

Association for Women in Mathematics

Volume 17, Number 5

NEWSLETTER

September-October 1987

PRESIDENT'S REPORT

Although I am writing this report in the dog days of summer, most of us will be back to the rigors of our respective positions by the time this *Newsletter* appears. For many mathematicians, fall carries the additional responsibility of preparing grant proposals (I understand there are some very organized individuals who do this in the summer). I urge our women and minority members to bear in mind the many grants available through the ROW (Research Opportunities for Women) and Minority programs at the National Science Foundation. A thorough description of these opportunities is given in the article by Louise Raphael in this *Newsletter* (May-June 1987). One of the most attractive of the NSF offerings is the Visiting Professorships for Women program. I have spoken to many women who have received this grant or applied for it, and was surprised to learn that there is a wide variety of opinion regarding its efficacy. If you have had experience with this grant or have an opinion about the concept, I would appreciate hearing your views.

While on the subject of the NSF, I would like to take this opportunity to wish Dr. Kenneth Gross, who has been the Program Director for Modern Analysis for the past two years, best of luck as he leaves NSF for the University of Vermont. Dr. Gross has been a strong supporter of women and minority mathematicians while at NSF, and many women have commented on the encouragement he has given them.

* Linda Keen and I have written to the *Notices* regarding the lack of women speakers at the symposium on the mathematical heritage of Hermann Weyl at Duke University (see August *Notices*, Letters to the Editor). I received a thoughtful reply from R. O. Wells, the conference organizer, describing the mechanism whereby speakers were selected. Lists solicited from prominent mathematicians failed to produce one woman. One would have hoped that at some level, someone would have questioned this oversight. When women are not involved at any level of the organization process (except perhaps as the secretary), this situation can easily occur. We would like to see the NSF, as a supporter of such events, encourage reviewers of conference proposals to bear in mind the importance of including qualified women in these programs.

* At the AMS Council meeting in Newark in April, Cora Sadosky presented on our behalf a resolution urging the Council to rescind its resolution that would prohibit an individual from being nominated by petition more than twice in any ten-year period. She has informed me that our motion was defeated.

* Congratulations to Past President Linda Keen on the publication of *The Legacy of Sonya Kovalevskaya* (AMS, Linda Keen, Editor), the proceedings of events in October, 1985, at the Bunting Institute and AMS meeting in Amherst, celebrating Kovalevskaya's achievements.

* Paul Chernoff of the University of California, Berkeley, has shared with me some interesting correspondence he has had with the AMS regarding their report in the June *Notices* on the number of women giving AMS invited addresses, speaking in special sessions, and so on. Professor Chernoff questions the failure to determine the sex of invited hour speakers classified as foreign or unknown, as there are a rather small number of them. In connection with his point, our Journal and Speaker Subcommittee, chaired by Sun-Yung Chang (UCLA), is considering these issues in addition to looking

at the numbers of women editors of prestigious journals. This committee could use your help. If you are willing to volunteer, please contact Professor Chang.

* Please write to Anita Solow at Grinnell College regarding your experience with maternity policies.

* Sally Lipsey is now chairing our Math-Education Subcommittee. The charge of this committee is to prepare articles for the AWM and WME (Women in Mathematics Education) newsletters and to respond to requests for information that are directed to AWM on math-ed related issues. You may contact Sally Lipsey through the AWM office at Wellesley.

Rhonda Hughes
Department of Mathematics
Bryn Mawr University
Bryn Mawr, PA 19010

TO ALL MY AWM FRIENDS

I want to thank you for all your messages and pictures which are carefully preserved in my memory book which a group of you presented to me at the party given for me by Alice Schafer on June 15, 1987. There were 22 there, all of whom have been active in AWM in one way or another in the Boston area. The memory book contained notes from members all over the country, and I was touched by them.

I am thrilled with the beautiful Movado watch which all of you gave me. It is the nicest one I have ever had.

It has been a pleasure to work for you and with you for the last nine years, and I wish AWM all the best.

