

AWM

ASSOCIATION FOR WOMEN IN MATHEMATICS

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NEWSLETTER

March–April 2004

PRESIDENT'S REPORT

The AWM announces the results of the recent election: The President-Elect is Barbara Keyfitz of the University of Houston. Barbara brings many new ideas and excellent leadership to the AWM. Our new treasurer is Rebecca Herb of the University of Maryland, and the newly elected Members-at-Large of the Executive Committee are Krystyna Kuperberg of Auburn University and Ann Trenk of Wellesley College. We thank the Nominating Committee (Jean E. Taylor, Chair, Meghan Burke, Sun-Yung Alice Chang, Ray Johnson and Carol Wood) for the excellent slate of candidates. We thank outgoing past president Suzanne Lenhart, treasurer Mary Ann Horn, and Executive Committee Members-at-Large Joan Feigenbaum and Ginger Warfield for their dedicated service and outstanding contributions to the AWM.

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We learned with great sadness of the death of Ol'ga Ladyzhenskaya on January 12. Her life and work are an inspiration to us all. See pages 18–19 for a reprint of her bio from the AWM Noether Lecturer booklet.

The diverse personal lives of mathematicians. The AWM presented a panel discussion at the Joint Mathematics Meetings on "Supporting the Diverse Personal Lives of Mathematicians." We thank all those involved in this successful event. My co-organizers were Marianne Korten, Kansas State University; Helen Moore, American Institute of Mathematics Research Conference Center; and Christine Sormani, Lehman College, CUNY; Helen also served as moderator. Panelists were Beth Bradley, University of Louisville; Jerome Dancis, Duke University; Cleopatria Martinez, Phoenix College; and Elizabeth Stanhope, Willamette University.

Panelists shared their personal stories in order to support and advise other mathematicians and to suggest ways in which the mathematical community may be more supportive. For example, how can an interviewing committee help a job candidate decide whether the campus environment would be welcoming of them personally? Here's a gem from Liz Stanhope:

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

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

The *Newsletter* is published bi-monthly.

The Editor welcomes articles, letters, and announcements.

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Prior to a job interview, the committee can mail the candidate a list of campus organizations, including when possible the names and emails of contact people, and leave a little time free during the interview day for the candidate to contact organizations of his/her choice. The list could include ethnic clubs and organizations, gay and lesbian (GLBT) organizations, women's groups, religious clubs, and political organizations, as well as public safety and handicapped access information. The campus diversity coordinator may be a resource for developing such a list and making it available to hiring committees in all departments.

The discussion begun by the panel is being continued in a very active web forum moderated by Christina Sormani. Topics include race, religion and ethnicity, sexuality, being a single parent, being single, extended families (including divorce), parenting children with special needs, illness, loss, and background (e.g., building a career from a poor background). Already at the time of this writing, there are 26 postings, including statements by some of the panelists.

Flexibility in the tenure clock. In the recent AWM member survey, 40% of respondents identified a single issue that they would like to see us address more aggressively: flexibility in the tenure process to alleviate conflicts between the tenure process and child rearing. A number of universities do offer the option of slowing down the tenure clock, and many women (perhaps men as well) have successfully used this option. However, even where such policies exist, women are frequently afraid to invoke the policy out of concern that they will be judged differently for tenure if they come up after, say, eight years rather than six. The data in the Annual Survey of the Mathematical Sciences show that the percentage of women among new Ph.D.'s is approximately 30%, and the percentage of women among newly hired doctoral recipients (this includes postdoctoral, industrial and government positions as well as tenure track) is also roughly 30%. On the other hand, the percentage of women among tenure-track assistant professors is only about 20%. I do not know to what extent this drop is related to the conflict between the tenure and biological clocks. The problem of course extends across all of academia. The AAUP has issued a statement recommending policies that include the options of stopping the tenure clock with or without leave and of having a reduced workload in order to handle family responsibilities. You will find their complete statement as well as examples of existing policies at various universities at their website <http://www.aaup.org/Issues/FamilyWork/index.htm>. We welcome your ideas on ways that the AWM might address this issue.

News from the Joint Mathematics Meetings. At the Joint Mathematics Meetings in January, Svetlana Katok of Penn State University presented a fascinating AWM Noether Lecture on "Symbolic Dynamics of Geodesic Flows." The AWM was honored to present the Louise Hay Award for Contributions to Mathematics Education to Bozenna Pasik-Duncan of the University of Kansas and the Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman to Kimberly

Spears of the University of California, Santa Barbara. The AWM Workshop for Women Graduate Students and Recent Ph.D.'s was very successful, thanks to the efforts of the organizers Catherine Roberts and Jodie Novak. We thank the AMS and the MAA for their efforts on behalf of all the AWM activities, Bettye Anne Case and Dawn Wheeler for coordinating all the AWM activities at the Meetings, and especially the AMS Meetings Staff for their continued and loyal assistance.

Congratulations to Cathleen Morawetz on her Steele Prize for Lifetime Achievement. It is indeed satisfying to see her honored for her profound contributions and leadership in mathematics. Congratulations also to Christine Stevens who received the Gung and Hu Award for Distinguished Service to Mathematics for her dynamic leadership of Project NExT. We were also delighted to see past Schafer Prize winner Melanie Wood honored with the Morgan Prize for Outstanding Research by an Undergraduate Student. Congratulations also to Karen Yeats, who received honorable mention.

See pages 9–18 for further information.

AWM Essay Contest. This year's AWM Essay Contest attracted 125 contestants from middle schools, high schools and colleges not only throughout the United States but also in the UK, Pakistan, Sierra Leone, Germany, and India. The grand prize went to high school student Esther Feldblum of the Maimonides School in Sharon, Massachusetts for her essay "Dr. Harpreet Chowdhary: The Mathematician as Executive," which will appear in the May–June issue. Congratulations to all the winners and a hearty thank you to Victoria Howle for organizing the Essay Contest and to Sandia National Labs for its sponsorship of this program.

Carolyn



Carolyn Gordon
Dartmouth College
January 23, 2004

MEMBERSHIP AND NEWSLETTER INFORMATION

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Contributing: \$100 Retired, part-time: \$25
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Friend: \$1000 Benefactor: \$2500
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Dues in excess of \$15 and all contributions are deductible from federal taxable income.

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See <http://www.awm-math.org> for details on free ads, free student memberships, and ad discounts.

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See the AWM website for details.

Subscriptions and back orders

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

Payment

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

Newsletter ad information

AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Director of Marketing, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the Newsletter must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is \$100 for a basic four-line ad. Additional lines are \$6 each. See the AWM website for *Newsletter* display ad rates.

Newsletter deadlines

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

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

Addresses

Send all *Newsletter* material **except ads and material for book review and education columns** to Anne Leggett, Math Dept., Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; email: leggett@math.luc.edu; phone: 773-508-3554; fax: 773-508-2123. Send all **book review** material to Marge Bayer, Math Dept., University of Kansas, 405 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523; email: bayer@math.ukans.edu; fax: 785-864-5255 and all **education column** material to Ginger Warfield, Math Department, University of Washington, Seattle, WA 98195; email: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 CSS Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

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Online Ads Info

Classified and job link ads may be placed at the AWM website. Detailed information may be found there.

Website and Online Forums

<http://www.awm-math.org>

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AWM-Net

To subscribe, send mail to awm-net-request@cs.umd.edu and include your email address; AWM members only.

AWM DEADLINES

NSF-AWM Travel Grant: May 1, 2004
and October 1, 2004

Michler Collaborative Research Grants:
May 1, 2004

Sonia Kovalevsky High School
Mathematics Days: August 4, 2004

AWM Workshop, January 2005:
September 1, 2004

Schafer Prize, January 2005:
October 1, 2004

Hay Award, January 2005:
October 1, 2004

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LETTER TO THE EDITOR

This month I attended the Association for Women in Mathematics' presentation of the Schafer prizes, which are awarded to extremely talented undergraduate women for their research. These awards were presented at the end of AWM's panel discussion.

I am ashamed of how our community treated these young women who thought they were there to be congratulated and honored. Instead, almost everyone attending the panel discussion, including panelists, noisily left the room as the award presentation was beginning.

What message was sent to these young women by this rude and boorish behavior? Here was an opportunity to honor and encourage some of our own who have done well. Are AWM members not supportive of these exceptional young women entering this profession? This lack of respect and support of other women mathematicians exhibited by AWM members is what has caused many women, including myself, to terminate their AWM memberships.

What are the actual goals of AWM? I used to think one of the primary goals of AWM was equality for women within the mathematics community. I no longer think this. Rather, I have become convinced that AWM's activities serve to cement women as second-class citizens within this community.

I exhort the AWM leadership to examine their attitudes and behavior. Our community, especially the professional organizations within it, must set ambitious goals and identify mechanisms to achieve these goals if we are to have a healthy, vibrant, and diverse community.

I am happy to serve on committees and panels to promote strong, forward-looking, inclusive agendas. However, I will not reactivate my AWM membership until I am convinced AWM is committed to effectively and vigorously promoting women as first-class citizens.

Sincerely,

Lynne H. Walling
Professor of Mathematics
University of Colorado, Boulder

Ed. note: The AWM Executive Committee shares your concern and has already planned a reordering of activities at the Atlanta meeting to better honor the Schafer prize awardees and make our pride in them unmistakable. We hope you will join us there.

AWM AT THE PHOENIX JOINT MATHEMATICS MEETINGS

AWM NOETHER LECTURE

The 2004 Noether Lecture, "Symbolic dynamics for geodesic flows," was delivered by Svetlana Katok of The Pennsylvania State University. She was introduced by Krystyna Kuperberg, Auburn University.

Abstract: At the dawn of modern dynamics, in the 1920s, E. Artin and M. Morse discovered that geodesics on surfaces of constant negative curvature may be described by sequences of symbols via certain "coding" procedures. They found one of the first instances of what much later became widely known as "chaotic" behavior. Artin's code of geodesics on the modular surface is closely related to continued fractions. Morse's procedure is more geometric and more widely applicable. For 80 years these classical works provided inspiration for mathematicians and a testing ground for new methods in dynamics, geometry and combinatorial group theory. Major contributions were made by R. Bowen, C. Series, R. Adler and L. Flatto who interpreted and expanded the classical works in the modern language of symbolic dynamics.

Quite surprisingly, there was room for new results in this well-developed area. Even more surprisingly, Gauss reduction theory leads to a variant of continued fractions that provides a particularly elegant coding of geodesics on the modular surface. This, in turn, brings about new connections with topological Markov chains that, mysteriously, are related to the five Platonic solids.

Biographical Information

Svetlana Katok grew up in Moscow in an environment saturated by mathematics: family, mathematical circles at the university, special mathematical schools, mathematical olympiads. She was especially influenced by her father Boris Rosenfeld, a renowned geometer and one of the most distinguished historians of science in the world. At the early age of thirteen, she decided to



AWM President Carolyn Gordon, 1999 Noether Lecturer Krystyna Kuperberg (introduced Katok), 2004 Noether Lecturer Svetlana Katok, Boris Hasselblatt (co-organizer of Katok's special session at the JMM)

become a professional mathematician. She earned an M.A. with honors from Moscow State University in 1969. Her first published paper, based on her master's thesis, was reviewed by Jurgen Moser. However, due to the anti-Semitic and anti-intelligentsia policies of the time, she was denied admission to the university Ph.D. program and worked for several years in the area of early and secondary mathematical education.

After emigrating to the United States in 1978, she returned to research mathematics and entered the Ph.D. program at the University of Maryland. She changed her research area from dynamical systems to number theory and completed her degree under Don Zagier in 1983. She was awarded an NSF postdoc and was associated with Caltech and four campuses of the University of California before moving to Penn State in 1990, where she was promoted to full professor in 1993. Her mathematical interests center on the interaction between number theory, geometry and dynamical systems with the latter field, her first mathematical specialty, coming to the fore in the last decade.

