presidents give or raise as a group?? In addition to your monetary support, I also seek your help and advice; I am the chair of this campaign, but I'm a novice fund-raiser. Please let me, Chuu-Lian Terng or Dawn Wheeler know of prospective contact people from foundations, of prospective donors, and of potential workers for the campaign.

Thanks very much in advance for whatever help you can give!

Best wishes,
Sylvia Wiegand

Donations and pledges may be sent to:

The Endowment Fund
Association for Women in Mathematics
4114 Computer and Space Sciences Building
College Park, MD 20742-2461.

AWARDS AND HONORS

CONGRATULATIONS to the women (and one male AWM member!) listed below for their meritorious achievements.

MARTHA J. SIEGEL has been elected MAA Secretary, to succeed Gerald L. Alexanderson who became President-Elect at the Joint Meetings in Orlando. Professor Siegel is currently Professor of Mathematics at Towson State University in Maryland and previously taught at Goucher College. She holds a Ph.D. from the University of Rochester and works in the fields of applied probability and modeling.

In the MAA she has served as a member of the Executive Committee and the Board of Governors from 1991–95. She was the Editor of *Mathematics Magazine* from 1991–95, having served previously for five years as Associate Editor. She has served on a number of MAA committees, most recently chairing the AMS-MAA-SIAM Morgan Prize Committee. As a member of the Executive Committee she served on its Subcommittee on Strategic Initiatives.

Professor Siegel will serve as Secretary-Elect until July 1, 1996 and become Secretary at that time.

The 1995 Chauvenet Prize for expository writing was awarded to JOAN S. BIRMAN by the MAA at the Joint Meetings in Orlando. The citation reads:

The 1995 Chauvenet Prize is awarded to Joan Birman for her article "New points of view in knot theory," which appeared in the *Bulletin of the American Mathematical Society* 28 (April 1993), pages 253–287. This marvelous article does everything one might want an expository account of a subject to do. It is all of these, at the same time:

• It is an article that one can give to a student who is just about to take a first course in Knot Theory. Birman sets down vividly, precisely, and agreeably the basic definitions, aims, intuitions, examples in the theory. Her article even provides at one point a sketch, readable by any student, of a proof of an important foundational matter which cannot be found elsewhere.

• Birman's article conveys the marvelously Protean nature of the subject matter, and of its history including a sympathetic recollection of the important ideas occurring in the early papers of Alexander, a discussion of the efforts of classification of knots in the 19th century by the physicist P.G. Tait and others, as well as the more recent startling connection to von Neumann algebras which are factors of Type II_1 stemming from the work of Vaughan Jones.

• As announced by her title, her article describes the "new points of view." Someone who had no inkling of these new developments, e.g., of the HOMFLY polynomial, the Kauffman polynomial, the quantum group invariants — alias "generalized Jones invariants" — the ideas of Arnold and Vassiliev on the "moduli space" of all knots —

including degenerate ones — and the "Vassiliev invariants" that one can deduce from the study of this "moduli space," and the connections between these collections of new invariants, can get a clean explanation of parts of this exciting work, including a sense of the swarm of open problems that remain, from Birman's article.

The instructions for the Selection Committee say that "preference should be given to papers that come within the range of profitable reading for members of the Association." Birman's article is particularly appropriate in this regard. It provides something for everyone, and does so with clarity and spirit.

Biographical note:

Professor Birman is currently Professor of Mathematics at Barnard College, Columbia University, where she received her B.A. in 1948, with an M.S. at Columbia in 1950 (in physics). Her Ph.D. was earned at the Courant Institute, New York University, 20 years following her B.A. and after raising three children. Before joining the faculty at Barnard, where she chaired the department in 1973–1987 and 1989–1991, she held positions in industry and at the Stevens Institute of Technology.

She has been awarded an honorary doctorate by the Technion (Israel Institute of Technology) as well as other honors, a Sloan Foundation Fellowship, 1974–76, and a Guggenheim Fellowship, 1994–95, among them. For the American Mathematical Society she has served on the Council 1990–93 and as a member of the Human Rights Committee, 1989–91, along with other assignments. She has also served on the Human Rights Committee of the New York Academy of Sciences. Since 1971 Professor Birman has held visiting appointments at Princeton, Paris, the Technion, Hebrew University, and the Institute for Advanced Study and currently serves on the Editorial Boards of *Topology and Its Applications* and *Mathematical Research Letters*. Her research has been in topology and knot theory.

Response from Professor Birman:

Much has been written about the pleasure of research in mathematics, but little about the pleasures in expository writing, so that is my theme for this response. We all share a love of teaching, and expository writing is an aspect of teaching, and I had real pleasure writing this article and telling others about a part of mathematics which seems beautiful to me. Even more, teaching is best when there is a response, and I was fortunate to receive a rich mix of responses.

One was from an obviously young student in an unknown college halfway around the world, who introduced himself via email. In my article I had described a homomorphism $\eta \colon SB_n \to CB_n$ where B_n is a group, SB_n a monoid which contains it, and CB_n its group ring. In the last three lines on page 278 I conjectured that η is injective, i.e. (and here I correct an error in the original text) that $\eta(x) = \eta(y)$ implies that $x = y$. This student understood my question well enough to correct my error without asking and go on to work on the corrected problem, arriving at a reduction which got to the heart of the matter. That was good work, and I told him so. (I wish I could report that he settled it, but mathematics is not that easy — the problem is still open.)

Then there was a junior colleague who, some months earlier, had discussed with me his symptoms of a well-known mathematical illness: he had completed and extended his Ph.D. thesis, and then the ideas stopped coming. But he didn't write to talk about that, instead he wrote to say that he had read my article, and had a question. Eventually that question led to a new project, and the project to a contribution to research, and he was on his way.

In a different direction, I had given (p. 282) the first few terms of an infinite sequence which arose in studying the weight systems which determine Vassiliev invariants. The sequence is impossible to calculate, with existing computers, beyond the 9th term. The first nine terms are 0, 1, 1, 2, 3, 5, 8, 12, 18. The response was from a combinatorialist whose hobby is collecting infinite sequences, and after a few exchanges he told me my 9-term sequence matched exactly one sequence in his very large collection, with a reference. That got me very busy trying to make a connection. Alas, I have not (yet) done so and that problem is still open, but his response opened new doors.

My last example is before all of you, in the citation. I don't know who wrote it, but clearly that person read and understood and learned from and responded to my article, and nothing is more rewarding to a teacher than to have that kind of substantive response. I was very moved by it. Thank you.

JANE M. BOOKER received the 1995 H.O. Hartley Award.

MARY ELLEN RUDIN, University of Wisconsin, was elected an Honorary Member of the Hungarian Academy of Sciences, May 1995.

CONSTANCE REID was awarded the Beckenbach Book Prize (the successor to the MAA Book Prize) by the MAA at the Joint Meetings in Orlando. The prize is awarded for distinguished, innovative books published by the Association.

The citation reads:

Most mathematicians are acquainted with the work of Eric Temple Bell. A number theorist and President of the Mathematical Association of America, he was also the author of popular expositions of mathematics and of entertaining, if sometimes fanciful, accounts of its history. Constance Reid's *The Search for E.T. Bell, Also Known as John Taine* introduces us to the man behind these accomplishments. Part biography and part detective story, Reid's book unravels the mystery of Bell's early years and leads us through his prodigious non-mathematical works, including epic poetry and science fiction published under the pseudonym John Taine. Reid summarizes Bell's research in number theory with the clarity that typifies her approach to mathematical biography, and her description of the influences on his mathematical development contributes valuable details to our understanding of the history of American mathematics.

The Search for E.T. Bell is a fascinating, informative, and readable account of an enigmatic mathematical personality. With her investigation of the human side of E.T. Bell, Constance Reid has once again performed a great service for the mathematical community. This outstanding book fully deserves its place among recipients of the Beckenbach Book Prize.

Biographical note:

Constance (Bowman) Reid was born in St. Louis on January 3, 1918, grew up in San Diego, and was educated at what is now San Diego State University and the University of California at Berkeley. After a career as a teacher of English and Journalism in the San Diego City Schools and a best-selling book about a summer vacation spent working on the B-24 production line during World War II, she was encouraged to devote herself to writing by her husband, Neil Reid, a San Francisco attorney. By chance and perhaps destiny, she became a mathematical writer when an article on the first computer testing of Mersenne numbers was accepted by *Scientific American* and she was subsequently asked by a publisher to write "a little book on numbers." The result was *From Zero to Infinity*, recently republished by the MAA. While writing *A Long Way from Euclid*, soon to appear in a new edition under

the same imprint, she became fascinated by the mathematical career and personality of David Hilbert. Her life of Hilbert was published in 1970. Biographies of Richard Courant, Jerzy Newman, and Eric Temple Bell, as well as a number of short biographical articles, followed. With D.J. Albers and G.L. Alexanderson, she edited *More Mathematical People* and *An Illustrated History of International Mathematical Congresses*. She is the recipient of the MAA's Pólya Prize for her article about her sister, "The Autobiography of Julia Robinson," and is currently working on an illustrated "miscellany" of Julia's life and work. Royalties will fund a Julia Bowman Robinson Prize in Mathematics at San Diego High School, where Robinson in her high school days was — after plane geometry — the only girl taking mathematics.

Response from Ms. Reid:

It is appropriate for a book about E.T. Bell to be awarded the Beckenbach Book Prize of the MAA since Bell was one of the charter members of the Association as well as (later) its president.

It is also appropriate that I should have written the life of Bell, since the inspiration that my sister Julia received in her student days from *Men of Mathematics* caused her to suggest in 1964 that I turn from mathematical exposition to the writing of the lives of mathematicians. Although Bell's *Men of Mathematics* is not so highly rated today as it was when it appeared, I would like to close by recalling to you G.H. Hardy's remark that "a book can hardly be entirely bad if it fires a clever boy's [and I would add 'or a clever girl's'] imagination."

The Joint Policy Board for Mathematics Communications Award was granted to Gina Kolata at the Joint Meetings in Orlando. Kolata has distinguished herself as an extraordinary communicator of mathematics, first as a senior writer for *Science* magazine and since 1987, writing about mathematics while covering science and health for the New York *Times*.