Sincerely,

Margaret Munroe
Administrative Assistant, 1978-1987
July 1, 1987

LETTER TO AWM MEMBERS

So what does it mean that AWM has an Executive Director? To tell the truth, I'm not sure. That's part of why I'm writing this letter: to invite comment and participation from AWM members so that I have a better chance of making this job what you want it to be. But first, let me tell you a bit about how I see this position.

In part, I am AWM's new secretary. I take care of the membership forms, the dues, the advertisements, and all the other daily things that are necessary for an organization of this size. I cannot do these things as well as Margaret Munroe yet, since I have only a few weeks' experience with the office, so I plead for your patience with mistakes. Please bring them to my attention, and I will do my best to remedy the situation.

In part, I am trying to make the Wellesley office even more of a resource. I am collecting bibliographies, articles, books, photographs, letters—anything that has to do with women/gender and math/science. In my first three weeks, AWM received several letters requesting general and specific information: from a high school student looking for activities for her Society of Women Engineers club, from a woman with a two-year-old bachelor's in math searching for a job, from a male Ph.D. with a summer's grant to study women and math. I have sent them what I could, and set to work building the office's resources and my knowledge.

In this regard, I would greatly appreciate receiving anything you think might be interesting to people interested in woman and math: newspaper clippings, career guidance materials, announcements of new publications, comments on books you love or hate. I am especially interested in educational programs you may be involved in or know about: what is happening, what works, what doesn't, perhaps some analysis of why. In general, I want to be able to answer people's questions, and any answers—or questions—are very welcome.

A third part of my job is working on special projects of various sorts. For example, I am putting together an index of the past issues of the *Newsletter*. My hope is that the index will make the *Newsletter* more accessible to scholars and ordinary folks who wish to understand more about the sixteen years since AWM was founded. I have found the old issues fascinating and hope that others will share my sense of exploration and new discovery. I will also be working on the Speakers' Bureau and hope that AWM will again be able to give honoraria, as well as travel expenses, to speakers.

This aspect of my job is especially open to suggestions. What do you think AWM should be doing? What can the Wellesley office do to facilitate its/your/our goals? How can we reach out to young women who are making critical decisions in their lives?

Feel free to write to me at any time. If you are in the area and wish to drop by, I would be glad to meet any AWM members. I am generally in the office from 9:30 to 5:20, Monday to Friday. Notice that at the end of the day I am here slightly beyond normal business hours and high-priced telephone rates. For those on limited budgets that would be a good time to call. Whenever you call, if I am not here I will call you back.

A final note: I will be coordinating the staffing of the AWM table in Salt Lake City. I will be at the table about three hours a day, and would love to meet people who drop by. Please sign up to staff the table for an hour: it's a great way to meet people interested in women and math.

I hope we can work together to make the position of Executive Director a valuable one for AWM. All comments, suggestions, complaints are appreciated (well, maybe not all complaints... but do complain if you feel the urge). Please keep in touch.

Lori Kenschaft
July 20, 1987, Wellesley, MA

EUROPEAN WOMEN IN MATHEMATICS

The second meeting will take place in Copenhagen on December 12-13, 1987.

As a result of the panel discussion at the International Congress of Mathematicians 86 on the situation of women mathematicians in different countries, it was decided to try to form an organization for Women in Mathematics in Europe. The first preliminary working meeting was held in Paris, December 13-14, 1986. The following countries were represented: Denmark, England, France, Italy, Sweden and West Germany. We hope that many more countries will be represented at the second meeting.

It is quite astonishing to be aware of how much the number of women in science differs from country to country. Therefore we should use the weekend to learn about the situation for women mathematicians in the different countries of Europe; to discuss further if we should form—more formally—a European organization for women in mathematics, based on national groups; to hear a few mathematical talks.

The meeting will start at noon on Saturday the 12th (with lunch) and end late in the afternoon on Sunday the 13th. We will have talks and discussions on Saturday afternoon and Sunday morning and afternoon. Saturday evening we will gather informally.

The situation as to financial support is not yet clear. If you are interested in attending the meeting please write to me; also indicate if you need financial support.

With best regards,

Bodil Branner
Mathem. Inst., Techn. Univ. of Denmark, DK-2800 LYNGBY, Denmark

HONORS AND AWARDS

Congratulations to Deborah M. Gordon of Harvard University who has received an NSF-NATO Postdoctoral Fellowship for study at the University of Oxford, England.