She has a life-long interest in mathematical education, which has borne such diverse fruits as innovative programs for primary school students from the Soviet period, the popular graduate text *Fuchsian Groups* and the unique MASS program for undergraduates at Penn

State that she created together with her husband Anatole Katok. The topics of her many invited talks are quite varied, ranging from her mathematical research to models for integrating research into the undergraduate experience. In 1995 she founded *ERA-AMS*, the first electronic-only AMS journal, and is managing editor of the journal. She has been a member of the Editorial Board of the *Journal of the Institute of Mathematics of Jussieu* since 2000. She has served on many AMS, NSF and NRC committees and panels and was a Member-at-Large of the AMS Council for 1993–1996. In 2001 she received the Eberly College of Science Alumni Society Distinguished Service Award.

She has three children whose careers range from operations research to software development and architecture to classical singing.

AWM PRIZES

Louise Hay Award for Contributions to Mathematics Education

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

Citation for Bozenna Pasik-Duncan

In recognition of her wide range of outstanding work as a mathematician, the Association for Women in Mathematics (AWM) presents the Louise Hay Award to Bozenna Pasik-Duncan of the Department of Mathematics at the University of Kansas.

Educated in Poland, Bozenna Pasik-Duncan received her master's degree in numerical analysis from the Department of Mathematics at Warsaw University. In 1978, she received her Ph.D. in Stochastic Processes from the Department of Mathematics at the Warsaw School of Economics. As an assistant professor in mathematics there, she received a research fellowship in 1982 from the International Research Exchange Board to visit electrical engineering departments at the University of Maryland; University of California, Berkeley; Harvard and the Massachusetts Institute of Technology (MIT), as well as the Mathematics Department at Kansas. In 1986, she received her *Habilitation* (a doctoral degree) in Mathematical Statistics and Stochastic Adaptive Control from the Mathematics Department of Warsaw School of Economics.

Since joining the faculty of the Mathematics Department at Kansas in 1983, she has held visiting appointments in Poland, Hungary, the Czech Republic, France, Italy, Japan and China, and has held offices and served on committees and as an editor at the Polish Mathematical Society, the Society of Applied Mathematics (SIAM), the Institute of Electrical and Electronics Engineers (IEEE) Control System Society (CSS) and the International Federation of Automatic Control (IFAC). She has been Professor in the Mathematics Department at the University of Kansas since 1994. Professor Pasik-Duncan's research has centered on stochastic processes and stochastic adaptive control of continuous-time linear and nonlinear systems; her current research interests are in stochastic processes and stochastic theory, the relation between statistics and control theory and applications of stochastic theory and control to biomedicine, biostatistics, telecommunication networks and finance. Her numerous awards and honors for her research culminated in an Institute of Electrical and Electronics Engineers Third Millennium Medal for outstanding achievements and contributions and a Distinguished Member Award from IEEE Control Systems Society in 2000. In 2001, she became an IEEE Fellow for contributions to Identification and Stochastic Adaptive Control.

Bozenna Pasik-Duncan is a research mathematician with a deep commitment to education with the focus on integrating research, teaching and learning in science, technology, engineering and math. She has been recognized for her teaching from the time she was a Lecturer in Warsaw, when she received the National Teaching

Award from the Ministry of Higher Education and Sciences in 1975. At Kansas, she has continued to receive teaching awards, including the Fellowship for Teaching Excellence and Advising in Public Outreach as well as one for distinguished teaching and the profound impact made on students' lives; another was her Honor for Outstanding Progressive Educator (HOPE), the first HOPE award ever presented to a math professor by graduating seniors. She was the 45th recipient of this award.

Pasik-Duncan's work in education extends beyond her exceptional skill as a teacher. In nominating her, Professor Jack Porter, chair of her department, said that her philosophy is that every student from high school senior to undergraduate to graduate will experience research that bridges mathematics with different fields (for example, biology, physics, chemistry, economics, and medicine). Pasik-Duncan has worked to make this vision come alive. Through the Research Experiences for Undergraduates Program of the National Science Foundation (NSF), Professor Pasik-Duncan has, since 1992, mentored students and nurtured them in their studies. Indeed, the NSF Control Workshops under her leadership enhance the connection among high school students, mathematics and science teachers, and research groups in control systems. As a co-investigator of projects supported by NSF and the Sprint Corporation, she involved her graduate students in industrial research. Her interests extend to mathematics education at the elementary level. She taught an algebra and probability class to fourth, fifth and sixth graders in 1994–96, with her students winning regional and state mathematics contests, and for the past ten years has organized well-attended annual workshops for fifth graders. According to one of her former students, she would bring local elementary school children to the university and invite her undergraduate students to give presentations about mathematics and its applications. "It was seeing demonstrations like these as a kid that got me excited about science and ultimately influenced my path to pursue a Ph.D. at MIT," wrote this student from a small Kansas farming town, with a high school student body one-tenth the size of his freshman chemistry class at the university.

Among her many professional services, Pasik-Duncan had been Vice President for Membership Activities of CSS, Vice President of the Warsaw Branch of the Polish Mathematical Society, Program Director of the SIAM Activity Group on Control and Systems Theory, chair of the IEEE CSS Standing Committees on

Assistance of Engineers at Risk, International Affairs, Women in Control and chair of the Technical Committee on Control Education as well as co-chair of the IFAC Control Education Committee. In 2000 she was the leader of the Control Systems Delegation to the People's Republic of China under the People-to-People Ambassador Program. This past year, she has formed and will be the faculty advisor to an AWM Student Chapter at the University of Kansas. She consistently exhibits a firm and active commitment to support women in mathematics, engineering, and science.

By the Louise Hay Award, AWM is proud to honor Bozena Pasik-Duncan for her broad and inspiring vision of mathematics as a discipline and as a profession, and for her remarkable skill and commitment in carrying out the role of a professional mathematician in a wide variety of communities and settings.

Response from Pasik-Duncan

I am very honored and proud to have been selected by the Association for Women in Mathematics for its Fourteenth Annual Louise Hay Award for Contributions to Mathematics Education. Professor Louise Hay's outstanding achievements as a teacher, scholar, administrator, and human being have inspired many of us.

It was over forty years ago when I became involved in real teaching as a teenager in a small village in Poland where we would spend lovely summer vacations. Every Sunday during those summers local kids walked to "my school" for math. It was during that time when I was also asked by a university math professor to tutor his daughter in math and science. One day when she was taking her oral exam in chemistry in the presence of the whole class she looked at me, "her teacher," with desperation in her eyes: "help me, I cannot do it?" I answered with the utmost confidence, "Yes, you can," and she did. From that moment on I knew that I could be a good math teacher who would take good care of all those students who need math and science. The long list includes my first students while I was in high school, my family, friends, neighbors, their children and grandchildren, etc. I have developed a reputation of being a math teacher who has time for everyone who needs help in math and science.

I have taught since 1984 at the University of Kansas after teaching in Poland for thirteen years, where I received excellent teaching experience. Balancing two



Schafer Prize Winner Kimberly Spears, AWM President Carolyn Gordon, and Hay Award Winner Bozena Pasik-Duncan

cultures in teaching fascinates me the most. When my daughter, Dominique, was a fourth grader we took her to Poland and France and enrolled her in the local schools. She was an outstanding student in Lawrence, but about two grade levels behind the French and Polish students in math. When we returned to Lawrence I said, "We need to work." I offered to share the tutoring with Dominique's class. It was the best teaching and learning experience. I used French, Polish and American books so the students also learned some Polish and French. A year later Dominique was up to speed with her French and Polish classmates. My fourth-grade students scored the highest in the state at mathematical problem solving. I taught them for three more years, and this year they graduated from high school, with a few being National Merit Scholars. Dominique is a first-year math student at the University of Chicago with almost 100 credit hours from the University of Kansas.

It was over thirty-five years ago when I became involved in a real-world project for the Polish Central Planning Committee. Stochastic modeling and forecasting were my first major research areas. Shortly after that I became the director of the Applied Mathematics Center of the Polish Mathematical Society, with some fascinating work. I had taught for thirteen years at Warsaw School of Economics where I was lucky to have an outstanding mentor in teaching. I came to Kansas to work

with Tyrone E. Duncan. His research in stochastic control, coupled with my own studies in stochastic processes and mathematical statistics, made the best partnership. We wrote over 100 papers together and solved some long-standing stochastic adaptive control problems. We built the program in stochastic theory and control that has put Kansas on the world map.

Most of my master's and Ph.D. students have gone on to work in industry. Some of them quickly took leadership positions: they work with the University of Kansas Medical Center on the analysis of epilepsy, for Sprint Corporation on the intricacies of telecommunication networks, for actuarial compa-

nies, for investment banks, for graphic design companies, and for various other industries. All of these former students are applying knowledge they acquired from research performed at KU. From freshmen to Ph.D. candidates, all of my students participate in research, and most of their research has been supported by the National Science Foundation. Several of my undergraduate students have received NSF fellowships for graduate study in the best programs in their fields of interest. Several undergraduate and graduate students are involved in research each summer. The NSF has also supported several national workshops for teachers and students on research and teaching, making a commitment to support K-12 school teachers who want to become involved in research.

I attended my high school's 35th year reunion and gave a talk entitled "From the Polish Space to the Land of Oz: Acceptance and Tolerance." I spoke about my students in Kansas, the people of Kansas, and about Kansas itself. I had never realized that I feel very much at home and can speak so enthusiastically and passionately about Kansas. I am grateful to all in Kansas for making me feel free from the stress of speaking with an accent. I can now joke, "You don't recognize my Kansas accent?" when asked, "Where are you from?"

I would like to thank my entire control community that includes women in control for giving me so many

opportunities to integrate research, teaching and learning in science, engineering and math. I would like to thank many KU and Kansas people for beautiful acceptance and tolerance, for countless help and assistance, and for recognizing my love for math, music, science, engineering, and for people. I am proud of being a Kansan and an American, and this is the reason why I have enjoyed giving back to the Kansas community by being involved in outreach programs. Teaching Lawrence school students, bringing them to KU for math: these activities which make me so, so happy are most rewarding. I would also like to thank my students and all students for making me happy in Kansas and in this country. I would like to thank Professor Jack Porter, my chairman for nominating me for this award and Professor Judy Roitman, who is the 1996 recipient of this award and who has shared with me her success stories in mathematics education over many years. Last, but not least, I would like to thank my mother, my husband and my daughter for their most beautiful support.

From the bottom of my heart I thank the selection committee and the AWM for making me feel the happiest person on the earth. I cannot find English words to express my feelings, but now I cannot even find Polish words to express my feelings. I will be even a better teacher now.

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

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

AWM is pleased to present the Fourteenth Annual Alice T. Schafer Prize to Kimberly Spears, University of California, Santa Barbara. AWM was pleased to recognize Karola Meszaros, a junior mathematics major at

Massachusetts Institute of Technology, and Jennifer Novak, a senior mathematics major at Texas A&M University, as runners-up in the Schafer Prize competition, as well as Elena Grigorescu, a senior at Bard College with a double major in mathematics and computer science, and Ariel E. Barton, a senior mathematics major at Harvey Mudd College, who received honorable mentions.

Citation for Kimberly Spears

Kimberly Spears is a senior at the University of California, Santa Barbara. As a junior, her "dedication and passion" led her to excel in advanced sequences in abstract algebra and real analysis, courses populated mostly by incoming graduate students. During the following summer she did research with Jeffrey Stoppel at UCLA as a participant in the UCLEADS program (Leadership Excellence through Advanced Degrees). Her project resulted in a generalization of Gauss's Law of Quadratic Reciprocity to general (nonabelian) groups. Kimberly was "highly motivated and enthusiastic about learning" and "had to master a lot of new material on group representation theory to even understand the question." Kimberly's senior thesis addresses the question of classifying discriminants d with one class per genus. Her proof that assuming a conjecture about the Grand Unitary Ensemble (GUE), no discriminant greater than d_{66} (the smallest with 66 prime factors) has one class per genus "would satisfy the minimum required for a Ph.D. thesis" at USCB. Kimberly's subsequent presentation in the UCSB Arithmetic and Geometry Seminar left the faculty audience "flabbergasted." "No undergrad had ever given a talk before, much less on original research," and "the breadth of material she has mastered astonished them." Papers on both of Kimberly's research projects will be submitted to journals this fall. Her recommenders also praise Kimberly's "remarkable ability to absorb the highlights and essential concepts of broad areas of mathematics quickly" and write that "Kimberly is without any doubt the best student I have ever seen in my 16-year career."