Ronald Graham, Adjunct Director, AT&T Bell Labs and past president of the AMS, says, "Gina Kolata has consistently given outstanding coverage to many of the most exciting breakthroughs in mathematics and computer science over the past 20 years. She has a special gift for conveying the essence of a complicated concept in an engaging and understandable way, and for portraying the human side of mathematics as well."

Mathematician and author Donald Albers, currently Director of Publications and Electronic Services at the MAA, says Kolata is an "outstanding expositor of mathematics." "Mathematics," he says, "is enriched by her work."

In eight years at the *Times*, Ms. Kolata has been nominated three times for Pulitzer prizes. She has a master's degree in mathematics from the University of Maryland and has given invited lectures at major universities including Princeton and Yale. She has written extensively for popular magazines and is author/co-author of four books.

EVELYN BOYD GRANVILLE, University of Texas, Tyler, delivered the Cox-Talbot Address, "Some Perspectives about Mathematics and Mathematics Education," at the banquet of the National Association of Mathematicians (NAM) at the Joint Meetings in Orlando. She was awarded an honorary life membership in NAM.

MARY WHEELER, an AWM Noether Lecturer, now holds a faculty chair in the departments of aerospace and engineering mechanics and of petroleum and geosystems engineering at the University of Texas. She leads the seventh official Center for Research on Parallel Computation (CRPC) site. "The Computational and Applied Math Program is novel," says Wheeler. "It involves multidisciplinary interactions between engineering, math, physics, and computer science." Wheeler was accompanied on her move from Rice University by several associates and graduate students.

Wheeler earned her B.S. in Social Sciences and her B.A. and M.A. in Mathematics at the University of Texas. She then went on to become the second woman to earn a Ph.D. at Rice in Applied Mathematics. A member of the Rice University faculty for the past 24 years, she is renowned for her work in the areas of applied mathematics, flow in porous media, and parallel computation.

ANITA BORG, Digital Equipment Corp., JEANNE FERRANTE, University of California, MARY JANE IRWIN, Pennsylvania State University, ANITA K. JONES, Department of Defense, MARIA M. KLAWE, University of British Columbia, BARBARA H. LISKOV, Massachusetts Institute of Technology, MARY SHAW, Carnegie Mellon University, and MARY K. VERNON, University of Wisconsin have been inducted by the Association for Computing Machinery (ACM) as 1996 ACM Fellows.

MONICA MARTINEZ, a graduate student in the Department of Computational and Applied Mathematics at Rice University, has won the 1995 Hispanic Engineer National Achievement Awards Conference honor for Student Leadership.

For the second consecutive year, IOANA GRADINARU, a Romanian-born eighth-grade student from Columbia, SC, whose parents and brother are all crack mathematicians, was the top female "mathlete" in the annual national competition sponsored by the National Engineering Society. Ioana received a second AAUW Educational Foundation $3,000 college scholarship.

The 1995–96 Eleanor Roosevelt Teacher Fellows, chosen by the AAUW, include a number of mathematics teachers: LAURA BENVENUTO, John Adams High School, Ozone Park, NY; MICHELLE CORT, PS/IS 284, Brooklyn, NY; ALEMELU IYENGAR, PS/IS 284, Brooklyn, NY; and GLORIA MORAN, M.G. Williams Junior High School, Bridgewater, MA.

ANGELA M. DEAN, Ohio State University, was elected a Fellow of the American Statistical Association, August 1995. MAGDA PELIGRAD and SUSAN RUTH WILSON were elected Fellows of the Institute of Mathematical Statistics and introduced at the 57th Annual Meeting in Montreal, July 1995.

MAY NILSEN was awarded the B.H. Neumann Prize for the best student paper delivered at the Annual Meeting of the Australian Mathematical Society in Hobart, Tasmania, July 1995.

ANN HIBNER KOBLITZ and NEAL KOBLITZ, at tenth anniversary festivities for the Kovalevskaia Fund in Vietnam in August 1995, each received three honors: the Medal for Women's Emancipation from the Vietnamese Women's Union; the medal of the Ministry of Science, Technology, and Environmental Protection; and the Friendship Medal of the Vietnamese government.

MARYAM MIRAZAKHANI of the Iranian mathematics team received a perfect score on the 1995 International Mathematics Olympiad, after receiving a near-perfect score of 41 in 1994.

ORTRUD RUTH OELLERMAN was awarded one of the inaugural (1995) Hall Medals of The Institute of Combinatorics and Its Applications.

WORKSHOP FOR WOMEN GRADUATE STUDENTS AND POSTDOCTORAL MATHEMATICIANS

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

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

WHEN: We are now inviting applications for the workshop to be held in conjunction with the annual Joint Mathematics Meetings in San Diego, California, January 8–11, 1997. The workshop will take place on Saturday, January 11th, with an introductory dinner on Thursday, January 9th.

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

MENTORS: We also seek volunteers to lead discussion groups and to act as mentors for workshop participants. If you would like to volunteer, please contact the AWM office.

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

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

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

Phone: 301-405-7892   Email: awm@math.umd.edu

(Applications via e-mail or fax will not be accepted.)

APPLICATION DEADLINE: **September 1, 1996**

NOTICE!! CHANGE IN APPLICATION DEADLINE!!
The deadline of **September 1** is earlier than in the past.

EDUCATION COMMITTEE

Dorothy Geddes: May 7, 1924 – January 23, 1996

The mathematics education community mourns the sudden loss of Dr. Dorothy Geddes, Professor of Secondary Education – Mathematics, who was a member of the faculty of Brooklyn College of the City University of New York for more than 30 years. Professor Geddes earned her Ph.D. in mathematics education at New York University, and prior to her appointment to the faculty of Brooklyn College she taught mathematics at Hunter College High School.

I am honored to have the opportunity to share my feelings and thoughts about my dear colleague and friend, Professor Dorothy Geddes. It is difficult to find the words to help me capture and express my memories, love, and respect for her. I could never share all of my memories in the space provided in this *Newsletter*. So I'll select a few.

I cannot remember when I first met Dorothy — I feel as though I have known her my entire life. She has had such a tremendous influence and impact on me. As for so many mathematics educators in New York, she was my mentor and role model, an outstanding scholar, and a dear friend and wonderful human being.

Mentor and Role Model

Dorothy was always there for me to offer advice and to give an objective perspective on a situation, whether it was professional or personal. I remember many conversations when I would tell her, "Dorothy, can you imagine we might have to teach one more course" (and I was at the time on release time for projects, teaching only one or two courses at Queens College). Dorothy would not say anything negative; she would always respond sympathetically. She, herself, was always on overload — carrying a load of seven classes and supervising 30 student teachers in one semester were not unusual for her! The more Dorothy did, the happier she was. She was always cheerful, and she always looked at the bright side of everything. Every day since her passing, I approach my many and varied challenges with the thoughts: how would Dorothy react to this?

what would Dorothy say? Immediately, my frown turns into a smile — she had this effect on people — she still has this effect.

A Scholar

As a scholar, Dorothy was highly respected. She was conversant in research, contributing to the research literature in geometry instruction. She was eloquent in designing and communicating ideas for instructional materials for teachers and students, putting theory into practice. She was a sought-after speaker at local, state, and national conferences. Dorothy very rarely said no to invitations.

When the National Council of Teachers of Mathematics (NCTM) appointed me editor of the *Middle Grades Addenda to the Curriculum and Evaluation Standards for School Mathematics*, I was given the responsibility of recruiting outstanding authors to develop a series of five books to support the implementation of the *Curriculum and Evaluation Standards* (NCTM 1989). There was no question in my mind who would be the best person to ask to lead the geometry and measurement writing team. I was most grateful when Dorothy accepted my invitation.

We were told that there were to be five books, one of which was to be a combination of geometry and measurement. Each book was to be limited to 64 pages. After the first draft, Dorothy and her writing team handed me 250 pages. She said that there was no way the book could be done in 64 pages. She convinced me. And, although geometry and measurements are naturally connected, she said we needed two books, not one.

So we had to prepare a rationale and go before the Educational Materials Committee of the NCTM for approval before taking the recommendation to the Board of Directors of the Council. Well, as chairman of the Educational Materials Committee, Dorothy was sure to see the recommendation would be approved.

In the end, we had two books, *Geometry in the Middle Grades* (Geddes et al., 1992) and *Measurement in the Middle Grades* (Geddes et al., 1994), and each one has 90 pages. These two books have turned out to be best sellers. Since being published in 1992, *Geometry in the Middle Grades* has sold 29,450 copies, and since being published in 1994,

By Frances R. Curcio, New York University. This text is a revised version of her remarks made at the Memorial for Dorothy Geddes at Brooklyn College on February 15, 1996.

Measurement in the Middle Grades has sold 11,472 copies. In all of her wonderful work, Dorothy continues to live.

Dorothy had a great talent for securing grant money to offer inservice teachers opportunities to improve their understanding of mathematics and their teaching skills. In her many projects, she collaborated closely with Professor George Shapiro, Chairman of the Mathematics Department.

A Dear Friend

Dorothy's passing is both a professional and personal loss for me, as it is for everyone in mathematics education. She was a wonderful friend who listened carefully, offered advice freely, and helped selflessly. In February 1995, I lost my father. Dorothy's words were a comfort to me and to my family. With some modification, I think it is fitting for me to share her words:

I know that the love you shared with Dorothy will strengthen and support all of you at this time of sorrow. Our hearts are filled with gratitude for Dorothy's life of love, wisdom, and service. In the words of a poet:

Look through the mist
    And see what really is —
The one you love still serving Him and His.
Life is eternal;
    Naught could ever part
Those whom God loves and He loves all,
        dear heart.

With dear love to all of you.

The love of mathematics, of teaching, and of service that Dorothy instilled in so many of us will continue to live.

Selected Bibliography

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LAUNCHING A CAREER IN MATHEMATICS

I have been teaching mathematics at Colorado College, a liberal arts college in Colorado Springs, for the last ten years. This is my second job after graduate school; the first was a two-year position at the University of Washington. Colorado Springs is filled with cars displaying a bumper sticker that exhorts residents to "Celebrate Diversity." These bumper stickers are a response to Colorado's anti-gay Amendment 2 (which caused the national AMS meeting to be moved from Denver last year). I believe the message of these bumper stickers is also important to keep in mind when launching a career in mathematics.