NSF Graduate Fellowships provide a stipend of \$12,300 per year for full-time graduate study. This rate is \$100 per month higher than for continuation fellows in order to cushion the effect of taxability of new fellow's stipends. An annual cost-of-education allowance of \$6,000 is also provided by the NSF in lieu of all tuition and fees to the U.S. institution selected by each fellow.

NSF Graduate Fellows may attend any appropriate nonprofit U.S. or foreign institution of higher education. Each fellowship is awarded for three years of graduate study. The fellowships may be used over a five-year period to permit students to incorporate teaching or research assistantships into their education during periods in which they are not receiving their fellowship stipends.

Congratulations to the recipients in the mathematical and computer sciences listed below (institutions listed in parentheses are those awarding bachelor's degrees; those listed outside the parentheses are those at which graduate study will be pursued). They constitute 19 of the 71 recipients in these areas. They are: Annamaria Beatrice Amenta (Yale University), University of California, Berkeley; Andrea Louise Bertozzi (Princeton University), Princeton University; Ingrid Karir Busch (Hillsdale College), Johns Hopkins University; Clara Sophia Chan (Harvard University), University of California, Berkeley; Carolyn M. Haibt (Princeton University), Massachusetts Institute of Technology; Nomi Lenore Harris (Princeton University), Stanford University; Leslie Ann Henderson (Rice University), Carnegie-Mellon University; Amy Katherine Kramin (Michigan State University), Stanford University; Julia Laetitia Lawall (Oberlin College), Carnegie-Mellon University; Melanie Lewis (Cornell University), University of Washington; Monica Ann McArthur (University of California, Los Angeles), University of California, Berkeley; Francesmary Modugno (Cornell University), Carnegie-Mellon University; Amy Fay Moormann (North Carolina State University), Massachusetts Institute of Technology; Catherine Elizabeth Myers (University of Delaware), Carnegie-Mellon University; Patricia Lynne Perkowski (Rice University), University of Maryland; Christine Piatko (New York University), Cornell University; Elizabeth Carol Schwerer (Harvard University), New York University; Laurel Liare Stell (New Mexico Institute of Mining and Technology), Cornell University; and Sarah Rebecca Thomas (Massachusetts Institute of Technology), Stanford University.

Joyce O'Halloran was supported by the Max-Planck-Institut für Mathematik during her stay there last fall. She was pleased to meet two other women there. Penny Smith from the U.S. was also supported by the Institut. Alice Fialkowski of Hungary was supported by the Humboldt Foundation.

O'Halloran has recently accepted an assistant professorship at Portland State University.

AMS ELECTION STATEMENTS

As usual, all candidates for AMS vice-president, Council member-at-large, and nominating committee member known in June have been invited to send a statement to this *Newsletter* in support of their candidacy. The topic of special interest suggested this year was the two motions on defense funding of mathematical research which are currently before the AMS membership. Other topics suggested for their discussion included women and minorities in mathematics, the role of the AMS Council, promotion and tenure practices, and the David report and its implications.

Two vice presidents will be elected. The Council has nominated James G. Glimm, Barry Simon, and William P. Thurston. A further candidate will be named later.

Five members-at-large of the Council will be elected. The Council has nominated Richard W. Beals, Johnny E. Brown, Robion C. Kirby, Albert Marden, Diana Frost Shelstad, Donald Solitar, and Harold M. Stark. At least three more candidates will be named.

Four members of the Nominating Committee will be elected. President G.D. Mostow has named Bernard M. Dwork, Jane P. Gilman, Robert Louis Griess, and Leonard L. Scott as candidates. Ronald A. DeVore has been nominated by petition. At least three more candidates will be named.

Kirby and DeVore were nominated too late to be invited to make statements.

VICE PRESIDENT

James Glimm, New York University, Courant

Women constitute slightly over half of the population. We have been much less successful in recruiting talented women to mathematics than we might have been. The problem is common to all of the mathematical sciences. Biology, the humanities and many professions are more successful in this respect.