Response from Spears

I am pleased to receive the 2004 Alice T. Schafer Prize. I would like to thank the Association for Women in Mathematics for encouraging me to continue doing what I love. Every day I have had to do research and



Standing: AWM President Carolyn S. Gordon, AWM Past-President Suzanne Lenhart;
Seated: Schafer Honorees Kimberly Spears, Jennifer Novak, Karola Meszaros,
and Ariel Barton (Elena Grigorescu was unable to attend)

learn more math is one that I have enjoyed.

I would like to thank my mentor Jeffrey Stopple who has been crucial to my development into a young mathematician. His dedication and support are indescribable. I would also like to thank William Duke for his mentoring and James McKernan. I would like to thank Sarah Dillingham and the UCLEADS program. Thank you to the mathematics department at UCSB for all their congratulations and support.

Citation for Karola Meszaros

Karola Meszaros is a junior mathematics major at Massachusetts Institute of Technology. After her first semester of her freshman year at MIT, she embarked on a research project in combinatorics. "In a remarkable tour de force of intricate reasoning," Karola successfully disproved a conjecture, found the correct formulation, and solved the given problem. The result was described as "a worthy Ph.D. thesis." Karola has another paper ready for publication, on Latin squares and a conjecture of Mahdian and Mahmoodian. While writing two papers in her first two years at MIT, Karola Meszaros has also been putting in outstanding performances in several difficult mathematics courses.

Response from Meszaros

I am honored to be recognized by the AWM as a runner-up for the Alice T. Schafer Prize. I am extremely grateful for all the encouragement I have received in exploring the beauties of mathematics. I would like to express my deepest thanks to Professor Richard P. Stanley for his support and guidance since my first year at the Massachusetts Institute of Technology. The opportunity of doing mathematical research in the vivacious atmosphere of MIT is of great importance to me, since for me, research represents the most refined charm of mathematics and science in general.

Citation for Jennifer Novak

Jennifer Novak is a senior mathematics major at Texas A&M University. Jennifer is the current President of the TAMU Math Club, garnering praise from TAMU professors for her outstanding work in undergraduate as well as graduate math courses. She spent the summer of 2003 in an NSF-sponsored REU on Knot Theory at Williams College. The students' research project was successful, producing a paper predicted to "be of great interest to knot theorists, geometers and topologists." Jennifer was "critical to the success of the paper."

Jennifer also won one of the top two awards for her talk on this research at the 2003 Mathfest in Boulder. In the summer of 2002 Jennifer Novak participated in an REU/VIGRE program at Texas A&M on mathematical modeling in ecology. Her mentor there remarked that Jennifer rapidly "grasped the heart of the problems." Her nominators describe Jennifer Novak as creative, independent, enthusiastic, and tenacious.

Response from Novak

I am pleased and excited to receive the exceptional honor of being named a runner-up for the Alice T. Schafer Prize. The Associate for Women in Mathematics has made phenomenal progress for women in math by supporting programs throughout their careers, in the work place and in their personal lives. I am especially grateful for AWM's constant efforts to encourage young female mathematicians by providing them opportunities and recognizing their achievements. I would like to give special thanks to Dr. Susan Geller for her overabundance of support, encouragement, and guidance throughout college; Dr. Colin Adams for showing me the beauty of mathematical research and the possibilities afforded by determination; and Dr. Keri Kornelson for going out of her way to help women succeed in mathematics. I would like to thank the entire faculty in the Texas A&M math department for their continuous support and encouragement of undergraduates determined to become mathematicians. Finally, I would like to thank my family and friends for their constant encouragement and assistance in my life.

Citation for Elena Grigorescu

Elena Grigorescu is a senior at Bard College with a double major in mathematics and computer science. She has twice participated in the REU program in Duluth, Minnesota and subsequently had two articles on graph theory accepted for publication. Of this work, it has been predicted, "these results will be often cited." Elena has also completed a senior thesis on Hilbert series of monomial ideals in several variables. In addition, she participated in an internship with IBM and was the recipient of the IBM/APS Research Internship Award.

Response from Grigorescu

This award represents a real encouragement for me towards a career in mathematics-related research. I thank the Association for Women in Mathematics for rewarding me, and I hope I will prove myself worthy of such an honor. I would very much like to thank Professor Joseph Gallian for his wonderful Duluth REU and for his assistance given to undergraduate students. Also, I am grateful to the faculty in the Mathematics and Computer Science Departments at Bard College for making my undergraduate years an exciting experience. In particular, I thank Professor Lauren Rose for her nomination.

Citation for Ariel E. Barton

Ariel E. Barton is a senior mathematics major at Harvey Mudd College. Her senior thesis is entitled "Convergence of Domains and Harmonic Measure Distribution." She is described as having "an excellent grasp

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings in January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. Five complete copies of nomination materials for this award should be sent to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2004**. For more information, phone (301) 405-7892, email awm@math.umd.edu or visit www.awm-math.org. Nominations via email or fax will not be accepted. *(Please note that beginning next year the deadline for nominations for this award will be moved to April, so that nominations for the 2006 award will be due April 30, 2005.)*

of the overall structure of the problem” but is also adept at proving the “gritty technical results.” She has also completed a summer research project that involved applying Hestenes’ classic treatment of Bolza’s control problem. Ariel has excelled in numerous upper division mathematics courses and had an outstanding performance on the Putnam Exam.

Response from Barton

I am honored that the Association for Women in Mathematics has chosen me to receive an honorable mention for the Alice T. Schafer Prize Competition. I would like to thank the mathematics department at Harvey Mudd College for their support over the past three years, in particular Lesley Ward, my research advisor, and Michael Moody and Arthur Benjamin, who have advised me so many times.

AWM WORKSHOP

Workshop talks, poster session and panel are open to the entire math community attending the Meetings. Selected graduate students and recent Ph.D.’s presented and discussed their research and met with other mathematicians. Thanks to Catherine A. Roberts (College of the Holy Cross) and Jodie Novak (University of Northern Colorado) for organizing this successful workshop and to ONR and NSA for their support of the AWM workshop program. Thanks also to the volunteers who served as mentors, discussion group leaders and panelists.

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

Lisa Bloomer, Middle Tennessee State University
“Comparison of Histograms for Use in Cloud Modeling”

Natasha Dobrinen, Pennsylvania State University
“Measurably Dominating Randomness: Some Measurable Similarities between Set Theory and Recursion Theory Regarding Dominating Functions”

Christine E. Heitsch, University of Wisconsin, Madison
“Results Motivated by Computational Biology”

Marian K. Hukle, University of Kansas
“Real and Topological Stable Rank”

Katherine J. Mawhinney, Appalachian State University
“Finite-to-One Mappings on $\beta\mathbb{N} - \mathbb{N}$ ”

Kathryn Nyman, Texas A&M University
“Inequalities for Geometric Lattice Invariants”

Haohao Wang, Southeast Missouri State University
“Implicitization via Syzygies”

Vicky Williams, Appalachian State University
“A Combinatorial Approach to Finding Root Multiplicities in Some Indefinite Type Kac-Moody Algebras”

The graduate students who presented posters were:

Laura Ciobanu, Rutgers University
“On the Complexity of the Endomorphism Problem for Free Groups”

Alissa S. Crans, University of California, Riverside
“Lie 2-Algebras”

Eva Curry, Rutgers University
“Characterizing Multivariable Low-Pass Filters”

Rachelle DeCoste, University of North Carolina, Chapel Hill
“Density of Closed Geodesics in Compact Nilmanifolds Defined by Compact Semisimple \mathfrak{g} -Modules”

Elizabeth Denne, University of Illinois at Urbana-Champaign
“Alternating Quadriseccants of Knots”

Peg Howland, University of Minnesota
“Application of the Generalized Singular Value Decomposition to Face Recognition”

Maria del Mar Gonzalez, Princeton University
“Singularities in Conformal Geometry: From PDE to Topology”

Sarah Hutcheson Jahn, University of Illinois at Chicago
“A Blowing Up Algorithm for Calculating Rings of Integers”

Katarina Jędrlic, University of Illinois at Urbana-Champaign
“Convergence of a Spacetime Discontinuous Galerkin Method to a Weak Solution of Temple Systems”

Gizem Karaali, University of California, Berkeley
“ r -Matrices on Lie Superalgebras”

Olga Kurgalina, Tufts University
“Radial Parts of Invariant Differential Operators on Grassmann Manifolds”

Rebecca Vessenes, California Institute of Technology
 “Generalized Foulkes’ Conjecture and Tableaux
 Construction”

AMS AND MAA AWARDS

from January 2004 Prizes and Awards *booklet*; see
www.ams.org/ams/2004-prizebook.pdf

Leroy P. Steele Prize for Lifetime Achievement

Citation for Cathleen Synge Morawetz

Cathleen Morawetz has greatly influenced mathematics in the broad sense throughout her long and distinguished career. Her fundamental research has resulted in seminal contributions to a number of areas. These contributions include her early work on equations of mixed type, with its striking consequences for the theory of flow around airfoils, her work on local energy decay for waves in the complement of an obstacle, and her results concerning the existence of transonic flow with shocks. Throughout Professor Morawetz’s work one finds the theme of deep, creative mathematics used in the treatment of problems selected because of their interest in applied areas. She has not only contributed greatly to mathematics, but also to the vitality of the interaction between mathematics and its applications.

Cathleen Morawetz’s influence on mathematics extends well beyond her research contributions. In residence at the Courant Institute of Mathematical Sciences

for almost all of her career, she provided guidance and inspiration to the stream of visitors and postdoctoral appointees, as well as to her own students. Her works include a number of influential contributions written in collaboration with younger mathematicians.

Beyond these mathematical contributions, commanding in themselves, Cathleen Morawetz has provided strong leadership for and representation of the mathematical community via her remarkable and generous service. The AMS has benefited from her membership on many committees, from her ten years of service as a Trustee of the Society, and her service as President of the Society. She dispatched her duties in these roles with excellence and did not merely serve; she provided leadership. The larger community benefited from her wisdom in positions such as that of a Trustee of Princeton University and a Trustee of the Sloan Foundation; mathematics also benefited from being represented by her in these roles. Among her pioneering “firsts,” one notes that she was the first woman to direct an institute of mathematics in the US and she was the first woman to receive the National Medal of Science for work in mathematics.

Thank you, Cathleen, for all you have done.

Biographical Note

Cathleen Synge Morawetz was born in Toronto, Canada on May 5, 1923. She received a B.A. in applied mathematics from the University of Toronto in 1945, an

CALL FOR NOMINATIONS: ALICE T. SCHAFFER MATHEMATICS PRIZE

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schaffer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career, but must be an undergraduate as of October 1, 2004. She must either be a US citizen or have a school address in the US. The fifteenth annual Schaffer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Atlanta, Georgia, January 2005.

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

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schaffer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2004**. If you have questions, phone 301-405-7892, email awm@math.umd.edu, or visit www.awm-math.org. Nominations via email or fax will not be accepted.



Cathleen Morawetz and Christine Stevens

M.Sc. from MIT in 1946 and a Ph.D. from NYU in 1951. From 1950–51 she was a research associate at MIT working on hydrodynamic stability with C. C. Lin. From 1951 on she worked with the group at NYU that became the Courant Institute, mainly at first with L. Bers, K. O. Friedrichs, and H. Grad.

Bers and Friedrichs introduced her to the fascinating problems of transonic flow; Harold Grad introduced her to problems in magneto hydrodynamics, especially the mathematical problem associated with very thin plasmas; and from Joe Keller she learned the open problems of wave propagation.

She became an assistant professor in the Institute in 1958. Always involved in some administration, she eventually served as Director of the Courant Institute from 1984 to 1988. She retired in 1993.

Cathleen Morawetz gave the Gibbs lecture in 1981. During much of her career she received support from the ONR.