Mathematicians work in a wide variety of jobs, both inside and outside of academia. While these jobs have some loose hierarchical ordering in terms of prestige, they have no clear ordering in the satisfaction they offer or the contributions they make to mathematics. Thus, when you are evaluating current or potential jobs, I urge you to consider other factors besides prestige. Do you enjoy teaching? What level and size of classes? Do you enjoy research? What types of problems, and with what sort of collaboration? What pressures contribute to your productivity and which detract? Do you enjoy applications, computing, interdisciplinary studies? What sorts of colleagues contribute to your happiness and success?

My own experience has been mostly at a small, teaching-centered school. The teaching at Colorado College is both satisfying and exhausting. I teach the equivalent of ten to twelve semester hours each

By Kathy Merrill, Colorado College. Panel presentation, AWM Workshop, Joint Meetings in Orlando, January 1996.

semester. This teaching is important to me, but mathematical research is important to me as well. A question submitted to organizer Carolyn Gordon before this panel was: "How is it possible to maintain a research program with a heavy teaching load?" Again I believe that the notion of diversity is important. A research career at a small liberal arts college will necessarily be different from one at a large research university. One difference is in the type of problems studied. The amount of time I have for research does not allow me to compete in solving the most stylish problems. I work on less popular problems that give me time to work at my slower pace. I am completely captured by the problems I work on, and I revel in both my small actual accomplishments and my occasional dreams of grand results. I have found research questions in work arising from my Ph. D. thesis, in play related to teaching, and in conversations with colleagues. I believe that collaboration in mathematical research is more essential at a small teaching-centered college than at a research university. Collaborators support me both in suggesting problems and in keeping me going when I am short on time or discouraged. Collaborators contribute new ideas, motivation, and fun.

Another question submitted to Carolyn asked about the difficulties involved in balancing a mathematical career with a family. I have two children who are now 10 and 14. My older child was born when I was in graduate school; my second child was born two weeks before I began my current job. I sometimes think myself a crazy person who is destroying herself and her family, and other times think that I have it all and no one can rival my happiness. I suspect that both people who have careers and no families and people who have families and no careers experience the same extremes. Having children has changed the pace of my career. Keeping both my work and my family going has taken away time that I would have given to leisure or friends. These are choices that, on the whole, have given me happiness. Here again I believe that an appreciation of diversity is important. If I measured either my number of research papers or my number of cookies baked against more single-minded colleagues, I would probably come up short.

When I was considering leaving the University of Washington for Colorado College, Ramesh Gangolli, then chair of the department, told me that the most important contribution most of us make to mathematics is in establishing and supporting a culture in which mathematical ideas and mathematical genius can flourish. Mathematicians in a wide variety of jobs contribute to this culture. I urge you to search for a career that will allow you to contribute in a way that brings you both success and joy. In the current market, you may need to search more broadly and persistently, but I believe that even today, you can find such a career.

HUDSON CONFERENCE

The third annual regional Hudson River Undergraduate Mathematics Conference was held at Skidmore College in Saratoga near Albany, New York on Saturday, April 20, 1996. The invited speaker, Ron Graham, described and demonstrated a new and unexpectedly simple way of describing juggling patterns, which has led to new patterns and new theorems. Hundreds of participants hailed from 30 colleges and universities in eight states. Faculty and students participated as equals in presenting and enjoying about one hundred 15-minute talks, each targeted either for general undergraduate students or for mathematics majors. A fuller report will appear in our next issue. The conference has been funded by grants from the National Science Foundation and previously the Alfred P. Sloan Foundation and also has been supported by the AMS, ASA, AWM, INFORMS, MAA, ORSA, SIAM, Skidmore College, and other participating schools. Next year, the conference will rotate to Williams College, in Williamstown, Massachusetts.

Most colleges and universities in the region have local organizers. If you have any questions (perhaps about organizing similar events elsewhere) or if you are willing to serve as a local organizer in the Albany region, contact the steering committee: David Vella, Chair, Skidmore College (dvella@skidmore.edu), Colin Adams, Williams College (Colin.Adams@williams.edu), Gove Effinger, Skidmore College (effinger@skidmore.edu), Emelie Kenney, Siena College (kenney@siena.edu), Frank Morgan, Williams College (Frank.Morgan@williams.edu), or Susan Niefield, Union College (niefiels@gar.union.edu).

Professor Frank Morgan, Williams College

BOOK REVIEW

Maria Dzielska, **Hypatia of Alexandria**, translated by F. Lyra. Harvard University Press, Cambridge 1995. viii+157pp. ISBN 0-674-43775-6 (cloth). $29.95.

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

In March of 1994, the *American Mathematical Monthly* published an excellent article by Michael Deakin ([1]) dealing with the life and legend, but most importantly with the mathematics, of Hypatia of Alexandria, the first woman mathematician for whom we have documentary evidence. Taken together with Maria Dzielska's new biographical treatment, *Hypatia of Alexandria*, published this fall by Harvard University Press, it is possible to construct a fairly complete picture of Hypatia: her life and times; her work as a teacher, mathematician, philosopher, and religious and political figure; and the circumstances of her violent death.

In the context of a course on the history of mathematics, Hypatia's appearance onstage is more than a little disappointing: the first known woman mathematician in history is far better known for her death than for her life. She was most likely born about 350 A.D., though many sources place her birth in the year 370 A.D., and spent her entire life in the city of Alexandria, until she was brutally murdered at the hands of a Christian mob in the year 415 or 416 A.D. (see [1], [3], and the book under review). In an attempt to present a much rounder picture of her life than is commonly offered, Dzielska draws upon the extant letters of her students, most notably Synesius, to demonstrate the significance of her role as a teacher of philosophy. Her book is also extremely valuable in its detailed description and debunking of the numerous latter-day myths surrounding her life and especially her death.

For several years I have been teaching my department's course in the history of mathematics, which is taken primarily by seniors majoring in mathematics and mathematics education. For most of them, it is among the last courses in mathematics that they will ever take. The class is frequently over 50% female. Women in the class, in particular, are often quite eager to write and reflect upon Hypatia. In a journal entry written in response to a classroom discussion of Hypatia, one young woman preparing for a career in high school mathematics teaching wrote that she could not understand why Hypatia

was so important, since she was "only" a teacher and editor. After all, the student wrote, even Hypatia's publications have been lost, and are only rumored to have existed. These comments are perhaps not surprising in light of the value that the mathematical community is inclined to place on the creation of new mathematics at the expense of the communication and preservation of the old (but I read these words with some alarm in view of the student's chosen vocation).

This same student speculated further that Hypatia's memory is kept alive solely for the polemical purpose of discrediting the claims of Christianity. Dzielska's first chapter, "The Literary Legend of Hypatia," tends to bear witness to the student's glib assertion. Hypatia came to life in European literature during the 18th century, and the story of her death has been used over and over again, with extreme license, by critics of the Church to the present day. More recently, Hypatia has been claimed by feminists; the image of a woman scientist martyred by a mob of Christian men has been used to dramatic effect. What is much less widely known is that the legend of the Roman Catholic saint, Catherine of Alexandria, borrows heavily from the legend of Hypatia (see pp. 12 and 21 of the book under review), which seems peculiar in light of the numerous ways in which Hypatia is identified as a victim of Christianity.

In her second and third chapters, Dzielska paints a picture of Hypatia and her role in the cultural and political life of Alexandria that helps to explain the seemingly contradictory polemical purposes to which her life story has been put. Through the eyes of her students, whose letters to and about her have been preserved, Hypatia emerges as a revered teacher of philosophy and mathematics, a member of the Neoplatonist school, and as such, a respected teacher of Christians, pagans, and possibly Jews. In the fourth and fifth century A.D., Alexandria was under the rule of a Roman prefect. Christianity was the official state religion, and religious matters were overseen by the bishop. Despite the official preeminence of Christianity, other beliefs and practices were tolerated to varying degrees. This mood of tolerance began to decline under the bishopric of Cyril, which began in 412 A.D. Cyril's ascendance was a matter of violent dispute in Alexandria, and there was great enmity between Cyril and Orestes, the civil prefect, a professing Christian. Dzielska argues that it was the friendship between Hypatia and Orestes that angered Cyril, leading him to conduct a propaganda campaign against her, discrediting her as a witch. Her brutal death at the hands of a mob of monks, while not clearly instigated by Cyril, was carried out by a group that was loyal to him.

While Hypatia's murder was the misogynist act of a Christian mob, Dzielska's book makes it clear that it is misleading to portray Hypatia's death as the violent defeat of the female and non-Christian by the male and Christian. Christian men were at least as numerous among the supporters and admirers of Hypatia as among her opponents. It is probably more instructive to draw parallels to life in modern Belfast, Beirut, or even Sarajevo (as Deakin is inclined to do in [1], page 236), than to portray her death as the result of a sharply delineated ideological or religious conflict.

It is often difficult to describe to students, accustomed as they are to the compartmentalization of the disciplines, that in Greek civilization the borders between philosophy, religion, mathematics, and astronomy were far less distinct than now. Since Dzielska is a cultural historian, her emphasis is on the aspects of Hypatia's work that are clearly philosophical. Dzielska identifies Hypatia's main philosophical concerns as "ontology and ethics," portraying the "mathematical sciences" as being "auxiliary to metaphysical knowledge" (p. 54). On the other hand, Deakin (as a mathematician and historian of mathematics) asserts that Hypatia was known first and foremost as a teacher of mathematics — her work in astronomy and philosophy being somewhat subordinate to this — and secondarily as a commentator upon the works of earlier Greek mathematicians ([1], pp. 237–8, 241–2). It is from this tension between Dzielska's cultural/philosophical viewpoint and Deakin's more explicitly mathematical perspective — clearly reflected in Deakin's own recent review of Dzielska's book ([2]) — that the clearest picture of Hypatia that we have had to date begins to emerge.

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DID MARIE CURIE'S VISITS TO AMERICA OPEN DOORS FOR WOMEN OR SLAM THEM SHUT?   (part IV of IV)

Now I will return to the question I posed at the beginning of my talk: what good did Marie Curie's hugely publicized tour do for women, particularly for women in science? Rossiter claims they set an impossible standard. But I believe the facts suggest otherwise. In 1920, the year before Marie Curie first visited, forty-one women in America were granted Ph.D.'s in science. In 1932, following her visits of 1921 and 1929, there were 138. And while, as Rossiter points out, the women's doctorates didn't earn them the jobs they deserved, the fact remains that many more women were choosing to go into science. It is possible that Curie's visit inspired them.