Broad political pressures are now building to improve science education. The mathematics community will have a large role to play in this process. There is an opportunity to add women's issues to these political forces. How can we convince young women (and young men as well) that the mathematical sciences are an exciting intellectual adventure and a practical and promising career choice as well? I hope women who have chosen mathematics in the past will help to guide the encouragement of more women for the future of mathematics.

The more effectively it is possible to encourage talented women to pursue mathematics and remain in it, the more it will benefit both mathematics and the lives of the women who respond to this message.

On other topics, I have been active in many ways in helping to bring to pass some of the recommendations of the David report. As these policies succeed, we want to do two things. We must remember the core of mathematics; it is our common love for and belief in mathematics which carries us forward together. We must also remember our role in science and our chances to participate in and to lead broader scientific developments which have a central mathematical component.

The defense funding resolutions have unfortunately been addressed to the wrong issues. There has been no broad overall increase in the DOD support of mathematics. However, increasingly, support is being placed in sharply focused institutes, so that the support of the DOD for a broad program, even within applied mathematics, may be decreasing. The same trends will no doubt reach the NSF and pure mathematics. These trends have some positive as well as a number of negative aspects. The mathematical community cannot effectively respond alone, but in conjunction with other sciences, should try to influence these developments.

Barry Simon, California Institute of Technology

The most serious institutional problem facing the American mathematical community during the next 10 years appears to be an issue connected with staffing resources. The bulge in tenured faculty in their early fifties will be retiring or approaching retirement during that period. On the other hand, the total number of Americans in the college age group is decreasing as we reach the tail of the baby boom. If demographic factors alone were not bad enough, we have clearly not been as successful as we might have been in attracting young Americans into mathematics.

I have just finished chairing a committee of the CBMS looking into questions of graduate student enrollments during the past 10 years. The percentage of foreign graduate students in the group 1 and 2 institutions in mathematics has gone from roughly one-quarter to slightly less than half.

One partial way of trying to improve things would be to try to reach those groups which have been underrepresented in mathematics in the past, including racial minorities and women. But much more creative thinking, and perhaps focus on Federal programs, are called for. While I would intend to be active in all aspects of the operation of the AMS, I plan to focus especially on this issue of staffing resources.

Bill Thurston, Princeton University: Issues in mathematical politics

The environment for mathematics is changing rapidly. The changes bring with them difficulties and dangers for mathematicians and for mathematics—and opportunities. *We need more widespread and more focused discussion and action to face the issues.* The organization of the AMS is too closed and musty, with decisions made in a backroom process by a small number of insiders. More mathematicians need to become more involved in the affairs of the AMS.

Here are some of the problems we face:

(1). Not enough people are entering mathematics. The enrollment in graduate and undergraduate degree programs has fallen by roughly a factor of two over the past dozen years. This has been accompanied by a trend for a greater proportion of foreign mathematics students. I favor the idea of exporting mathematics to the rest of the world, but this does not alleviate the domestic problem. We face a national crisis in the staffing of teaching of mathematics. The shortage of young people entering mathematics also causes problems for research: we are spread thin over the number of interesting and significant mathematical research problems.

(2). Particularly, not enough women and minorities enter mathematics. This is a tough problem. I believe this is related to the low quality of mathematical education generally provided in our primary and secondary school systems. Budding mathematicians seem to get much of their mathematical and technical competence from a certain "nerd" culture which is an option mainly for white males, and from sources outside of school such as parents or friends. Young girls tend to concentrate much more on the official curriculum. Minority students are likely to have very few educational resources except from the schools. For these reasons, I think that improving the quality of mathematics education in schools would help increase the proportion of women and minorities in mathematics.

(3). Too much of the Federal support for mathematics is military and mission-oriented, and threatens to undermine the health of the field. I have been actively involved in this issue and helped draft the motions which will be presented to AMS members in a referendum in February. See *Letters* section of the January 1987 *Notices*.