She served the Society as a member of the Council from 1973 to 1975, as a member of the Executive Committee in 1975 and from 1994 to 1998, as a Trustee from 1975 to 1985, and was the second woman president of the society from 1995–97. She is still a member of two committees. She received the National Medal of Science for 1998.

Cathleen Morawetz was a trustee of Princeton University, a trustee of the Sloan Foundation, a member of the board of NCR, and a founding director of JSTOR

(1995–1998). In addition, she served on the board of MSRI and chaired the board for theoretical physics of the Dublin Institute for Advanced Studies. She also received numerous honorary degrees.

She first studied the nonlinear wave propagation of shock wave theory as a student and later, at the suggestion of I. Segal, of semilinear equations. This resulted in fundamental work with Walter Strauss. Both her transonic theories and her work in wave propagation involved finding special identities and inequalities for the relevant equations.

Response from Professor Morawetz

Receiving the Steele Prize for lifetime achievement is not only a huge honor but a stunning surprise for which I am very grateful. But I can never be quite as grateful as I am to those people who mentored and encouraged me in a lifetime of mathematics which, somewhat to my surprise, still goes on. The person to whom I am most grateful is Richard Courant who steadfastly employed me in real research as I struggled to get a Ph.D. and to bear and raise four children between 1946 and 1958. He claimed it was Kurt Friedrichs who constantly recommended me to him but Courant was surely the only person with the authority to follow this nonstandard path. Before that time I wavered a great deal in my career ideas, working as a chronographer during World War II, seriously contemplating teaching in India (a chance meeting with Cecilia Krieger sent me off to graduate school instead), trying out and failing at electrical engineering at MIT. There was also a considerable amount of external social pressure to abandon my career but such ideas did not enter the minds of Courant and his colleagues—nor for that matter of my husband Herbert.

Among the many people at the Courant Institute who educated, mentored, and helped me in the vast literature of mathematics (I have a bad memory) were not only Friedrichs but Lipman Bers, Joe Keller, Harold Grad, Fritz John, Paul Garabedian, Peter Lax, and Louis Nirenberg. Let me add the names of my collaborators who taught me so much, Walter Strauss, Jim Ralston, and Ralph Phillips.

Lastly, and by no means least, I am forever indebted to my mother for instilling in me the idea of ambition (then very unladylike) and to my father for the idea of intellectual achievement (not to mention the introduction to Courant).

MAA Distinguished Service Award

The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics is the most prestigious award made by the Association.

Citation for T. Christine Stevens

Project NExT (New Experiences in Teaching) is widely accepted as being one of the most successful programs in the history of the MAA, and its success is one indelible mark that T. Christine Stevens has already left on the national mathematics community. However, it is not the only one, and before it is described in more detail, some of the others must be mentioned.

As an AMS/MAA/SIAM Congressional Science Fellow, Chris Stevens worked as a legislative assistant for a New York Congressman on issues involving defense, arms control, and education for the mathematical sciences, providing a reasoned mathematical voice in an environment in which it had an impact on national legislative policy. In addition, as an Associate Program Director for the Teacher Enhancement Program at the National Science Foundation, she directed the review, funding, post-award management, and evaluation of proposals that had direct consequences for the mathematical preparedness of large numbers of teachers and, consequently, their students. Chris has also lent her expertise to the larger mathematical community by serving on and chairing MAA and SIAM committees on science policy and education. In 1997, her effectiveness as a teacher and mentor was recognized by the MAA with the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.

But it is through her leadership of Project NExT that Chris has had by far her greatest influence on all levels of collegiate mathematics. Its success and impact may be measured in many ways: participants' testimonials; the effectiveness of those participants in their home departments; their success as teachers, scholars, and members of the academic community; and the influence the program has had on other academic societies and disciplines. Project NExT has served as the gateway through which over 600 mathematicians have entered the academic profession, and its offshoots, the MAA Section NExTs, have similarly served over 400 more.

The impact of these participants on the profession has already been substantial. NExT Fellows have received

two statewide teaching awards, a Section award for mentoring, two awards for outstanding articles in MAA publications, several research awards including a prestigious AAUW American Fellowship, and numerous NSF grants for curriculum development. One has served as a Visiting Mathematician at the MAA, many have served as officers in over two-thirds of the MAA's 29 sections, sixteen have served on MAA committees on education, and numerous others have served elsewhere throughout the MAA's committee structure. They have directed a project funded by the NSF to increase underrepresented minorities in science, mathematics, and education; directed an in-service project for middle school mathematics students in three states; co-organized a national research conference for undergraduate women in mathematics; and directed local mathematics programs for precollege students. The impact of this extensive array of activities on our profession has been and will continue to be truly remarkable.

Chris Stevens created Project NExT with the late Jim Leitzel in 1994, co-directed it with him until his death in 1998, and since then has been the director of the project. It is her active leadership, vision, attention to detail, and inextinguishable energy that have enabled the project not just to survive the passing of its cofounder, but to thrive. For her continuing service to mathematics through her direction of Project NExT and her long record of other service to the profession, the MAA is pleased to name T. Christine Stevens the winner of the 2004 Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics.

Biographical Note

T. Christine Stevens is Professor of Mathematics and Mathematical Computer Science at Saint Louis University. A graduate of Smith College, she earned her Ph.D. in mathematics at Harvard University. Her research interests are in topological groups, especially Lie groups, and in the history of mathematics. She has also published papers on issues in undergraduate mathematics education, and she is the director of the MAA's Project NExT (New Experiences in Teaching). Before coming to Saint Louis University in 1989, she taught at the University of Massachusetts, Lowell, at Mount Holyoke College, and at Arkansas State University. During leaves from these institutions, she spent a year doing research at the University of Cambridge and worked on Capitol

Hill, at the National Science Foundation, and at the MAA.

Response from Professor Stevens

To receive the Gung and Hu Award is both an unexpected honor and a delightful surprise. The surprise is made doubly delightful by the fact that the service for which I am being honored has itself been a source of so much pleasure. The AMS/MAA/SIAM Congressional Science Fellowship provided me with a fascinating year on Capitol Hill, and my work at the National Science Foundation taught me much about teaching. Through Project NExT, I have the joy of getting to know many of the wonderful people who are entering our profession, and I have been fortunate to share that experience with such marvelous colleagues as Jim Leitzel, Aparna Higgins, Joe Gallian, Judith Covington, and Gavin LaRose. I am grateful to the MAA for generously adding this award to the many benefits that I have already reaped from my service to mathematics, and I am greatly honored to join the list of its previous distinguished recipients, among whom is my dissertation director, Andrew Gleason, who launched me on this path a quarter century ago.

Morgan Prize for Undergraduate Research

The Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student recognizes and encourages outstanding mathematical research by undergraduate students.

Citation for Melanie Wood

The winner of the 2003 Morgan Prize for Outstanding Research by an Undergraduate is Melanie Wood. The award is based on research on two different topics: Belyi-extending maps and P -orderings.

The first topic is concerned with finite coverings of the projective line that are ramified only at three points of the projective line. The absolute Galois group of the field of rational numbers acts on these coverings and on diagrams (that Grothendieck named *dessins d'enfants*) associated with the coverings. Melanie Wood's research gives a way to generate genuinely new Galois invariants of *dessins* from old ones. Her work yields important insights into the actions of the Galois group on fundamental groups. This research has attracted the attention

and admiration of the specialists working in this field. The paper has been submitted for publication.

In a separate project, Melanie Wood studies P -orderings in Dedekind rings. These P -orderings were introduced by Bhargava in 1995 to generalize the usual factorial function. It is well-known that a polynomial with rational coefficients takes integer values at the integers if and only if it is an integer linear combination of binomial coefficient polynomials $x^k C_k$. One of her results in this area implies that in imaginary quadratic fields, the integer-valued polynomials cannot possess a basis of this same general form. Melanie began this work during the 2000 Duluth Summer Research Program (directed by Joseph Gallian), and her paper on P -orderings has recently appeared in the *Journal of Number Theory*. Richard Hain (with help from Makoto Matsumoto) mentored her work at Duke.

Melanie Wood's research has been described in glowing terms by her mentors and by other experts in her field. The work is deep and original. The committee commends her for the mature mathematical perspective in her writings. The AMS, the MAA, and SIAM are pleased to award the 2003 Frank and Brennie Morgan Prize to Melanie Wood.

Biographical Note

Melanie Wood graduated from Duke University in May 2003, with highest distinction in mathematics. Her math competition honors include top place finishes on the USA Mathematical Olympiad and the Asian Pacific Mathematical Olympiad and the designation of Putnam Fellow. She won both a Gates Cambridge Scholarship and a Fulbright to study at the University of Cambridge, where she is currently doing a one-year math program. This fall, she will enter the math Ph.D. program at Princeton on a National Science Foundation Graduate Fellowship. Her current research interests are in algebraic number theory and arithmetic algebraic geometry. Melanie also enjoys acting, especially classical acting and voice work, directing, dancing, and philosophy.

Response from Melanie Wood

I am extremely honored to be awarded this prize. My experiences doing math research have been tremendously rewarding and the critical factor in my decision to continue to graduate work in mathematics, and that I had these experiences at all is due to two institutions that

enable and encourage undergraduate math research: Duke University and the REU at the University of Minnesota Duluth. At Duke, I wish to thank Richard Hain, who supervised my research on the absolute Galois group, and Robert Bryant, who was available for many helpful conversations. I wish to thank Makoto Matsu-moto for quick and helpful responses to technical questions. I also wish to thank Joe Gallian, director of the Duluth REU, for his support of my research, and all those affiliated with the Duluth REU who gave me feedback on my P -orderings paper.

Citation for Karen Yeats

The Morgan Prize Committee is pleased to award honorable mention for the 2003 Morgan Prize for Undergraduate Research to Karen Yeats for a series of outstanding contributions on topics ranging from asymptotics and number theory to mathematical logic. A few examples indicate the broad versatility of her research.

One of Karen Yeats's research projects is motivated by a precise analogy between results in additive number theory and results in multiplicative number theory. Based on this analogy, Karen Yeats has proved a multiplicative version for Dirichlet series of a classical estimate of Schur on the size of the coefficients of a product of two power series.

In her second paper, Yeats determines bounds on the size of values of a character, expressed as a function of the degree of the character, for exceptional compact Lie groups. This research completes the work of other researchers, who had previously obtained results for classical compact Lie groups.

In a third paper, she makes a model-theoretic investigation of exotic identities of the positive integers. An exotic identity is one involving addition, multiplication, and exponentiation that is not a consequence of eleven basic arithmetic identities, articulated by Dedekind in 1888.

The committee was impressed by the quality of the papers, the enthusiastic letters from her mentors, and the speed and independence of her research. The committee is proud to honor Karen Yeats with this award.

Biographical Note

Karen Yeats was born and grew up in Halifax, NS, Canada. She began enjoying mathematics through

contests, regional, national (Canadian), and foreign. She entered the University of Waterloo in September 1998 and graduated with an honors B.Math. in Pure Math and a Governor General's Silver Medal in 2003. During that time she had the opportunity to spend three summers as an NSERC (Natural Sciences and Engineering Research Council of Canada) undergraduate research assistant, and benefited greatly from the strong faculty and program in Pure Mathematics at Waterloo. She is now pursuing a Ph.D. in mathematics at Boston University. Karen is an accomplished recorder player, and also enjoys playing clarinet and singing in choirs, as well as the occasional foray into making teddy-animals and working on free software.

Response from Karen Yeats

I am truly honored to have been named honorable mention for this year's Morgan Prize. Great thanks to the creators and organizers to whom the Prize owes its existence. I also owe great thanks to NSERC, Kathryn Hare, Frank Zorzitto, and especially Stan Burris for my summer research terms, which have made all this possible. At the University of Waterloo I also want to thank everyone in Math and Pure Math for making it clear to me that I was in the right place from the very beginning, and in Halifax to everyone who encouraged me on the contests.

Haimo Award for Distinguished Teaching

The MAA presents Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics to honor college or university teachers whose teaching effectiveness has been shown to have had influence beyond their own institutions. Thomas Garrity (Williams College), Andrew Chiang-Fung Liu (University of Alberta) and Olympia Nicodemi received Haimo awards this year.