Nor is it fair to suggest, as Rossiter does, that Marie Curie was unsupportive of individual women aspiring to a career in science. "What," asks Rossiter,

> had Madame Curie's career "shown?" Had she "proven" anything about women's abilities, careers, or prospects in science? ... Had she really, as so many speakers would say, "opened" any "doors" for women in science? Had she, for instance, reserved a place in her laboratory for women, American or otherwise?[37]

The answer to these questions is yes. As a teacher of young women at Sèvres, as a teacher of her own children and the children of her friends, as a trainer of *manipulatrices* during the war, she had demonstrated her sympathy for and solidarity with other women again and again. From the early days, her laboratory had hosted an unusual number of women, including Ellen Gleditsch, Eva Ramstedt, Sybil Leslie (who later worked in Rutherford's lab), and many many more. In 1931, for instance, out of the 37 researchers working at the Curie Institute, twelve — a remarkably high number for that period — were women. It is true that some of these women did the drudgery of the lab: the service of measurement against the radium standard and the lengthy and dangerous fractionations involved in purifying certain radioactive elements. But they also shared in the glory: Marguerite Perey started out as a test-tube washer and went on to discover the element

Francium. She became in 1961 the first women to enter the Academy of Sciences. And of course Curie's daughter Irène won a Nobel prize for her work on artificial radioactivity. Rossiter is right to point out that the Curie saga presented on her visit to America was "sanitized."[38] But her distaste for "one of the great publicity and fund-raising campaigns of the 1920's" seems to have blinded her, as it has others, to Curie's importance as a scientist and as an ally of women.

I think the greatest disservice done by the trip to America was not to women scientists, but to Curie's own reputation, especially among her peers. Because she became so famous and such an icon, she is sometimes discredited by other scientists. And this trip, along were her daughter Eve's book *Madame Curie*, created a legend of a woman too good to be true — the kind of legend that incurs resentment and even gossip. A number of scientists told me, in the course of my research, that Curie was promiscuous, although there is absolutely no evidence of this. Also, the trips increased a tendency to link Curie's name with a cure for cancer — something which she cared about but was only peripherally involved with — as opposed to pure research, which is what she should be remembered for. To the extent that the American campaign conspired in creating a myth of a saintly mother and curer of cancer, an impoverished researcher, and a woman unlike other women, it did her a disservice. Marie Curie was a brilliant and original scientist, and it is for this that she should be remembered.

About the author

Susan Quinn has worked as a professional writer for the last 30 years. She began as a daily newspaper reporter on *The News Herald* outside Cleveland. In 1972, she published an account for young adults entitled *On Stage: The Making of a Broadway Play*. After moving to Boston, she became a regular contributor to an alternative Cambridge weekly, *The Real Paper*, and then a contributor and staff writer on *Boston Magazine*. In 1979, she won the Penney-Missouri magazine for an investigative article for *Boston Magazine* on dangerous cargo. She has written articles for many publications, including the *New York Times Magazine* and *The Atlantic Monthly*.

In 1987, she published her first biography, *A Mind of Her Own: The Life of Karen Horney*, to widespread critical acclaim. The following year, *A Mind of Her Own* received the *Boston Globe*'s Laurence L. Winship Award as the best book published during the previous year by a New Englander.

Talk delivered at Brandeis to the Women's Science Group by Susan Quinn, the author of Marie Curie: A Life.

For her current work, *Marie Curie: A Life*, she was the recipient of a Guggenheim Fellowship and a Rockefeller Foundation Bellagio residency. Ruth Lewin Sime, writing in *Science*, described *Marie Curie* as "an exemplary work, rich in the details and connections that bring a person and her era to life." She concluded, "It is certain to be this generation's biography of Marie Curie."

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18. "largest meeting": *New York Times,* May 19, 1921, 15:1.

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20. "the self-conscious": As quoted by Judith Magee. From "The Discoverer of Radium," *The Outlook,* May 25, 1921, no author.

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23. "the Madame": Badash, 346–347.

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37. " 'What,' asks Rossiter": Rossiter, 125.

38. "sanitized": ibid., 125.

SURVEY SUBJECTS SOUGHT

If you are a woman who finished her undergraduate work in the fifties, spent some time away for the work force, and then went on to get an advanced degree in science or engineering, we hope you will agree to complete a brief questionnaire. The information will be used only for research and will be kept completely confidential. Contact: Professor Roberta E. Madison, Epidemiology, Department of Health Science, California State University at Northridge, Northridge, CA 91330, fax: 818-885-2045, email: Rmadison@huey.csun.edu; or Professor Nancy G. Berman, Biostatistics, Department of Pediatrics, Harbor-UCLA Medical Center, 1000 W. Carson Street, Torrance CA, 90509, fax: 310-476-4582, email: Nberman@ucla.edu.

PEOPLE TO PEOPLE

Some sixty representatives of the American mathematical community were among the more than five hundred women and a few men who flew to Beijing in August of last year for the U.S.–China Joint Conference on Women's Issues, sponsored by the Citizen Ambassador Program of People to People International in conjunction with the China Women's Association for Science and Technology (CWAST). This was the first of three conferences that would in the space of two weeks bring more than thirty thousand women to China.

Established originally as a government entity by President Eisenhower but now a private organization, the Citizen Ambassador Program remains dedicated to Eisenhower's belief that there will never be peace until the peoples of the world get to know one another.

Alice T. Schafer (Marymount University and Wellesley College), who had earlier led a similar group to China ("Women in Mathematical Research"), headed the Science and Mathematics Section, the largest of the eleven formal sections at the conference. Chinese participants in the section were led by Xiao Ling, a research fellow in the Institute of Mathematics of the Chinese Academy of Sciences and an associate professor at Beijing Normal University. A specialist in partial differential equations, she has been a visitor at Brown, Rutgers, Washington, Indiana, and the Courant Institute.

The dynamic Madame Wu Ganmei, secretary general of CWAST and executive director of the Nongovernmental Organizations (NGO) Forum on Women, which was to begin in only a few days, presided at the opening plenary session at Friendship House. Delegates were welcomed by the president of CWAST, Dr. Xie Xide, a physicist and a former president of Fudan University who took her doctorate at M.I.T.

Dr. Xie (Chinese surnames come first) was also in attendance at the first working session on Women in Science and Mathematics. Schafer, a founding member of the Association for Women in Mathematics, opened the session by describing successes of American women mathematicians in the last twenty-five years: "Some with the help of men

mathematicians who believe in fairness, and some with the help of the organizations which have been formed to aid in these endeavors." She was followed by Pao-sheng Hsu (University of Maine), the assistant chair, who addressed the diverse audience on "Building a Community of Mathematicians, Mathematics Educators, and K–12 Teachers."

Mathematics Empowers Women was the theme of the section. A banner bearing those words was displayed at the front of the meeting room. Another theme, pointed out by one of the speakers, might have been expressed by the Chinese character for "Crisis," which implies "Opportunity."

Presentations by Americans alternated with those by Chinese. Since the Americans included representatives from business and industry as well as from secondary school, community college, and college and university faculties, their subjects were varied. Their Chinese counterparts, who came largely from Beijing Normal University, tended to concentrate on pedagogical problems. Americans more frequently treated technological developments in mathematics and mathematical research in other sciences, but the Chinese treated each of these subjects at least once. Wong Zu We from the People's Bank of China spoke on the use of the computer for researching numerical methods, while Ye Shuhua, director of the Center for Astro-Geodynamic Research, presented recent results in seismic research and urged greater international cooperation.

Americans also took up such currently popular educational concerns as self-mentoring, cooperative learning, dealing with nontraditional students, and innovative programming at community colleges. The Chinese, however, were well aware of the problems of women trying to pursue a career in science. Liu Xiufang of Beijing Normal University ("Women Can Get Ahead by Their Own Efforts") described winning "a garment award" — working on one occasion for forty-three hours straight — while writing her book on the foundations of probability.

As with the Americans, success for the Chinese was often ambiguous. Pointing out that 30% of the students in graduate classes are now women, Hwang Hai Yang, also of the Normal University, had to add that as a result of "economic reform"

men are leaving mathematics for better paying jobs. Other pedagogical concerns treated by the Chinese were "The Method to Guide School Girls to Master Mathematics," "Teachers' Influence on Learning Mathematics in Secondary Schools," "Paving Stones on the Road to Science," and "Better Ways to Teach College Mathematics." What emerged most strongly from these talks was a rueful recognition by the Americans of the commonalty of problems in bringing women successfully into mathematics.

The concluding Chinese speaker was Wang Chang Pei, dean of the Department of Mathematics at the Beijing Institute of Education. Crediting the reading of Freeman Dyson's *Disturbing the Universe* for some of his ideas, he proposed a "paradigm revolution" in mathematics education for the twenty-first century that would change the "color" of the subject from gray (military camp) to green (garden, "useful and enjoyable"), with increased concern for the individual while maintaining a balance between the needs of the individual and of society.

Although the Americans had looked forward to roundtable discussions with their Chinese counterparts, the size of the section precluded these. Also disappointing was the fact that while four talks given in Chinese were translated, no Chinese translator was provided for talks in English, the size of the section being again responsible.

Because of People to People's long rapport with CWAST, its delegates did not generally experience the frustrations and surveillance reported by other groups. An exception occurred in connection with their attendance at the opening ceremonies of the NGO Forum on Women, a spectacular and moving celebration for which the women's symphony and chorus and hundreds of Chinese young people had been preparing for two years. On that occasion some identification badges were arbitrarily held up or not issued; and those who did attend (sometimes simply borrowing the badges of others) were examined with metal detectors on entering the Olympic Stadium, their bags opened and — with the temperature in the 90's — their water bottles confiscated. Once inside, however, they found themselves seated on the fifty-yard line, in the shade, and in much more comfortable seats than those on the other side of the stadium.

A contingent from People to People went the following day by bus to participate in NGO sessions in Huairou, the smaller city to which the Chinese government had consigned that less favored group. (First Lady Hillary Rodham Clinton also travelled to Huairou to speak there as well as in Beijing, where she addressed the United Nations Fourth World Conference on Women.)