(4). Mathematicians (as a whole) have not yet come to terms with computers. Computers will clearly be a part of the landscape in every mathematics department before long, but we have been slow in adapting to them. I believe the unfavorable comparison of computer equipment in mathematics departments with that in other science and engineering departments is one reason we are losing students. Computation is expensive, and we must work to get adequate funds for computation while not taking away from other needs, in particular the traditional NSF programs. Computers are time-consuming, and too many mathematicians (in particular, me) have become involved in solving technical problems more appropriate to technical staff—which for the most part doesn't exist. We need to adopt some of the patterns of the other sciences, e.g., ask for startup grants (of say 25 to 100 thousand thousand dollars) when we hire people as Assistant Professors or at higher ranks.

(5). Mathematics teaching in our school systems is in sad shape. More mathematicians should become involved in the school systems. This is coupled with (1): there are not enough mathematicians for the effort which really should be spent on the school systems.

(6). There is poor communication between mathematical subcommunities, e.g., those represented by the AMS, the MAA, and SIAM. There is also poor communication between mathematicians and other branches of science. We would all benefit from a greater exchange of ideas.

MEMBER-AT-LARGE

Richard Beals, Yale University

I feel that mathematics is necessarily an eclectic discipline. There is no single source of inspiration, no single way to approach the subject, and no strict division between pure and applied mathematics. We need to recognize and to make known that the health of mathematics depends on fostering research of many kinds, those which promise a specific short-term payoff but also those which do not. We need to attract people of talent from all backgrounds and all groups. Concerning the two motions on defense funding, I oppose both as now worded, though I do not want the AMS even to appear to endorse early deployment of SDI. It is appropriate for the AMS to provide a forum for debate on the merits of various sources and mechanisms of support, but not to take the institutional stand envisioned in motion 2.

Albert Marden, University of Minnesota: When the AMS speaks, who listens?

The national issue that has the greatest direct effect on the working mathematician is the issue of federal funding. The most precious thing that can be given to a serious practitioner of mathematics is peace, quiet and the freedom to pursue the subject in his/her own way. It is safe to say that the

summer research grant has played a large role in the past 25 years in expanding American mathematics to the scope it has today. But today we see a sharp percentage drop in the number of people holding grants and perhaps coincidentally a sharp percentage drop in the number of American-born math grad students. Over the past several years we have been sold a number of things the end results of which were to have been to alleviate the situation. You cannot sell to Congress the fundamental importance to mathematics of individual grants, we were told; you cannot sell the importance of having lots of talented people doing their own thing. Instead we are advised to do this indirectly, support more people through under-funded institutes, or through research that can be funded by the defense department. All I can see from this is increased divisiveness, and more travelling mathematicians. I cannot and will not believe that one cannot sell the truth. Partly this involves the difficult problem of how to explain in a meaningful way to a person who has learned to fear math in school what mathematicians do and why it is important. Because of its unique role as the organized representative of American research mathematics, we look to AMS to come to grips with these problems; the AMS must speak loudly and persistently on the essential issues, but only after careful background research and input from all sectors of its membership.

NOMINATING COMMITTEE

Jane Gilman, Rutgers University, Newark

As a candidate for the Nominating Committee, I have the following comments on the SDI and DOD funding motions which are before the AMS membership:

It is good that the motions will be widely debated both at AMS meetings, in the *Notices*, and in other forums. It is also good that there will be a secret mail ballot. While the SDI and DOD funding motions address important issues, there are a variety of other important issues which the AMS must address in the near future. These include the more general question of proper modes and adequate levels of research funding, adequate research opportunities, a projected shortage of trained mathematicians, and serious problems in mathematics education. Therefore it would be short-sighted for the Nominating Committee to promote single-issue candidates or to use any position (e.g., for or against the SDI/DOD funding motions) as a litmus test in the choice of candidates. The Nominating Committee should seek out well-informed and thoughtful candidates who are sensitive to the diversity and the complexity of the mathematical community.

Leonard L. Scott, The University of Virginia

My main interest in seeking this position is in funding policy for research, in particular as they deal with interdisciplinary initiatives. After the speeches by Bloch and others at the New Orleans meeting in '86, I was the first (the only?) at the AMS social afterward to urge upon president-elect Mostow a more active participation and voice directed toward matters of national funding policy. In my view the new initiatives represented both great opportunities for mathematics, and at the same time considerable dangers, which nobody at the time seemed to be thinking about. And the greatest danger is for the Scientific Community not to have sufficient input to funding and funding policy.