Citation for Olympia Nicodemi

Mentoring students is a way of life for Olympia Nicodemi, writes one of her colleagues. Whether offering extra help to struggling students in calculus, encouraging students with budding ability, prodding students to take on a difficult challenge, or assisting students to obtain summer REU's and then providing a forum for them to present their work when they return to the

campus of SUNY College at Geneseo, she is always finding ways to help students to aspire to a higher level.

In her twenty-two years at SUNY Geneseo, Olympia has provided a role model of excellent teaching and is undoubtedly responsible, in large part, for the unusual growth in mathematics majors (a current high of about 250), 65% of whom are female. She has been recognized by the SUNY Chancellor's Award for Excellence in Teaching and nationally by the Elena Lucrezia Cornaro Award for significant contributions to her profession and community. A popular but demanding teacher, she developed and wrote the text for an undergraduate course in Discrete Mathematics and developed a master's course in Classical Algebra, for which she is writing a text for publication. One student wrote, "According to Webster, the definition of a teacher is one who shows or helps someone to learn how to do something, or to provide someone with knowledge and insight. Based on this definition, Dr. Olympia Nicodemi is not your ordinary teacher. She goes above and beyond the call of duty ... she tries to not only teach the material, but to instill a lifelong love of learning and math."

Beyond her classroom teaching, Olympia has directed undergraduate research projects and honors theses in a variety of subjects and has been a guiding force in the "Research Weekend Experience" at Geneseo in which prominent mathematicians visit the campus for three days, culminating in a Saturday research seminar. As a Project NExT mentor, she has taken a leadership role in the formation of a regional Project NExT for the MAA Seaway section. She has been a frequent presenter on a wide variety of subjects at regional math gatherings for both students and faculty.

Olympia has served as faculty advisor to Geneseo's student MAA chapter for over 10 years, reaching out to student groups and nearby colleges. Her success led to her current appointment as Student Chapter Coordinator for the Seaway Section.

For her excellence in teaching and her extraordinary devotion to students, we are delighted to honor Olympia Nicodemi with the Deborah and Franklin Tepper Haimo Award.

Biographical Note

Olympia Nicodemi was born in Brooklyn, to an extraordinary mother and teacher, Anne Nicodemi. Nicodemi notes that her mother made learning—music

and literature primarily—part of the happy fabric of life. Olympia found her way into mathematics as an undergraduate at New York University through Richard Courant's book at a time when he was still at the Institute. (She recognized him from the statue!) Olympia continued the mathematical quest at the University of Rochester where she learned to watch birds, attended concerts at the Eastman School, and worked on mathematics with David Prill, a mentor to whom she expresses many thanks. At the U of R, Olympia met Gary Towsley. Their wonderful sons are Adam and Jacob. Olympia has spent most of her teaching career at SUNY Geneseo, which she calls "a remarkable institution where the best scholars are the most dedicated and innovative teachers, and the students are the best teachers of all."

Response from Professor Nicodemi

Receiving the Tepper Haimo award is an overwhelming honor. My deepest thanks go to the MAA, my school, my department, and my family for their support of the joy of learning and teaching. But I must share the award with my students. It is mostly theirs; they learned more than I taught.

OL'GA LADYZHENSKAYA: IN MEMORIAM

Reprinted from Profiles of Women in Mathematics: The Emmy Noether Lecturers by Allyn Jackson. Published by AWM. Available online at <http://www.awm-math.org/noetherbrochure/Acknowledgements.html>.

Ol'ga Aleksandrovna Ladyzhenskaya was born on March 7, 1922 in Kologriv, a small town in Kostroma province. Her interest in mathematics developed under the influence of her father, Aleksandr Ivanovich Ladyzhenskii. She graduated from the Moscow State University in 1947; that year, due to family circumstances, Ladyzhenskaya moved to Leningrad. Since 1947 she has lived and worked in Leningrad, now St. Petersburg.

O. A. Ladyzhenskaya earned her Ph.D. at the Leningrad State University in 1949, and her Doctor of

Sciences degree at the Moscow State University in 1953. Since 1955 she has been Professor of Mathematics at the Physics Department of St. Petersburg University, and since 1961 the Head of the Laboratory of Mathematical Physics at the St. Petersburg Branch of the Steklov Mathematical Institute of the Academy of Sciences of Russia. In 1981 she was elected a corresponding member of the Academy of Sciences of Russia and in 1990 a full Member of the Academy. She is a member of the Deutsche Akademie der Naturforscher Leopoldina and of the Academia dei Lincei.

Ladyzhenskaya's primary mathematical interests are in partial differential equations. She has made fundamental contributions to the theory of initial-boundary value problems for hyperbolic equations. Her results on the Navier-Stokes equations have become classical. Her monograph "The mathematical theory of viscous incompressible flow" is on the desk of every scholar working in theoretical hydrodynamics. Her paper "A dynamical system generated by the Navier-Stokes equations," published in 1972, laid the foundations for the modern theory of attractors of dissipative systems. Since then, many people have contributed to the theory. However, the original approach developed by Ladyzhenskaya in the 1980s (see her book *Attractors for semigroups and evolution equations*, Cambridge University Press, 1991) is remarkably deep and powerful.

Yet another topic is among Ladyzhenskaya's favorites: boundary value problems for quasilinear elliptic and parabolic equations. Since the mid-1950s, by herself and with her students, she has obtained a number of basic results in this field. Her two books, one written with N.N. Ural'tseva, on elliptic equations, and another written jointly with Ural'tseva and V.A. Solonnikov, on parabolic equations, belong to the classics of literature on partial differential equations. In recent years, Ladyzhenskaya herself, and in collaboration with Ural'tseva, has obtained several new results for quasilinear and/or fully nonlinear elliptic and parabolic equations, giving detailed answers to some questions left unanswered in the above mentioned books.

Apart from mathematics, Ladyzhenskaya has broad interests in art, literature, and music. She is an enthusiastic nature-lover. Ladyzhenskaya has a strong personality, in which charm matches an impressive intellectual power. A large circle of friends and associates in Russia know and rely on Ladyzhenskaya's strength of conviction, her resilience, her warmth and generosity toward

students and those in need of help.

Ladyzhenskaya gave a Special Noether Lecture at the ICM-94 meeting in Zurich on August 4, 1994.

EDUCATION COLUMN

THE JOYS OF EDUCATING TEACHERS

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A couple of decades ago I took on the teaching of the content courses offered to future elementary school teachers by the University of Washington Mathematics Department. My motivation was largely supplied by social conscience: the experience that began my career was directing Seattle's Project SEED (see the May-June 2003 AWM *Newsletter*), which took me into elementary classrooms all over the city. I became aware of how very important elementary school teachers are, and of how much they need and deserve our support. The feeling of obeying my conscience was lovely. Eventually, though, it was joined by another feeling—that of needing to know a lot more than I did. This feeling launched me on a whole new phase of my career. In this phase I have gotten to know many folks specializing in mathematics education, first close to home and eventually internationally. I have shared the joys and perils of a massive and wonderful professional development project, working with a team of mathematicians, some of us from the Mathematics Department, some from the College of Education and some from local school systems. I have read some fascinating material on the learning and teaching of mathematics. These experiences have not actually diminished my sense of needing to know a lot more, but the sense of virtue has long since been supplanted by a sense of adventure, not to mention plain pleasure.

Last year I was enormously pleased to be asked to join the MAA's Committee on the Mathematical Education of Teachers, and even more pleased when I discovered that the committee was sponsoring a series of what are called PMET Workshops—Preparing

Mathematicians to Educate Teachers (see www.maa.org/pmet). At the recent Joint Meetings in Phoenix, a special session co-sponsored with MER (Mathematicians and Educational Reform) gave a progress report on PMET and its issues. Speakers talked about their experiences with teaching courses for K-12 teachers, or designing them, or writing textbooks for them, and an impressively large collection of folks turned up to listen. The whole afternoon was very exciting, but one moment stood out for me. It happened while Jim Lewis, of the University of Nebraska, was describing his own experiences. It seems that after years of avoidance generated by a memorably hideous experience very early in his career, he recently decided to take himself in hand and make himself undertake the teaching of future elementary school teachers. He joined forces with a colleague from the College of Education, took a deep breath and dived in. He described the course they designed and co-taught, and the huge amount of work he put into it, and a number of surprises and challenges. Then he finished off with what was to him the biggest surprise of all. "It was," he said with a considerable gleam in his eye, "a lot of fun!"

Needless to say, I was delighted with that line. Among other things, I'll feel much less guilty as I gently twist the arms of my colleagues to persuade them to get involved in teacher education. On the other hand, I find that I still think of the joy of educating future teachers as isolated from the more commonly visible joy of teaching mathematics to future mathematicians.

This week I got a glimpse of a bridge between those joys. The explanation of that glimpse has two components.

This quarter I am teaching for the first time a course the University of Washington instituted a few years ago entitled "Introduction to Mathematical Reasoning and Proof." I find myself grading papers of students who are clearly bright and able, but nonetheless give me three examples when asked for a proof, or negate "for all x , $x < b$ " with "for all x , $x > b$ ", or... I expect anyone reading this could supply many more instances. This has provided me with much food for thought and a fascinating teaching challenge. With these papers fresh in my mind, I attended a talk by Virginia Bastable at this year's conference of the Association of Mathematics Teacher Educators. Bastable is on the faculty at Mount Holyoke College, directs their Summermath program and is one of the co-PIs of the Developing Mathematical

Ideas project.

Bastable was discussing algebraic thinking in elementary school, which she illustrated with a case history from a kindergarten class. The teacher set the class up in pairs to play "Double Compare," in which each child would turn up two cards from a stack of cards with numbers 0 to 6, and whoever had the greater sum would get the cards. As she cruised about the room observing, the teacher noticed that a number of the kids were responding instantly to situations with, for instance, a 6 and a 2 being compared with a 6 and a 4—numbers whose sums a kindergarten child does not have immediately available. Intrigued, she instituted a discussion of what was going on, and one of the kids articulated nicely: "If two numbers are the same you don't have to pay attention to them." Others had good, if less efficient, ways of describing their thinking. She was duly impressed, and in an interview after the class session she speculated on what would have happened if she had tried to get them to articulate one of the other situations that she saw being acted on, where each of one child's cards was smaller than one of the partner's cards, but not both (e.g. 1, 4 and 2,6).

Discussion of this case study among the people at the AMTE session was extremely lively. We had a lot of admiration for the teacher, both for her perspicacity in noting the kids' thinking, and for her ability to get them to articulate it. If we can succeed in preparing teachers to do that, we will have made a major accomplishment. It was noted, on the other hand, that we should refrain from feeling critical of those who miss such opportunities. For one thing, the opportunities are much easier to see from the outside or by hindsight than on the spot. On top of that there's a spot of basic human nature: that game was introduced with an eye to getting the kids to practice addition. What the teacher observed was actually a form of avoiding addition by seeing when it wasn't necessary, so that following up on her observation involved abandoning her planned topic (one for which there is a lot of pressure, at that!).

Eventually the session continued with a videotape of some first and second graders discussing the relationship among the operations in a set of word problems involving addition, subtraction and the same three numbers. These problems also generated a lot of discussion among the AMTE participants. Towards the end, Bastable described for us the progression she has observed in kids' response to generalization: at first there is none,

making each case a new and exciting discovery (not only is $3+5$ even, but so is $7+9!$). Next comes "It must be true, I've tried several examples!" Then a little conservatism strikes: "I don't know for sure, because there are lots of numbers I haven't tried yet." That may even lead to "You *can't* prove it, because there are always more numbers to try." And then at last "Here's the reason why it really has to be true."

This is where I recognized that I was no longer in the land of "How can we educate teachers to help students through this progression?" I was in the land of "That's where a lot of my students are—how can I reach them wherever they are along that progression (some, alas, still not all that far along it!) and coax or entice them forward?" That's an interest I guarantee I share with a lot of folks who have not yet discovered the joys of teaching teachers.