Patricia Kenschaft (Montclair State University) and Frances Rosamond (National University) had campaigned unsuccessfully to have the MAA send representatives to the NGO conference, but they were able to send to China two banners with the words "Mathematics Empowers Women." The second of these was taken by Schafer, Hsu, and Mary Steen to Huairou, where it was displayed in the Once and Future Pavilion as a reminder that women are empowered by mathematics.

People to People closed with an opportunity for delegates to visit their choice of such Chinese institutions as the Beijing Institute of Technology, the West District Residential Community, the Xiyuan Traditional Chinese Medicine Hospital, the Teaching Hospital of Beijing Medical University, the Beijing Arts and Crafts School, and Beijing University. The latter institution, founded in 1898 as the Imperial University, now has twenty-eight departments offering undergraduate and graduate programs, twenty-seven research institutes, and twelve interdisciplinary research centers as well as a school for adult education.

In spite of the heavy schedule, the delegates still had time to visit the Great Wall and the most famous tourist sights of Beijing, as well as to shop in the Friendship Store and the Antique Lane, cope with Chinese taxis, attend Peking Opera, and enjoy a free evening on the town (which many of the younger delegates spent at the Hard Rock Cafe).

There had been excitement and delay at the beginning of the trip when Harry Wu was unexpectedly returned to the U.S. on the chartered plane on which most of the delegates were scheduled to leave, but the return flight of eleven hours and fifteen minutes brought them back to San Francisco on time on September 2 — before, according to the calendar, they had left China.

> **JULY–AUGUST DEADLINE:**
> Please submit *Newsletter* material by May 17 for the next issue if possible. Our production schedule is tight due to vacations and meetings.

UPDATE ON ROCHESTER

Memorandum to College Faculty

The Rochester Renaissance Plan, which we announced last November, is aimed at bringing the College into a state of fiscal stability by emphasizing quality in everything we do at the undergraduate level and by building on our strengths at the graduate level. Quality at the undergraduate level, both in the short term and in the steady state, can best be achieved, in our judgment, by reducing the size of the undergraduate student body by 20%. In turn, reductions in faculty size, though only 10%, were required to reach fiscal stability, and we targeted those reductions rather than spreading them across all departments and programs. It is our strong belief that a College with fewer graduate programs, but of higher average quality, will enhance our institutional reputation far more than a College with a greater number of graduate programs of lower average quality.

These premises were reinforced in our discussions with you over the course of the past eighteen months, as we gathered information about the ways in which we should think about making changes necessary for fiscal stability and institutional growth in the future. And with the full backing of the Board of Trustees, and the commitment of the Trustees to support the investment and stability necessary to plan for a reenergized future, we believe that the Renaissance Plan is an important step forward for the institution. The Plan itself is a mosaic, with a number of interrelated pieces — thus the undergraduate curricular changes tie together appropriately with the decision to reduce the size of the student body and with the reexamination of residential life currently taking place....

While our decisions with respect to suspension of admissions to four graduate programs, and the refocusing of several others, were painful ones, it is clear that the suspension of the Ph.D. program in mathematics, and its associated reduction in faculty size from 21 to 10, was the most controversial and, to many external observers at least, the most counterintuitive. Arguments have been made that a research university without such a program cannot mount successful graduate programs in related disciplines (science, engineering, and the quantitative

social sciences) and that advanced undergraduates will be deprived of high quality mathematics instruction. Similarly, it has been argued that mathematicians are best able to meet the needs of undergraduate non-math majors who are the primary enrollees in calculus and related service courses.

We have in a previous memo addressed these arguments and do not need to belabor them here. But it is important to reemphasize the decision-making matrix of the Renaissance Plan. In addition to the overall fiscal goal of the Renaissance Plan, which included a reduction of 37 faculty positions (or FTE's) in the College and 20% of the current graduate student population (or their dollar equivalents), we also identified three areas of importance for purposes of evaluating any department at a university: (1) the quality of undergraduate instruction, including, where appropriate, the quality and fit of service courses to the needs of undergraduates and to other departments; (2) the quality of the Ph.D. program; and (3) the presence of actual linkages to other appropriate departments, both in research and in graduate-level instruction.

A welcome product of the Rochester Renaissance Plan was a series of unprecedented conversations involving selected mathematics faculty and the central administration, as well as discussions between those faculty members and colleagues in other departments. We now believe that we can work constructively with the mathematics department to address our concerns about mathematics without sacrificing the overall fiscal goals of the Renaissance Plan — goals that we must adhere to if the Plan is to succeed. Moreover, we can accomplish this without an involuntary tax on other departments and programs in the College — an issue of paramount importance, as we believe it fundamental to the Plan's success that we provide planning stability to departments and programs as well as an assurance that no further retrenchments will occur in the next five years.

We want to be clear that our revised stance on mathematics is predicated on two fundamental facts. First, the Renaissance Plan recognized the necessity for new thinking in areas of undergraduate instruction and programmatic linkages and retained resources precisely for these purposes. Second, the faculty in mathematics have recognized our concerns, and those of faculty in other departments, and

From: Richard N. Aslin, Thomas H. Jackson, and Charles E. Phelps; Re: Revitalizing Mathematics; March 28, 1996

are dedicated to dealing with them in a comprehensive manner and with a constructive spirit. With that active cooperation of the mathematics faculty, we now believe a superior plan can be implemented at little or no additional cost; one that not only is fully consistent with the goals of the Renaissance Plan but that can enhance its underlying objectives.

Our revised plan includes components that deal with the three areas of concern we identified (and listed above: service courses, a quality Ph.D. program, and linkages). First, the Renaissance Plan had allocated resources for five non-tenure track faculty to serve as instructors in the mathematics service courses. These faculty would not have been hired until the tenure-track faculty in mathematics had fallen below 15 FTE's. The Plan had also allocated sums to provide recitation sections by employing a combination of graduate students in other departments, upper-level undergraduates, and faculty (tenure and non-tenure track) in the mathematics department.

We are now convinced, based on a commitment from the mathematics department, that the hiring of non-tenure track faculty will not be necessary to meet the goals for our undergraduate service courses. Recognizing that new efforts needed to be made to design courses appropriate for non-math majors in other user departments, the mathematics faculty has now dedicated itself to a fresh and innovative look at the delivery of service courses. A committee chaired by Professors Ravenel and Gage has pledged itself to work closely with faculty in the user departments to optimize the delivery of excellence in undergraduate mathematics. Among issues under consideration are calculus sections tailored to the needs of specific non-math majors. In turn, the Dean's office has pledged to work closely with the mathematics department and other disciplines to ensure that such cooperative efforts do not flounder again. Thus, we are prepared to adjust the steady-state size of the faculty in mathematics from 10 to 14 FTE's. Note that this adjustment is financially neutral, assuming that a non-tenure track faculty member is on average somewhat less costly than a tenure-track faculty member. It is thus consistent with the fiscal goals of the Renaissance Plan, and holds out the substantial promise of adding to its educational and quality goals.

Second, the mathematics department has requested that it be allowed to reactivate a carefully-crafted Ph.D. program with substantially reduced expenditures for graduate stipends. The incremental faculty resources mathematics believes would be required to mount a small Ph.D. program is one additional FTE (for a total of 15 rather than 14), in addition to stipend support appropriate for the reduced-size program, and netting out resources that otherwise would need to be targeted for recitation sections if there were no Ph.D. program. Under the tight constraints of the Renaissance Plan, even this modest increment of one FTE plus graduate stipends raises the incremental resource question — an issue to be addressed below. A prior question, however, is whether a smaller faculty can mount a Ph.D. program of distinguished quality. We know that small programs can gain substantial national acclaim, as a number of Rochester's Ph.D. programs attest, and there are similar examples of small but highly-acclaimed math Ph.D. programs at other universities. But we believe, and the mathematics department concurs, that gaining the appropriate quality level within the resource constraints under contemplation will require planning, careful execution, and appropriate monitoring.

Third, one of the necessary enhancements, for the benefit of all, is the development of true formal linkages between mathematics and other departments and programs in the College. We believe, and the mathematics departmental leadership concurs, that developing these linkages will be central to the establishment of a Ph.D. program that is both of high quality and contributes in a meaningful way to the overall missions of the University. Moreover, solid linkages are also the vehicle by which necessary incremental resources for any Ph.D. program in mathematics can be found.

We believe that, at this stage, reinstatement of a mathematics Ph.D. program, being run on a substantially smaller scale than before, fits within the basic goals of the Renaissance Plan. First, enhanced quality in undergraduate instruction has very high positive value, both intrinsically and for all the financial and programmatic goals of the Renaissance Plan. Second, the benefits of linkages with other departments are clear, but need to be actual, not theoretical. Concrete steps are now ready to be taken in this direction. In particular, the Department of Physics and Astronomy has made an important commitment to two future joint appointments (one FTE) with mathematics for the purpose of encouraging more active future interaction among faculty in these two departments. With such contributions, in addition to the conversion of non-tenure track instructor lines into tenure-track faculty lines and

non-math recitation instructors into math graduate student recitation instructors, and application of special research resources contemplated for departments without a Ph.D. program, there will be no detrimental impact on other departments, either next year or in the future, and the important stability of the planning horizon called for by the Renaissance Plan will remain as promised. In sum, the College will have gained improved mathematics instruction for non-math majors as well as a reenergized Ph.D. program with a department almost 30% smaller than the current size (15 rather than 21 FTE's). It is fiscally prudent and educationally sound.

Because this decision regarding mathematics was reached after a period of internal and external controversy that spanned the graduate recruitment period, attempting to enroll any new graduate students in mathematics for the upcoming year would be a case of too little, too late. However, this enables us to have a six-month planning horizon that can and should be taken advantage of so that we can put in place a new Ph.D. program for the class entering in the Fall of 1997.

The mathematics department has agreed to develop, in close coordination with the Dean's Office, concrete plans for its Ph.D. under these new conditions. We stand prepared to provide the resources outlined here once this plan has been formulated. As noted, virtually all of the necessary resources for this rescaled program will come either from instructional resources contemplated by the Renaissance Plan or from other voluntary departmental contributions, most notably the important agreement of Physics and Astronomy to joint appointments.

Following an affirmative vote of the mathematics faculty, Doug Ravenel has agreed, effective July 1st, to assume the chairmanship of the department. In that position, he has agreed to work aggressively with other departmental leaders towards these mutually agreeable goals, which include enhanced undergraduate mathematics instruction for non-majors, systematic linkages with other departments, and a small Ph.D. program of distinction.

With these prospects, and with clear recognition of the importance of mathematics to the undergraduate curriculum, we are committed to maintain and elevate the quality of mathematics at all levels. We are especially encouraged in the understanding of and commitment to these principles by the mathematics department, whose leadership has dedicated itself to the highest standards of undergraduate and graduate teaching. We are confident that these cooperative efforts will ensure a future for mathematics in which the University can take pride in its undergraduate and graduate programs alike. And we are pleased at the prospects — for mathematics as well as the College generally — suggested by enhanced linkages between mathematics and other science, engineering, and quantitative social science disciplines.

We believe this is the right move at this time for the College and the University. We have always believed that a revitalized mathematics department would make us a stronger university, and we now have the opportunity to work towards that goal. It should both be viewed as a satisfactory step by those who believed in the intrinsic importance of a Ph.D. program in mathematics, while also fully consistent with the operating premises, and constraints, of the Renaissance Plan, on which the College's future so clearly rests. It is also consistent with the resolution recently passed by the Faculty Council, both in the reinstatement of mathematics' Ph.D. program and in its working within the Renaissance Plan's resource constraints.

The original steps in the Renaissance Plan were taken with the belief that the necessary improvements and changes could not and would not be met without a wholesale reorganization of business as usual. We now believe that we can retain the best features of the current mathematics department and, working closely with the department's leaders and the other College departments, make the department and its products even better on the dimensions of quality, calculus, and linkages, while staying within the general financial constraints of the Renaissance Plan on which the College's future is being built.

Rochester Enhancing Math Programs

The University of Rochester's mathematics department will implement a comprehensive proposal jointly developed by the administration and key faculty in the department, with input from leaders in other departments as well.

The mathematics faculty has agreed to a sweeping review of the courses it offers to undergraduates not majoring in mathematics and of the department's linkages with the research specialties of

faculty in other departments. The department also will develop a new Ph.D. program in mathematics. Last November, the program was suspended and the projected faculty size was slated for a significant reduction. The new proposal is enabled in part by resources provided by the Department of Physics and Astronomy, which will contribute through future joint appointments with mathematics.

President Thomas H. Jackson said that the new arrangement, crafted in discussions among key faculty in the math department, other departments (notably Physics and Astronomy), and the administration, meets both the financial and instructional quality goals outlined in the "Renaissance Plan" for the College, announced last November. The five-year plan strengthens and refocuses core programs in arts, sciences, and engineering. With the entire array of undergraduate programs retained, the plan calls for a smaller, more selective student body, new investments in campus facilities and residential life, and a renewed dedication to the core principles of the goals of the College, as exemplified in the College's new curriculum.

"I am happy to say that the Renaissance Plan led to a series of unprecedented conversations between math faculty and the administration, and between math faculty and their colleagues in other departments," Jackson said. "That, in turn, led to the Department of Physics and Astronomy's offer to promote linkages by joint appointments, and a new dedication on the part of the mathematics faculty to strengthen undergraduate instruction and their ties to other departments, in concert with all of our other efforts."

"The mathematics department fully supports this plan," said Joseph Neisendorfer, department chair. "It provides both an opportunity and a challenge to the mathematics department. We are enthusiastic about the prospect of introducing some significant innovations which promise to diversify and enhance the undergraduate experience in mathematics. I am grateful that the administration has provided us with the opportunity to do this within the context of a graduate program of high quality."

"This is an important development for the University," added mathematics professor Douglas Ravenel. "I am glad to see it is renewing its commitment to mathematics, a subject lying at the heart of modern science. Excellence in math at all levels is a vital asset for any research university."

The new proposal includes the following key developments:

- Faculty in the Department of Physics and Astronomy have agreed to two future joint appointments with the Department of Mathematics. This effectively provides funding for one additional position to the mathematics department, as well as promoting tangible linkages between these fields.

- Mathematics faculty have offered to develop a plan for a smaller, high quality Ph.D. program, which they could operate with a reduced number of faculty. (The Renaissance Plan had called for the number of tenure-track mathematics faculty to decline from 21 to 10, with the ultimate addition of four to five non-tenure track faculty to teach undergraduate mathematics courses for non-math majors. Under the new proposal, the mathematics departmental size would be set at an ultimate target of 15 tenure-track faculty members, and there would be no hiring of non-tenure track faculty for instructional purposes.) The new Ph.D. program is to be planned out during the next six months and would be available to doctoral students in the fall of 1997.

- Mathematics faculty have agreed to form a committee to work with other departments on improving the teaching of undergraduate mathematics, especially calculus, for non-math majors.

- The mathematics department has elected a new chair, Douglas Ravenel, who is charged with implementing the instructional program and the renewed linkages with other departments.

"This is a solution that fully meets the goals of the Renaissance Plan — the bottom line, as before, is that we will increase the quality of our programs within our overall budget targets — and, obviously, it is a happier solution for the mathematics faculty," Jackson said. "It will add luster to our undergraduate program and work to enhance intellectual cooperation across disciplines while implementing a Ph.D. program of distinction. I am pleased that their active cooperation — and that of the Physics and Astronomy Department — now enables us to move forward in this direction."

He said that Charles E. Phelps, University provost, and Richard N. Aslin, vice provost and dean of the College, have also endorsed the new proposal, as has the Executive Committee of the University's Board.

PROGRAM AND CONFERENCE ANNOUNCEMENTS

The IMA will hold a three-week program on Mathematical Modeling, July 29 through August 16, 1996. The program is designed for college and university instructors and graduate students. Participants will work in teams guided by a senior scientist with experience in modeling and contact with industrial problems. Experience will be provided in the use of mathematical modeling to solve problems from industry and engineering. Instructors can then use their experience and newly acquired skills in the enrichment of existing math courses or the development of new courses in math modeling. For graduate students, this is an ideal way to learn aspects of industrial research and problem solving. For application information, see the display ad in this issue or write by **May 16** to Mathematical Modeling, Institute for Mathematics and its Applications, 514 Vincent Hall, University of Minnesota, Minneapolis, MN 55455; email: staff@ima.umn.edu.

The IMA will hold a two-week program on Emerging Applications of Number Theory, July 15–26, 1996. The first week will concentrate on quantum mechanics, including the distribution of energy levels and eigenfrequencies, as well as their relation with the classical periodic orbits (through the trace formula). The second week will be on graph theory and will concentrate on the use of number theory to construct graphs having desirable features such as the expansion property. For further information, write to IMA at the addresses above.

The Calculus Consortium based at Harvard University, in conjunction with the National Science Foundation and John Wiley and Sons, Inc., will host The Fifth Conference on the Teaching of Mathematics on June 21–22, 1996 in Baltimore, MD. This year's conference will continue to broaden its focus to include mathematics that precedes and follows calculus, including their relationship to other disciplines. A program of invited speakers, panels, and contributed papers will provide something of interest for everyone involved in the way mathematics is taught. On June 20, faculty training workshops will precede the conference. Unlike the conference, the workshops focus specifically on the Consortium's approaches and materials. For more information on the conference, write: Jay Kirsch, John Wiley & Sons, Inc., 605 Third Avenue, 5th Floor, New York, NY 10158. For more information on the workshop, contact: Herman O. Sudholz, Calculus Consortium, Science Center #325, One Oxford Street, Harvard University, Cambridge, MA 02138; 617-496-5421; calculus@math.harvard.edu.

The American Institute of Mathematics presents "In Celebration of the Centenary of the Prime Number Theorem: A Symposium on the Riemann Hypothesis" from August 12–15, 1996, in Seattle, Washington (immediately following the Seattle Mathfest). One hundred years ago Hadamard and de la Vallée Poussin independently gave the final arguments in the proof of the Prime Number Theorem. They followed a plan that had been mapped out by Riemann some 36 years earlier. However, Riemann's goals for understanding the prime numbers are still not realized, as the famous Riemann Hypothesis remains tantalizingly unsolved. Conference speakers will present interesting developments that have arisen from Riemann's original work, with an eye toward understanding future research directions regarding the zeros of the Riemann zeta-function and related L-functions. The symposium will start with a special historical lecture on the Prime Number Theorem by Professor Atle Selberg on Monday, August 12 at 5 P.M.

We anticipate having funding to assist the attendance of graduate students and young mathematicians. For further information, see the Web site http:// www.math.okstate.edu/ ~conrey/rh-conf.html or contact Jennifer Gibson, Department of Mathematics, Oklahoma State University, Stillwater, OK 74078, gibsonj@math.okstate.edu. The conference organizers are Brian Conrey and Amit Ghosh, Oklahoma State University; Doug Lind, University of Washington; and Steve Sorenson, American Institute of Mathematics.

"Women Leading: Today and Tomorrow" is the 12th annual national conference for college women student leaders. Sponsored by the National Association for Women in Education (NAWE), it will be held June 6–8, 1996 at Georgetown University, Washington, DC. The registration fee before **May 17** is $295 and after, $345. For further information, contact: NAWE, 1325 18th Street, NW, Suite 210, Washington, DC 20036; phone: 202-659-9330; fax: 292-457-0946; email: nawe@clark.net.

POSTDOCTORAL FELLOWSHIPS

The Alfred P. Sloan Foundation and the U.S. Department of Energy believe that a nexus with exceptional scientific potential is emerging between the powerful theoretical and practical tools of molecular biology and the revolutionary power of modern computational techniques. However, too few scientists possess the cross-disciplinary skills in both molecular biology and computation that are needed to further such advances.

The purpose of these fellowships is to catalyze career transitions into computational molecular biology from physics, mathematics, computer science, chemistry, and related fields. Ideal candidates will have strong educational backgrounds in such fields and wish to bring these backgrounds to bear upon computational molecular research questions.

The focus of this program is upon those aspects of computational molecular biology related to data and information resulting from the study of human and other genomes. Of special interest are important problems in structural biology and genome analysis, including analysis of protein and nucleic acid sequence, protein and nucleic acid structure, genome structure and maps, cross-species genome analysis, multi-genic traits, and structure-function relationships where the structures are from genomes, genes, or gene products.