This experience was just a glimpse of a bridge between my preoccupations as a teacher educator and my preoccupations on the general teaching front, as I said. I have a shrewd suspicion that it's part of a whole system of bridges. Furthermore, I am beginning to realize I am not the only one jogging around on that system. I look forward to more explorations of the bridges and to finding the company on them!

BOOK REVIEW

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Black Stars: African American Women Scientists & Inventors, Otha Richard Sullivan, Jim Haskins, General Editor, John Wiley and Sons, Inc., NYC, 2002, ISBN: 0-471-38707-X

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Black Stars: African American Women Scientists & Inventors consists primarily of twenty-five biographies, each two to four pages and accompanied by a full-page photograph, with many shorter pieces interspersed. Ten of the primary subjects have Ph.D.'s, each in a different

discipline, five are MD's, and the other ten have made at least one remarkable invention. All are African American women, and it is a truly inspiring array of potential career paths in math, science, and technology.

"Our" representative among the august twenty-five is Evelyn Boyd Granville (b. 1924). Alas, she is said to be the first African American woman to earn a doctorate in mathematics, although in the summer of 2001, the year before the book was published, Johnny Houston and Scott Williams independently discovered that Euphemia Lofton Haynes (1890–1980) had earned a doctorate in mathematics in 1943, six years before Granville. That this was widely known by the time the book was published indicates the uncertainty of historical "firsts." Indeed, Granville held her post as first for almost twenty years since my paper in the October 1981 *Monthly* gave her that honor, about a year after Haynes died. It still puzzles me that nobody who knew Haynes corrected my error in the flurry of correspondence my *Monthly* paper generated.

Marjorie Lee Browne (1914–1979), who passed her doctoral defense just months after Granville, receives a full-page sidebar with photo in *Black Stars: African American Women Scientists & Inventors*. Valerie Thomas (b. 1943) is reported as a "mathematician and data analyst" who helped develop the Landsat image processing system (Landsat was the first satellite to provide images from outer space). Earlier, in 1980 Thomas had received a patent on an illusion transmitter that sends signals through the air like a television, but they are three-dimensional images.

The other nine Ph.D.'s among the main biographies include one each in biology, zoology, chemistry, physical chemistry and mechanical engineering. We still believe that Shirley Jackson (b. 1946) is the first African American woman to earn a Ph.D. in physics (in 1974—after AWM existed). The less familiar doctoral subjects are electronic materials, wood and paper science, and humanities. Marjorie Steward Joyner (1896–1994) earned the doctorate in humanities in her mature years, but is included because she received a patent for a permanent wave machine in 1928.

Two of the others born in the nineteenth century also were inventors of hair-care items. Both made millions from their inventions. Annie Turnbo Malone (1869–1957) patented the first pressing comb to iron hair and eventually accumulated fourteen million dollars. Madame C. J. Walker (1867–1919, née Sarah

Breedlove) made a secret all-purpose hair-care formula whose esoteric contents were revealed to her in a dream. She is possibly the most famous of the twenty-five subjects, as the daughter of former slaves who became the first African American female millionaire. She employed thousands of other African American women in her enterprise, and encouraged them to be independent too. The author writes in a sidebar, "Going to the beauty shop became one of the few luxuries that African American women had at the time and a wonderful way to relax and be pampered. In this single-sex environment, women could discuss health problems, family relationships, parenthood, men, and community issues." [p. 43]

The two earliest created inventions directly useful to homemakers. Ellen F. Elgin (1849-?) invented a clothes wringer, but sold it to a white person for \$18 instead of patenting it. She later wrote, "You know I am black and if it was known that a Negro woman patented the invention, white ladies would not buy the wringer." [p. 7] Sarah E. Goode (1850-?) became the first African American woman recorded by the United States Patent and Trademark Office in 1885 when she patented her writing desk that converted to a guest bed. Three years later Miriam E. Benjamin (?-?) patented a chair that contained a button from which someone could summon help. She envisioned it being useful in restaurants, but one of her early customers was the United States House of Representatives. The House became much quieter when, instead of summoning their pages by clapping, the Representatives merely pushed buttons on their chairs.

Later inventions included specially designed pockets for a walker (Mary Beatrice Davidson Kenner, b. 1912) and an automatic invalid feeder that allowed severely disabled people to drink from cups or bowls supported by the device. Bessie Blout Griffin (1913-?) could not market this product profitably in this country, but eventually found a buyer in the French government, "proving that a black woman can invent something for the benefit of humankind," as she said in her press statement. [p. 55]

Sharon Barnes (b. 1955), a chemist with Dow Chemical, was part of a team that found a way to test the temperature of a laboratory sample without touching it, making the results more accurate. Ursula Burns (b. 1958) majored in mathematics and engineering at the Polytechnic Institute of New York and then helped the Xerox company figure out how to fix design flaws in a

digital copier and manufacture it in a third the previous time. The machine became one of Xerox's best sellers, and Burns was appointed head of worldwide manufacturing. Subsequently she became senior vice president for Corporate Strategic Services, the first woman in this position.

The five physicians were an innovative lot. Jane Cook Wright (b. 1919) developed a method for removing pieces of a patient's cancerous tumor and experimenting with drugs in the laboratory to see which drug was most effective against that particular tumor; she was also the first woman president of the New York Cancer Society. Angela Ferguson (b. 1925) developed methods for detecting sickle-cell anemia and ways to reduce the effects of the disease, especially during surgery. Patricia Bath (b. 1942) invented a laser instrument for removing cataracts that changed eye surgery and saved the vision of many people. Alexa Canady (b. 1950) performed the first brain operation (in 1995) to prevent an epileptic from having seizures. Mae Jemison (b. 1956) was the first African American woman in space.

Evidence of racism pervades the book. When Alexa Canady achieved above the white students in her second grade class (in 1957 in Michigan), her teacher refused to give her the grade she deserved; the teacher was fired for this behavior. When Shirley Jackson entered MIT about 1964, she was one of only two African American women in her class, and among only fifteen African Americans and only forty-three women out of nine hundred entering students. Other students refused to eat with her, and a group of men shouted racial epithets. One spat on her. A professor said, "Colored girls should learn a trade." [p. 99] When Alexa Canady became the first African American to do a neurological residency at New Haven Hospital in 1974, she observed, "... I got it not because I'm smarter than somebody forty years ago, but because the politics were such that they needed a black woman and I was there and qualified." [p. 105]

There are also stories of sexism. When Jane Cooke Wright wanted to enter Harvard University Medical School in 1942, it was closed to all women. When Angela Ferguson (b. 1925) entered Howard School of Medicine, there were few women and, "She recognized that she had to be smarter than her male colleagues to get respect." [p.74]

There are a number of clues that Otha Richard Sullivan, the author of *Black Stars: African American Women Scientists & Inventors*, is a former middle school

counselor who wanted to remedy the dearth of inspiring readings for his students. For example, there are sidebars with definitions such as “*Calculations* are the steps in working out math problems” (page 9) or “*Data* is factual information such as measurements, used for research.” [p. 71] The writing is rarely complex.

On the other hand, there is much in this book to interest and surprise AWM members. I suspect I’m not the only one who had no previous knowledge of the four-volume *The Colored Inventor*, compiled by Henry E. Baker of the United States Patent Office in 1913. It lists about 1200 inventions that had already been filed in the United States by that time. Baker observed that the list was probably incomplete. “Many of them refuse to acknowledge that their inventions are in any way identified with the colored race, on the ground, presumably, that the publication of that fact might adversely affect the commercial value of their invention...” [p. 11] Of course, slaves could not get their names on patents; their masters did. We read that it was the slaves of Eli Whitney who really thought up the idea of the cotton gin.

Black Stars: African American Women Scientists & Inventors is a good read for adults interested in broadening their horizons, and it would be a fine present for any middle or high school student, not just those who are black and/or female. Does your public library have a copy?

NON-STANDARD CAREERS

We continue our series of articles about women in mathematics whose careers have taken some unexpected twists and turns but have wound up satisfying. And we repeat our invitation: if you or someone you know has had such a career and would like to write about it, or to talk on the phone and have somebody else write about it, please get in touch with Ginger Warfield (warfield@math.washington.edu).

VARIETIES OF EDITORIAL EXPERIENCE

Cathy Kessel

After Ginger asked me to write about my career I wondered if I actually had one—I call what I do “odd

jobs in math education.” According to the *Oxford English Dictionary*, “career” in the sense used in this column has two related meanings, “a person’s course or progress through life” and “a profession affording opportunities for advancement.” This makes writing about my career a bit difficult: I don’t have a readily identifiable profession and my progress through life has been rather complicated.

In 1994, before I went to Australia for the first time as a mathematics education researcher (a job experience to which I give the descriptor “migrant worker”) I was obliged, probably for visa purposes, to list the jobs that I’d had in the past three years. There were 12 of them. Several years later, my jobs had proliferated and I decided that listing them on my c.v. in chronological order made it hard to read and put them into four sections: Curriculum and Exam Development, Mathematics Education Research and Projects, Editing and Consulting, and Mathematics. Even if I didn’t describe every job that I had ever had, I was not going to manage to cover what I do *and* how I came to do it in the amount of space usually occupied by this column. So Ginger and I have decided on a two-part series. In the second article, I’ll describe some of the motivation for my post-Ph.D. course through life. In this article, I’ll describe some of the work that I’ve done in editing and publishing.

Editors and other people who work on books tend to be invisible to the reader, leaving the illusion that a book is entirely the work of the author. The beginnings of some textbooks have lists that look like movie credits (without the caterers): project editor, editorial assistants, production editor, production manager, and so on. Academic books aren’t nearly so complicated, but still often involve editors, copy editors, and indexers in their production. Sometimes the acknowledgments of a book will include lists of people and their contributions. A particularly graceful end to such a collection of lists appears in the acknowledgments for Stephen Stigler’s *History of Statistics*: “the final form exhibits the craft of many hands.”

I became well acquainted with Stigler’s book during my job at a publishing company. My title was assistant editor and one of my projects was to find history to include in a high school textbook on algebra and data analysis with graphing calculators. (At the beginning of the book, I’m listed as “historical researcher.”) I researched and wrote short pieces on the history and use of statistical and mathematical ideas like mean, standard

deviation, and regression, as well as relatively recent methods of data analysis like stem-and-leaf and box-and-whisker plots. Part of the intent of the book was to show the power of graphing calculators. After seeing some of the many ways in which calculations were made and objects were graphed, my idea for the beginning of the book was to show a graphing calculator together with some devices it replaced: a tide predictor (sic!), a counting board, abacuses, a slide rule, a table of trigonometric functions, a planograph, and a Brunsviga calculator (described by Pearson as “The familiar mechanical calculator of the biometrician, the grinding sound of which ... is the music which tells him how much his labors can be lightened”). Some devices fit nicely into later chapters; for instance the tide predictor was a way of calculating sums of sine functions by means of wheels and pulleys and occurred in the textbook’s trigonometry chapter. Many of these objects are depicted and described on the Web (a Google search on “computing museum” is a good way to start) and in E. M. Horsburgh’s entertaining book *Modern Instruments and Methods of Calculation: A Handbook of the Napier Tercentenary Exhibition*, originally published in 1915, and now (in part) on the Web.

Thinking about this history was fascinating and enjoyable. I could happily write the rest of this article on interesting things that I discovered—from names of curves (Tulip, Hyacinth, Convolvulus, Pink, Fuschia, Bulbus, Rose, Bullet Nose Curve, Alysoid, Cartesian Oval, Cross Curve, Devil Curve, Trident, Serpentine, Palm Stems, Archer’s Bow, Twisted Bow, Pilaster, Tunnel, Urn, Pyramid, Helmet, Flower Pot) to various methods of computing before electronic computers. More importantly, this experience enriched and changed my view of mathematics and its development.

Some of my other projects as assistant editor included historical research for another book; a project on assessment that involved phone interviews of teachers, analysis of the interviews, and synthesis of that information with some state documents on assessment (this led to my migrant worker job in Australia); and review of textbook chapters. This review included mathematical as well as social issues. For example, I borrowed “counting arguments” from feminist linguistics, and listed and categorized all the textbook characters (many were invented characters in word problems). It turned out that the only identifiably Asian character was a magician—not desirable and certainly not

necessary for this textbook. That was easy to fix by renaming invented characters.

I was reminded of this review because a recent AWM-Net submission mentioned a book on mathematical writing that used names of 1970s female porn stars in sentences with double entendres. This falls under what the *Chicago Manual of Style* calls biased language—“language that is either sexist or suggestive of other conscious or subconscious prejudices that are not central to the meaning of the work.” My editorial experiences have probably influenced my view that when a publication contains such a slip, the production staff as well as the author may be at fault. In a similar, though less egregious case, my project editor explained to the author that no matter how amusing the name of the character seemed to him, that name would not appear in the published high school textbook. (The *Chicago Manual of Style* says, “Careful writers avoid language that reasonable readers might find offensive or distracting—unless the biased language is central to the meaning of the writing.... A careful editor points out to authors any biased terms or approaches in the work (knowing, of course, that the bias may have been unintentional), suggests alternatives, and ensures that any biased language that is retained is retained by choice.”)

After returning from a third migrant worker stint in Australia, I began working with Liping Ma on her book manuscript (then entitled *Knowledge and Teaching Competence*), which had been accepted for Alan Schoenfeld’s book series. By then I’d had some experience working on books on research in mathematics education as well as textbooks and had become acquainted with the *Chicago Manual of Style*. I’d worked on Schoenfeld’s *Mathematical Thinking and Problem Solving*, fixing various problems that weren’t apparent to the copy editor (a non-mathematician) and making the index. Among other things, non-mathematician copy editors don’t always recognize mathematical terms; for example, they may change “complex numbers” to “complicated numbers”—the sort of activity which I’ve often thought would be the basis for a good party game, but not something I enjoy fixing in a manuscript. (Terms in mathematics education have similar problems.) I’d also done some proofreading and copyediting for the *Research in Collegiate Mathematics Education* book series. The *Chicago Manual of Style* has a wonderful description of all the different sorts of work involved in copyediting. In brief, copyediting involves attention to

mechanics (e.g., grammar, punctuation, and syntax, consistency among text, tables, and illustrations) as well as substantive editing (e.g., fixing awkward or ambiguous sentences, editing tables, and “other remedial activities”).

Because Ma and I discovered that we both wanted to be thorough and because our editors allowed us time for thoroughness, we worked for about two and a half years to shape and polish her book. When I get impatient with superficial interpretations of the book (commonly “many US elementary teachers know very little mathematics”—a research finding that is at least 10 years old and an observation that is even older)—I try to remind myself that I am about two years ahead of almost everyone else in this matter, and know a lot about both mathematics and mathematics education research. In the next installment of this column I’ll try to describe how my career led to this knowledge and why I chose that course through life.

Acknowledgment

In an article on editing, it seems particularly appropriate to acknowledge editorial assistance. Thanks to Judith Epstein and Alan Schoenfeld for mechanical and substantive editing on this and other articles.

SKHS MATHEMATICS DAYS

Sonia Kovalevsky High School Mathematics Days are funded through grants from the National Security Agency and Coppin State College. Thanks to our funding agencies!

The organizers of each program are asked to submit an activity report, to provide a valuable resource for others to consider when setting up their own programs.

Hood College

Kira Hamman, hamman@hood.edu

This year we started our day with a Math Trail, an idea Kira got at the Women Count! workshop at the MAA meeting in Boulder, Colorado this summer. The Math Trail consisted of four short mathematical activities, each of which was located at a different “station” in our large central atrium. When students arrived for the

workshop, they were each given (among other things) a number between one and four (inclusive!). After the opening session, they went to the station in the atrium whose number matched their own. When the signal was given, they began work on the activity at that station. They had 15 minutes, then another signal was given and they rotated to the next station. Each group worked at each station, which took just over an hour including shuffle time.

The interesting part of the Math Trail was that the activities were designed by the people running the workshops, so that each activity was an introduction to one of the workshop topics. The stations were staffed by undergraduate students, and those same students then helped with the workshops, so they were able to answer questions and direct the high school students’ focus in the appropriate directions. After the math trail, the high school students had the opportunity to sign up for the workshop on the topic that interested them most.

We thought this worked very well. The student participants were able to get a taste of each of the workshop topics, and they were able to choose a workshop topic with at least some vague idea of what they were getting into. Of course, we had to cap the enrollment in the workshops, so not everyone got her first choice, but we didn’t have any complaints.

University of Alaska Anchorage

Kamal Narang, afkn@uaa.alaska

All participants had the opportunity to hear from “Sonia Kovalevsky” herself. Anastasia Mironova, one of our mathematics majors, was a stunning sight, dressed in the authentic Russian costume of that period, and, of course, came naturally equipped with authentic Russian features and accent. “Sonia Kovalevsky” told her story to the participants, describing in some detail where and when she was born, where and how she was educated, how her mathematical talents were discovered, how hard it was for her to be taken seriously as a mathematician, her moving out of Russia to further her education, her collaboration with Weierstrauss and Laplace, her eventual recognition as a mathematician after getting many prestigious prizes and her struggles and unhappiness in personal life.

AWM STUDENT CHAPTER

Bhama Srinivasan

Following a message from AWM President Carolyn Gordon, an AWM Student Chapter was started in Fall 2003 at the University of Illinois at Chicago. It was organized by Ju-Lee Kim, a faculty member since 2001, assisted by Brooke Shipley, a faculty member who arrived this fall, and by Bhama Srinivasan (AWM Past-President) and Vera Pless. The student officers were Jing Tao and Katherine Bird (Co-Presidents) and Talia Fernos and Ozlem Beyarslan (Co-Secretaries). Meetings were held monthly and started off with a talk by Jeanne Laduke (DePaul University) entitled "Women Mathematicians before 1940 in the US" on October 16. The next meeting on October 27 featured a talk by Lenore Blum (Carnegie Mellon University, past president of AWM) on "Transforming the culture of computing: The Carnegie-Mellon experience." Finally there was a talk and a party on December 10; the talk was by Marcia Sialom (State University of Campinas, Brazil) on

"Women Mathematicians in Brazil." All the talks were well-attended by an enthusiastic crowd, and all felt it had been a highly successful semester of events. Ozlem has made a web page for the Chapter, to be found at <http://www2.math.uic.edu/~awm>.

We would like to hear of similar experiences!

OPPORTUNITIES

Project NExT

Project NExT (New Experiences in Teaching) is a professional development program for new and recent Ph.D.s in the mathematical sciences (including pure and applied mathematics, statistics, operations research, and mathematics education). It addresses all aspects of an academic career: improving the teaching and learning of mathematics, engaging in research and scholarship, and participating in professional activities. It also provides

NSF-AWM TRAVEL GRANTS FOR WOMEN

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

Travel Grants. These grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization. A maximum of \$1000 for domestic travel and of \$2000 for foreign travel will be applied. For foreign travel, US air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

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

Target dates. There are three award periods per year. An applicant should send *five* copies of 1) a cover letter, including the conference name, conference dates and location (city/state/country), and amount of support requested, 2) a description of her current research and of how the proposed travel would benefit her research program, 3) her curriculum vitae, 4) a budget for the proposed travel, and 5) information about all other sources of travel funding available to the applicant to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The next three deadlines for receipt of applications are **May 1, 2004, October 1, 2004 and February 1, 2005.**

the participants with a network of peers and mentors as they assume these responsibilities. Each year, about sixty faculty members from colleges and universities throughout the country are selected to participate in a workshop preceding the MAA summer meeting, activities during the summer MAA meetings and the Joint Mathematics Meetings in January, and an electronic discussion network. Faculty for whom the 2004–2005 academic year will be the first or second year of full-time teaching (post-Ph.D.) at the college/university level are invited to apply to become Project Next Fellows. The application deadline is **April 16, 2004**. For more information, see the Project NExT Web site, archives. math.utk.edu/projnext/.

CBMS Regional Conferences

Proposals are invited for 2005 NSF-CBMS Regional Research Conferences in the mathematical sciences; they are due **April 8, 2004**. The five-day conferences feature a distinguished lecturer who delivers ten lectures on a sharply focused research topic of considerable current interest. The four conferences to be held in 2004 are: "Graph Algebras: Operator Algebras We Can See," "Wave Packets, Multilinear Operators, and Carleson Theorems," "The Combinatorics of Large Sparse Graphs," and "Non-Positive Curvature in Group Theory." Further information is available at <http://www.cbmsmet.org>.

SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

Through grants (*pending final funding approval*) from Elizabeth City State University and the National Security Agency (NSA), the Association for Women in Mathematics expects to support Sonia Kovalevsky High School Mathematics Days at colleges and universities throughout the country. Sonia Kovalevsky Days have been organized by AWM and institutions around the country since 1985, when AWM sponsored a symposium on Sonia Kovalevsky. They consist of a program of workshops, talks, and problem-solving competitions for high school women students and their teachers, both women and men. The purposes are to encourage young women to continue their study of mathematics, to assist them with the sometimes difficult transition between high school and college mathematics, to assist the teachers of women mathematics students, and to encourage colleges and universities to develop more extensive cooperation with high schools in their area.

AWM anticipates awarding 12 to 20 grants ranging on average from \$1500 to \$2200 each (\$3000 maximum per school) to universities and colleges. Historically Black colleges and universities are particularly encouraged to apply. Programs targeted toward inner city or rural high schools are especially welcome.

Applications, not to exceed six pages, should include: a) a cover letter detailing the proposed date of SK Day, expected number of attendees (with breakdown of ethnic background, if known), grade level program is aimed toward (ex. 9th & 10th grade only), total amount requested and organizer(s) contact information b) plans for activities, including specific speakers to the extent known; c) qualifications of the person(s) to be in charge; d) plans for recruitment, including the securing of diversity among participants; e) detailed itemized budget (i.e., food, room rental, advertising, copying, supplies, student giveaways, etc. Honoraria for speakers should be reasonable and should not, in total, exceed 20% of the overall budget. Stipends and personnel costs are not permitted for organizers. This grant does not permit reimbursement for indirect costs or fringe benefits. Please itemize direct costs in budget.); f) local resources in support of the project, if any; and g) tentative follow-up and evaluation plans.

The decision on funding will be made in late August. The high school days are to be held in Fall 2004 and Spring 2005. If selected, a report of the event along with receipts (originals or copies) for reimbursement must be submitted to AWM within 30 days of the event date or by June 1, 2005, whichever comes first. Reimbursements will be made in one disbursement; no funds can be disbursed prior to the event date. An additional selection cycle will be held February 4, 2005 for Spring 2005 *only if funds remain after the August 2004 selection cycle*.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, Maryland 20742-2461. For further information: phone 301-405-7892, email awm@math.umd.edu, or visit www.awm-math.org. Applications must be received by **August 4, 2004**; applications via email or fax will not be accepted.

AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PH.D.'S

supported by the Office of Naval Research, the National Security Agency,
and the Association for Women in Mathematics

Over the past sixteen years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings.

WHEN: The next AWM Workshop to be held in conjunction with the Joint Mathematics Meetings will take place in Phoenix, AZ, January 5–8, 2005. The workshop is scheduled to be held on Saturday, January 8, 2005 with an introductory dinner/discussion group on Friday evening, January 7.

FORMAT: Twenty women will be selected in advance of the workshop to present their work; the graduate students will present posters and the recent Ph.D.'s will give 20-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. The workshop will also include a panel discussion on areas of career development, a luncheon and a dinner with a discussion period. Participants will have the opportunity to meet with other women mathematicians at all stages of their careers. All mathematicians (female and male) are invited to attend the program. Departments are urged to help graduate students and recent Ph.D.'s who do not receive funding to obtain some institutional support to attend the workshop presentations and the associated meetings.

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

ELIGIBILITY: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years, whether or not they currently hold a postdoctoral or other academic position. Women with grants or other sources of support are still welcome to apply. All non-US citizens must have a current US address. All applications should include a cover letter, a concise description of research (two or three pages), a title of the proposed poster or talk, a curriculum vitae, and at least one letter of recommendation from a faculty member or research mathematician who knows the applicant's work. In particular, a graduate student should include a letter of recommendation from her thesis advisor. Nominations by other mathematicians (along with the information listed above) are also welcome. For some advice on the application process from some of the conference organizers see the AWM website.