Awards will support up to two years of research work in an appropriate molecular biology department or laboratory in the U.S. or Canada selected by the applicant. There are no formal application forms needed for this program. Up to 10 fellowships will be granted during 1996, each with a total budget of $100,000 (including indirect and overhead costs, which together will be limited to 15% of direct costs). These funds are to be spread over a grant period of two years ($50,000 per year). The deadline for receipt of all application materials from applicant, sponsoring scientist, and related reference letters is **August 1, 1996** (firm). Announcements will be made by November, 1996.

For more information, write Dr. Michael S. Teitelbaum, Sloan-U.S. Department of Energy, Joint Postdoctoral Fellowships in Computational Molecular Biology, c/o Alfred P. Sloan Foundation, 630 Fifth Avenue, Suite 2550, New York, NY 10111-0242.

IMU ON THE WWW

The Konrad-Zuse-Zentrum fuer Informationstechnik in Berlin (ZIB) has been working together with the Executive Committee of the International Mathematical Union (IMU) to compose a homepage for IMU at http://elib.zib-berlin.de/IMU. Gopher access is possible via gopher://elib.zib-berlin.de:70/11imu. The IMU server can be accessed via telnet as follows: telnet elib.zib-berlin.de, login: imu, no password required.

We hope this WWW home page will serve several purposes. The first is to inform all members of the international mathematical community of what the IMU is doing. Secondly, they can find there descriptions of various programs from which they can benefit: the IMU lectures, exchanges with the developing countries, conferences being sponsored, etc.

Thirdly, the IMU server is also a collection of data that everyone can use to find the addresses of the main mathematical organizations of the world. We are planning to extend the scope of the IMU server so that it will become a true "home page of the world of mathematics". You can already find a number of links to mathematical and mathematics related information offered around the world. Just look at the "Links to the Mathematical World" in the IMU server.

Fourthly, the IMU server will give everyone immediate access to the latest information on the next International Congress (ICM98 in Berlin), as well as the ability to preregister for this congress by the WWW server of ICM98. It can be "clicked" in the IMU server or directly accessed through the following URL: http://elib.zib-berlin.de/ICM98.

The ICM98 server contains a form page for preliminary preregistration. This is not formal registration yet. Everybody preregistered for ICM98 will be automatically informed in the future about the progress of the organization of the congress by email and will receive final registration materials this way. Please encourage your colleagues interested in ICM98 to preregister for the congress.

Whoever has no access to advanced Internet tools can send an email to the address icm98@zib-berlin.de, putting "preliminary preregistration" on the Subject line. Include the following information in the body of the mail: Last Name, First and Middle Name, Email, Phone Number, Fax Number, Institution, Street, ZIP Code, City, Country.

APS CENTENARY

In 1999 the American Physics Society will celebrate its centenary with many events, including exhibits on the history of physics. Women have disappeared in the history of physics, though many have made important contributions in the last 100 years. The Committee on the Status of Women in Physics (CSWP) is initiating a project entitled "Women's Contributions to Physics 1898–1998" in order to fill in the blanks. (The starting date is important because Marie Sklowdoska Curie's first great papers were published in 1898.)

A database needs to be developed for this project. There are many great discoveries made by women in addition to those of Marie Curie that should be documented, e.g., those of Lise Meitner, Emmy Noether, Dorothy Crowfoot Hodgkin and many others.

Often women were not acknowledged when they should have been, e.g., because they did not occupy appropriate positions in the universities and/or laboratories in which they worked. For the women mentioned above the record is being put straight. But there are other cases which should be brought to light. Volunteers are needed for the effort.

For more information, contact Professor Nina Byers, Physics Department, UCLA, Los Angeles, CA 90024, byers@physics.ucla.edu.

WATER OVER TIME

Sharon Glassman is a New York-based writer/performer who is now touring "Water Over Time: A Monologue of Women and Science" to theaters and universities across the country. Her goal is to start a dialogue about women and science among scientific and non-scientific audiences. Sylvia Wiegand enjoyed the performance at the NSF Conference on Women and Science very much.

"Water Over Time" is the story of two women, the Narrator, a modern-day woman who thinks of herself as anything *but* a scientist, and Laura Bassi, the 18th century Italian physicist who was the first female professor of science in Europe. When Bassi shows up in the Narrator's basement laundry room one night, the Narrator is not impressed. "Of all the famous people in the world," she asks, "why did I end up with you?" As the two women continue to meet, Bassi uses the details of her life story to tempt the Narrator into seeing the world with a scientist's eyes. But will the Narrator ask Bassi the right question in time?

The character of Laura Bassi is a "quantum" portrait created from research in the archives of the University of Bologna and from interviews with contemporary female physicists. This technique lets Bassi's story literally cross time and space.

For more information, contact Sharon Glassman, sharong127@aol.com.

SCIENCE IS WOMEN'S WORK!

"Science is Women's Work!" the magnet proclaims. Colorful posters and biographies galore, along with videos, reference books, and activity guides are readily available to prove that point. An excellent array of choices are included in the latest Women's History Catalog.

"More girls are attracted to science and mathematics classes when we introduce them to women who have been stellar figures in those fields," advises Bonnie Eisenberg, Education Director at the National Women's History Project. "When they see women's faces on posters and read about their lives and work, it becomes clear that these are fields that are thoroughly appropriate to explore ... and enjoy!"

For a copy of the 48-page Women's History Catalog, contact the National Women's History Project, 7738 Bell Road, Dept. P, Windsor, CA 95492, 707-838-6000.

CORRECTION

EQUALS and Family Math were mentioned in the November–December *Newsletter*. Both programs are indeed at Lawrence Hall of Science, but of course the location is Berkeley (just down the hill from MSRI), not Oakland. The LHS web page is http://www.lhs.berkeley.edu/.
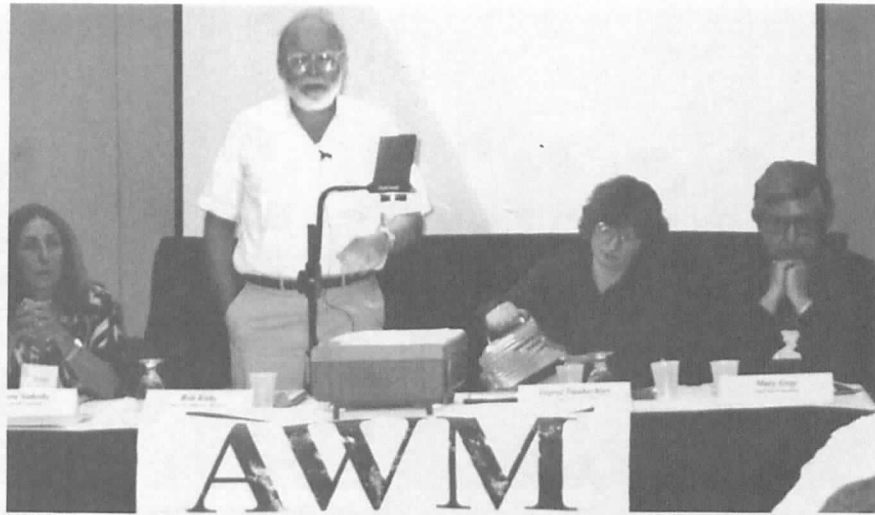
AWM IN

AWM President Chuu-Lian Terng (Northeastern University),
Hay Award recipients Judith Roitman (University of Kansas) and
Glenda T. Lappan (Michigan State University)

Cathleen Morawetz (AMS President, Courant Institute),
Olga Oleinik (Noether Lecturer, Moscow State University),
Chuu-Lian Terng (AWM President, Northeastern University)

ORLANDO

Panel, "Affirmative Action: A Look Back and a Look Ahead":
Cora Sadosky (Howard University), Rob Kirby (UC, Berkeley),
Ingrid Daubechies (Princeton), Mary Gray (moderator; American University)

Many Past Presidents and a Newsletter Editor:
Carol Wood (Wesleyan), Cora Sadosky (Howard), Anne Leggett (Loyola Chicago),
Lenore Blum (MSRI), Alice T. Schafer (Marymount), Judy Roitman (Kansas)

AWM–ONR

Graduate Students: Front: Katrina Barron (Rutgers), Elizabeth Grossman (Chicago), Loredana Lanzani (Purdue), Margaret Symington (Stanford), Meeyoung Kim (Notre Dame), Naomi Klarreich (Rutgers); Back: Cora Sadosky (AWM Past President, Howard), Judy L. Walker (Illinois), Navah Langmeyer (Michigan), Tamara R. Lefcourt (Pennsylvania), Elizabeth A. Brooks (Duke), M. Jeannette Kelley (Rutgers), Yue Chen (Connecticut), Chuu-Lian Terng (AWM President, Northeastern)

Workshop Panel: Kate Okikiolu (UC San Diego), Susan Friedlander (Illinois at Chicago), Kathy Merrill (Colorado College), Chuu-Lian Terng (Northeastern)

WORKSHOP

Postdoctoral mathematicians: Elizabeth Kochneff (Eastern Washington),
Claudia Polini (Michigan State), Bryna Kra (Hebrew University),
Megan Kerr (Dartmouth), Katherine F. Stevenson (Maryland)

Postdoctoral mathematicians:
Wenxian Shen (Auburn), Ruth Michler (University of
North Texas), Chandni Shah (UC Riverside)

AWM Noether Lecturer
Olga Oleinik (Moscow State University) with
Elizabeth A. Brooks (Duke University) at her poster

25TH ANNIVERSARY LUNCHEON

NAM presents AWM with a citation: Sylvia Wiegand (AWM President-Elect, University of Nebraska), John W. Alexander, Jr., (NAM President, University of the District of Columbia), Chuu-Lian Terng (AWM President, Northeastern), Mary Gray (American University), Alice T. Schafer (Marymount University), Johnny L. Houston, (NAM Executive Secretary, Elizabeth City State University), Cora Sadosky (Howard University)

Alice T. Schafer (Marymount University), Kate Okikiolu (AWM 25th Anniversary Lecturer, UC San Diego), Cora Sadosky (Howard University)

AWM WORKSHOP: Focus on Reporting Research Results

held in conjunction with the SIAM Annual Meeting Kansas City, Missouri, July 22-26, 1996

Preliminary Schedule as of April 8, 1996

The Association for Women in Mathematics (AWM) plans a two-day event for the first two days of the 1996 Annual Meeting for the Society for Industrial and Applied Mathematics (SIAM). AWM and SIAM welcome your participation.