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 URL: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **September 1, 2004**.
Applications via email or fax will not be accepted.

COLLABORATIVE RESEARCH GRANTS FOR WOMEN

Dedicated to the memory of Ruth Michler

Supported by the University of North Texas and the National Science Foundation
through Ruth Michler's POWRE grant

The objective of the Collaborative Research Grants is to enable women who are already tenured to carry out collaborative research at other institutions. (Women who are not yet tenured are referred to the Mentoring Grants Program.) The length of stay may vary from one week to several months, although only partial support will be provided for the longer stays. Each grant will fund travel, accommodations, and other required expenses for a tenured woman mathematician to travel to an institute or a department to do research with a specified individual. Typical grants will be under \$4000, although higher amounts may be awarded in exceptional cases. All travel must be completed by August 31, 2004. For foreign travel, US air carriers must be used (exceptions only per federal grant regulations; prior AWM approval required).

Applications: Applicants must be women mathematicians with a work address in the US. Slight preference will be given to women who have been recently tenured or who have an equivalent level of experience in an industrial or governmental position. The applicant's research must be in a field that is supported by the Division of Mathematical Sciences of the National Science Foundation. (See <http://www.nsf.gov/od/lpa/news/publicat/nsf03009/mps/dms.htm#1> for the list of supported areas.)

An application should consist of: 1) a cover letter; 2) a curriculum vita; 3) a research proposal (approximately five pages in length) which specifies why the proposed travel would be particularly beneficial; 4) a supporting letter from the proposed collaborator (who must indicate his/her availability at the proposed travel time), together with the curriculum vita of the proposed collaborator; 5) a proposed budget; and 6) information about other sources of funding available to the applicant. A final report will be required from each awardee. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu).

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

Collaborative Research Grant 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 URL: www.awm-math.org

APPLICATION DEADLINE: Funds are expected to remain after the February selection process, so there will be a further funding cycle. Applications are invited and must be received by **May 1, 2004**.

Applications via email or fax will not be accepted.

ADVERTISEMENTS

Assistant/Associate Professor in Statistics

The Department of Mathematics, Physics, and Computer Science at the University of the Sciences in Philadelphia (USP) invites applications for a tenure-track Assistant/Associate Professor position in Statistics starting in August, 2004. A Ph.D. in statistics, biostatistics, or applied mathematics is required by the starting date. Applicants must demonstrate a commitment to excellence in teaching as well as the potential for scholarly activity. Command of written and spoken English is required.

The Department has a unique Computer/Computational Science BS degree program geared to the biomedical, pharmaceutical, and health sciences. There are active minors in mathematics, physics, computer science, as well as a soon-to-be active minor in statistics. In addition to resources within the department, the successful candidate will have access to major pharmaceutical databases through the Philadelphia College of Pharmacy at USP and will be expected to continue the department's efforts in collaborative research with other components of the University. The computing facilities of the department and the university contain up-to-date computing equipment and software. More about the department can be found at our website: <http://www.usip.edu/mpcs/>.

Duties will include teaching undergraduate and graduate courses in statistics, biostatistics, and mathematics, as well as serving as a statistical consultant for BS, MS, Ph.D. and other graduate degree candidates.

USP is a unique, private health-science University with an enrollment of 2,600 undergraduate and graduate students, with programs in the natural sciences, pharmacy, and other health related areas. Consult our Web site at: <http://www.usip.edu> for additional information.

To apply, please submit a letter of application, a curriculum vitae, unofficial transcripts of all graduate work, a description of commitment to excellence in teaching, a brief description of planned scholarly activities, and contact information for three references to: **Dr. Gregory V. Manco, Chair, Statistics Search Committee, Department of Mathematics, Physics, and Computer Science, University of the Sciences in Philadelphia, 600 S. 43rd St., Philadelphia, PA 19104.** Applications will be accepted until the position is filled.



An Equal Opportunity/
Affirmative Action Employer

PENNSYLVANIA STATE UNIVERSITY – Mathematics Advanced Study Semesters (MASS) is an intense semester long program for undergraduates from across the USA based at Penn State: visit www.math.psu.edu/mass or email to mass@math.psu.edu. Applications for the fall 2004 semesters are welcome. Subject to the availability of funds, MASS participants receive support so that their out of pocket expenses do not increase.

PURDUE UNIVERSITY – DEPARTMENT OF STATISTICS – Faculty Position(s) in Statistics - The Department of Statistics at Purdue University has one or more openings for faculty positions. Screening will begin December 1, 2003, and continue until the position(s) is (are) filled. Essential Duties: Conduct advanced research in statistical sciences, teach undergraduate and graduate students and maintain service in the Statistics Department. Essential Qualifications: Require Ph.D. in Statistics or related field, in hand or expected by August 16, 2004. Candidates must demonstrate potential excellence in research and teaching. Salary and benefits are competitive and commensurate with qualifications. Rank and salary are open. Candidate for assistant professor should send a letter of application, curriculum vita and three letters of reference. For senior positions, send a letter of application or nominations, curriculum vita, and the names of three references. Purdue University is an AA/EA/EO employer and educator. Send applications to: **Mary Ellen Bock, Head, Department of Statistics, Purdue University, 150 N. University Street, West Lafayette, IN 47907-2067, USA.**

UNIVERSITY OF TENNESSEE – DEPARTMENT OF MATHEMATICS - The University of Tennessee Department of Mathematics invites applications for the position of Head. A Ph.D. in Mathematical Sciences is required. The successful candidate should be qualified to be tenured at rank of full professor in the department. Evidence of a distinguished record of research and a commitment to teaching as well as administrative experience should be provided at the time of application. A commitment to supporting both pure and applied mathematics is expected. Strong leadership skills and the ability to work effectively with colleagues, staff, and students are especially important characteristics. Experience with curricular matters, notable activity in professional associations, and experience with generating external funding are highly desirable. The successful candidate will also have an understanding of and demonstrated commitment to equal employment opportunities and affirmative action. The Mathematics Department currently consists of 39 full-time faculty, 30 full and part-time lecturers and 60 full-time graduate students representing both pure and applied mathematics. The faculty has a strong commitment to graduate and undergraduate teaching, is associated with many interdisciplinary programs, and maintains close research relationships with the Oak Ridge National Laboratory. Applicants should submit a letter of application including current research interests and administrative philosophy, a curriculum vitae, and at least 3 letters of recommendation. Women and minorities are encouraged to apply. Address material to: **Chair, Math Head Search Committee, Department of Mathematics, 121 Ayres Hall, University of Tennessee, Knoxville TN 37996-1300.** Review of applications will begin February 1, 2004, and will continue until the position is filled. The University of Tennessee is an EEO/AA/Title VI/Title IX/Section 504/ADA/ADEA institution in the provision of its education and employment programs and services.

WILLIAMS COLLEGE - DEPARTMENT OF MATHEMATICS AND STATISTICS - Williams College invites applications for a newly authorized full-time visiting position in mathematics for the 2004-2005 year, at the rank of assistant professor; in exceptional cases, however, more advanced appointments may be considered. Ph.D. required. Send vita and three letters of recommendation on teaching and research to: **Visitor Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267.** Consideration of applications will begin immediately and continue until the position is filled. As an AA/EOE employer, Williams especially welcomes applications from women and minority candidates.

Association for Women in Mathematics

2003/2004 MEMBERSHIP FORM

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

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

The AWM Newsletter is published six times a year and is part of your membership. Any questions, contact AWM at awm@math.umd.edu; (301) 405-7892 or refer to our website at: <http://www.awm-math.org>

LAST NAME _____ FIRST NAME _____ M.I. _____

ADDRESS _____

I DO NOT wish for my AWM membership information to be released for the **Combined Membership List**.

Email: _____

Home Phone: _____

Work Phone: _____

do not publish home number

do not publish work number

Date of Birth (optional): _____ (MMDDYYYY) [the date of birth field is to strictly help prevent duplicate entries]

PROFESSIONAL INFORMATION:

Position: _____

Institution/Company: _____

City, State, Zip: _____

If student, GRADUATE or UNDERGRADUATE (circle one)
 If not employed, leave position & institution blank

DEGREES EARNED:

Degree(s) _____

Institution(s) _____

Year(s) _____

Doctorate: _____

Master's: _____

Bachelor's: _____

MA_04

INDIVIDUAL DUES SCHEDULE

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

REGULAR INDIVIDUAL MEMBERSHIP.....	<i>For NEW Individual members: JOIN at the reduced rate of \$30.00 for the 03/04 membership year [valid thru 6/30/04]</i>	\$ 50	
2ND FAMILY MEMBERSHIP.....		\$ 30	
(NO newsletter) Please indicate regular family member: _____			
CONTRIBUTING MEMBERSHIP.....		\$100	
RETIRED or PART-TIME EMPLOYED MEMBERSHIP (circle one).....		\$ 25	
STUDENT or UNEMPLOYED MEMBERSHIP (circle one).....		\$ 15	
ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO).....	FOR ADDITIONAL POSTAGE ADD	\$ 8	
All payments must be in U.S. Funds using cash, U.S. Postal orders, or checks drawn on U.S. Banks.			
BENEFACTOR [\$2,500] or FRIEND [\$1,000] (circle one).....		\$	
<input type="checkbox"/> I am enclosing a DONATION to the "AWM GENERAL FUND".....		\$	
<input type="checkbox"/> I am enclosing a DONATION to the "AWM ALICE T. SCHAFFER PRIZE".....		\$	
<input type="checkbox"/> I am also enclosing a DONATION to the "AWM ANNIVERSARY ENDOWMENT FUND".....		\$	

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

INSTITUTIONAL DUES SCHEDULE

<input type="checkbox"/> CATEGORY 1 (includes 10 student memberships; 1 free ad; 25% off additional Newsletter & online ads*)..	\$250	
<input type="checkbox"/> CATEGORY 2A (includes 3 student memberships; 1 free ad; 10% off additional Newsletter & online ads*)....	\$125	
<input type="checkbox"/> CATEGORY 2B (includes 6 student memberships; 10% off Newsletter & online ads*).....	\$125	

ADVERTISING: Institutional members on Categories 1 and 2a receive ONE FREE job link ad or ONE FREE Newsletter ad (up to 4 lines) for the membership year Oct. 1st to Sept. 30th. All institutional members receive discounts on other eligible* advertisements (25% off for Category 1 and 10% off for Categories 2a and 2b). *Eligible advertisements: The institutional discount applies to both classified and job link online ads as well as classified Newsletter ads, but it does not apply to Newsletter display ads. If institutional dues have not been received by the invoice date, the full advertising rate will be charged. Newsletter advertising deadlines are the 1st of every EVEN month. All institutions advertising are Affirmative Action/Equal Opportunity Employers. **STUDENT NOMINEES:** Institutions have the option to nominate students to receive the newsletter as part of their membership. List names and addresses of student nominees on opposite side or attach a separate page. [ADD \$15 (\$23 for foreign members) to the listed institutional rate for each student add-on over the initial 10 students for Category 1; over the initial 3 students for Category 2a & over the initial 6 students for Category 2b]. For more advertising/membership info see www.awm-math.org

Indicate if GIFT membership FROM: _____ **TOTAL ENCLOSED \$** _____

ADDRESS CORRECTION FORM

- Please change my address to:
 Please send membership information to my colleague listed below:
 No forwarding address known for the individual listed below (enclose copy of label):
(Please Print)

Name _____

Address _____

City _____ State _____ Zip _____ - _____

Country (if applicable) _____ E-mail Address _____

Position _____ Institution/Org. _____

Telephone: Home _____ Work _____

- I **DO NOT** wish for my AWM membership information to be released for the **Combined Membership List (CML)**.

MAIL TO:

Database Corrections
 AWM
 4114 Computer & Space
 Sciences Bldg., University
 of Maryland, College Park
 Maryland 20742-2461

or E-MAIL:

awm@math.umd.edu

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