The event focuses on the reporting of research results and mentoring of graduate students and Postdocs. It includes a minisymposium which specifically addresses the topic of how to give an oral presentation, four research-focused minisymposia on control theory, inverse problems, dynamical systems, and stochastic processes, and one poster session. Participants will have an opportunity to meet one on one with established researchers and to receive feedback on the presentation of their own talks. Those attending the workshop events can interact with outstanding applied mathematicians from industry, government labs and universities over two informal lunches and a dinner where there will be panels on careers, on government funding and a Keynote speaker. **An important event at the dinner on Monday evening, July 22, will be the awarding of the Alice T. Schafer Prize.** This prize is awarded annually to outstanding undergraduate women for their accomplishments and promise in the field of mathematics.

Monday, July 22, 1996

8:00 a.m.   **Coffee and Registration**

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

One key to success in academe and industry is a person's ability to communicate with those around her. The relevance of excellent technical work must be actively revealed and not left to others. A mathematician enhances her technical achievement by developing additional organizational talents such as public speaking. A successful mathematician must be able to communicate in both informal and formal settings. This workshop will focus on how to develop the speaking skills and prepare for technical presentations that can be given comfortably and with confidence. The intended audience are graduate students or recent graduates who are at the beginning of their careers. The technical content will be assumed and will not be discussed. Speakers will discuss the construction of a presentation, preparation of the slides, as well as practical tips.

     Organizer: Rosemary E. Chang, Silicon Graphics Computer Systems

     Speakers: Margaret Wright, Robert Barnhill, David Lane (Times and Titles of talks: **TBA**)

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

12:45 p.m. - 1:30 p.m.   **Panel on Careers**

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

Natalia Berloff, Florida State Univ.	Lianfang Liu, Univ. of Rochester	Dorina Mitrea, Univ. of Minnesota
Monica L. Brodzik, Univ. of Pittsburgh	Laura Lochhead Rock, Univ. of Texas	Sharon Moulden, George Mason Univ.
Maria Do Carmo Carbinatto, Georgia Institute of Tech.	Maia Martcheva, Purdue Univ.	Kathleen A. Rogers, Univ. of Maryland
	C. Maeve McCarthy, Rice Univ.	Yanping Wang, New Jersey Institute of Tech.
Tamara L. Gibson, Univ. of Maryland	Cindy S. Miller, Univ. of Pittsburgh	Katherine Wyatt, City Univ. of New York
R. Clarissa Howison, Univ. of Cincinnati		

3:15 p.m. - 5:15 p.m.   **Inverse Problems**

Inverse problems arise in many areas of applications, such as electric impedance tomography, elastic impedance tomography, material science, seismology, radar, sonar and medical imaging. These problems are broadly divided into various classes, for example, inverse boundary value problems, inverse spectral problems and inverse scattering problems. In one class of problems, one or more coefficients in a differential equation or a number of matrix entries in a finite dimensional problem are unknown. Each of these unknowns may represent physical quantity, such as the electric conductivity of a medium, density stiffness or the sound speed in a medium. In another class of problems, scattering objects are unknown. The inverse problems are to recover the unknown parameters or the shape of obstacles from boundary measurements, the spectrum of a related operator, or the far field data. Many scientists, engineers and mathematicians have studied a variety of inverse problems and have successfully obtained some very satisfactory results. A primary goal of this minisymposium is to bring together women from a variety of mathematical disciplines who are working on inverse problems. The minisymposium will be focused on a number of open problems in several areas.

     Organizer: Changmei Liu, University of North Carolina

3:15 p.m.	Changmei Liu, Univ. of North Carolina	4:15 p.m.	S.K. Patch, Stanford Univ.
3:45 p.m.	Susan E. Minkoff, Univ. of Texas, Austin	4:45 p.m.	Lizabeth V. Rachele, Univ. of Washington

7:00 p.m.   **AWM Dinner Banquet and Awarding of the Alice T. Schafer Prize**

     Keynote Speaker: **Bozenna Pasik-Duncan**, University of Kansas *[see pre-registration information for more details]*

Tuesday, July 23, 1996

8:00 a.m.   **Coffee and Registration**

8:30 a.m. - 10:30 a.m.   **Applications of Control Theory**

Control theory involves inducing a desired behavior on a physical system. Applications arise in difficult areas, for example, in the stabilization of plates, beams and shells and in improving communications protocols for data transmission. The speakers will consider a variety of problems that can be modeled by partial differential equations, ordinary differential equations or discrete event systems. They will discuss recent theoretical developments and their applications to real-world problems.

     Organizers: Mary Ann Horn, Vanderbilt University; and Suzanne Lenhart, University of Tennessee

8:30 a.m.	K. Renee Fister, Univ. of Tennessee, Knoxville	9:30 a.m.	Renée B. Koplon, Wright State Univ.
9:00 a.m.	Nancy J. Lybeck, North Carolina State University	10:00 a.m.	Christine A. McMillan, Virginia Tech.

AWM WORKSHOP at the SIAM Annual Meeting

Tuesday, July 23, 1996 (continued)

12:00 p.m. - 12:45 p.m. **Lunch** *[see pre-registration information below for more details]*
12:45 p.m. - 1:30 p.m. **Panel on Government Funding**
3:15 p.m. - 5:15 p.m. **Geometric Methods in Dynamical Systems I**

Poincare introduced mathematicians and physicists to the power of qualitative techniques in the study of nonlinear dynamical systems. Differential geometry, differential and algebraic topology, and continuum theory are important tools in understanding the elements of modern dynamical systems theory. The availability of interactive dynamics software now allows scientists in virtually all fields to identify the complex structures described by topologists and geometers in models within their own specialties. The speakers will present theoretical results in the geometric and topological aspects of nonlinear dynamics.

Organizer: Kathy Alligood, George Mason University

3:15 p.m.	M. W. Brunzie, Montana State Univ.	4:15 p.m.	Jody Sorensen, Bates College
3:45 p.m.	Wai Chin, IMA, Univ. of Minnesota	4:45 p.m.	Yi Li, Univ. of Minnesota

In addition to the above Workshop events, AWM will co-sponsor a minsymposium with SIAM on Monday, July 22, 1996 from 3:15 p.m.- 5:15 p.m. entitled: **"New Models and Approaches for Stochastic Phenomena in Physics and Chemistry"** organized by Rachel Kuske, Stanford University; and Malgorzata M. Klosek, University of Wisconsin, Milwaukee. This minisymposium will focus on new models and techniques for stochastic processes in physical applications and emphasize the use of a complementary combination of analytical and numerical techniques.

REGISTRATION: There is **no registration fee for the AWM Workshop**. The panels, minisymposia and poster session are open to all. **Pre-registration for workshop lunch and dinner banquet tickets are strongly encouraged.** Tickets on-site will be very limited. Individuals who wish to attend the Schafer Prize session need to pre-register for the dinner banquet. Individuals can inquire about ticket availability at the AWM registration desk on Sun., July 21 from 5:00 p.m.-7:00 p.m. or on Mon., July 22 or Tues., July 23 from 7:30 a.m.-8:30 a.m. To obtain a pre-registration form for the meal functions, please contact the **AWM office, 4114 Computer and Space Sciences Bldg., University of Maryland, College Park, MD 20742-2461; 301-405-7892 or awm@math.umd.edu. Pre-registration deadline is: June 15, 1996.** For further information on the workshop, contact the workshop chairperson, Joyce McLaughlin (jmclaugh@querulous.cims.nyu.edu) or Dawn Wheeler at the AWM office (awm@math.umd.edu)

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FASHION INSTITUTE OF TECHNOLOGY (SUNY) - DEPARTMENT OF SCIENCE AND MATH - The Fashion Institute of Technology, a college of the State University of New York located in New York City, invites applications for a full-time tenure track faculty position at the level of instructor in its Science and Math department. Minimum academic requirements: 60 appropriate graduate credits, including master's or above in Developmental Math, Math Education, or related area (ABD will be considered). Developmental Math teaching experience and related professional activities required; familiarity with related educational technologies preferred. Minority applicants strongly encouraged. Application materials, including current curriculum vitae, names and phone numbers of three references should be sent by May 15, 1996 to: **Clare Johnson, Chair, Science & Math, FIT, Seventh Avenue at 27 Street, New York City 10001-5992.** FIT is an affirmative action, equal opportunity educator and employer.

SOUTHERN ILLINOIS UNIVERSITY AT CARBONDALE - DEPARTMENT OF MATHEMATICS - Temporary Positions - Temporary positions as Lecturer are anticipated starting on August 16, 1996. Master's degree in mathematics or admission to candidacy required; Ph.D. preferred. Applicants <u>must</u> provide evidence of excellence in teaching and evidence of ability to teach in English effectively. Preference given to applicants with research interests compatible with those of the faculty. The duties will consist of 12 hours of undergraduate mathematics instruction each semester. Closing date May 15, 1996, or until positions are filled. Send applications (including transcripts) to: **Temporary Positions c/o Ronald Kirk, Chair, Department of Mathematics, Southern Illinois University at Carbondale, Carbondale, IL 62901.** SIUC is an Equal Opportunity/Affirmative Action Employer.

UNIVERSITY OF WISCONSIN, MADISON - DEPARTMENT OF BIOSTATISTICS - Senior Biostatistics Position - The Department of Biostatistics is seeking a senior level biostatistician in a tenured position at either the Associate or Full Professor rank. We anticipate the start of this position to be Summer 1997. Candidates should have a Ph.D. in biostatistics or statistics and must have a track record of excellence in teaching, statistical research, and collaborative research. In addition to continuing their own independent research, candidates should expect to collaborate with both basic and clinical science investigators in the Medical School, the Comprehensive Cancer Center and other research centers. Teaching duties may include graduate courses in Statistics or Biostatistics. Program responsibility will depend on background and experience. Applicants should send a resume and 3 letters of reference to: **David L. DeMets, Ph.D., Chair, Department of Biostatistics, K6/446 Clinical Science Center, University of Wisconsin - Madison, Madison, WI 53792-4675.** Note: Unless confidentiality is requested in writing, information regarding the applicants must be released upon request. Finalists cannot be guaranteed confidentiality. The University of Wisconsin is an equal opportunity/affirmative action employer.

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