I am first of all a pure mathematician, and spend by far most of my research time in that activity. But I have participated extensively in interdisciplinary seminars in my university. I have seen how scientists in other departments think, and how administrators within the university think about local interdisciplinary initiatives, and how they think about the new possible funding sources. You will not get doctrinaire answers from me, but moderation and experience to channel the great forces at work in our national policy to the benefit of mathematics, as well as to society as a whole.

You asked specifically about the two motions before the Society. I would vote no on the first motion, largely because it draws the issue involved in SDI in too simplistic terms, and because it has overtones of restricting individual academic freedom. I would vote in favor of the second resolution, which is phrased in more reasonable terms, yet does address a real danger. Aside from serious questions regarding the health of our standard funding programs, how many of the small, scientifically oriented interdisciplinary groups now operating on many campuses would continue to flourish, to keep their goals and identity, if all interdisciplinary funds available were very strictly mission oriented, and

awarded with little scientific input? Some universities have already begun to recognize the problem, which might, in fact, begin to be met at the university level by strong policies insisting upon some discretion in the use of mission-oriented funds, a kind of second "overhead". But most administrators will completely ignore the problem until there are strong statements from institutions such as the AMS you can throw on their desks.

Finally, after all of this interdisciplinary discussion, let me reaffirm my strong belief in the value of pure mathematics. One of the great problems we face is that many well-meaning scientists and scientific administrators do not really share this belief. I do not really believe the problem is entirely public relations, but that bridges of genuine cooperation and mutual contact need to be built. But bridges are meant to be travelled in both directions, and part of the job of the AMS, as well as its individual members, is to better educate the scientific community regarding mathematics, and to encourage mathematical activity in other disciplines.

REPORT ON THE SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAY

by Donna Beers, Associate Professor, Simmons College and Member, Organizing Committee

On Monday, April 6, 1987, sixty-one Boston area high school mathematics teachers and two hundred sixty-seven of their young women students met at Park Science Center, Simmons College for a program on the applications of mathematics. This special occasion, sponsored jointly by the Association for Women in Mathematics and Simmons College, was called the Sonia Kovalevsky High School Mathematics Day in honor of the first woman ever to receive the Ph.D. in mathematics. The purpose of the gathering was to encourage and inspire young women high school students to pursue the study of mathematics and prepare for possible careers in mathematics-related fields and to share with high school teachers some of the most up-to-date resource materials for the high school curriculum.

In the morning, students and teachers separated for their own individual programs of workshops on the uses of mathematics. These workshops were run by mathematicians from academia and industry. For students, there were six choices: Bet on Random Numbers and Win; Chances: Putting Probability to Work; Computer Network Protocols; Covering Your Bases; The Role of Mathematics in Decision Making; and Unemployment, Toothpaste, and Kicking Tires Across the Highway. Each student participated in two of the six workshops and also took part in a problem-solving contest led by Ethan Bolker, Professor of Mathematics at the University of Massachusetts, Boston. Teachers also participated in two of six workshops on applied mathematics. The topics for teachers were: Female Mathematicians; Electronics, Head Start, and High School Algebra; Predicting the Course of a Rumor or an Epidemic; Problem Posing and Problem Solving: Doing It and Teaching It; and The Network Design Problem. Each teacher also attended a presentation on films and curricular materials developed at the Consortium for Mathematics and Its Applications (COMAP) given by Solomon A. Garfunkel, the Executive Director of COMAP.

In the afternoon, students and teachers reunited for a luncheon and heard a brief talk on the life and work of Sonia Kovalevsky, given by her biographer, Ann Hibner Koblitz, Assistant Professor of History at Wellesley College. Following the luncheon, Ethan Bolker went over the contest problems with students and teachers, and prizes were awarded to student winners. One of these winners was invited to be present at Governor Dukakis' office when he signed a proclamation declaring the week of April 13th to be Mathematics Awareness Week in Massachusetts.

The day concluded with a reception hosted by Anne Coghlan, Dean of Sciences at Simmons College.

We are very grateful to the Cabot Corporation Foundation Inc., Digital Equipment Corporation, Raytheon Company, the MITRE Corporation, Arthur D. Little Inc., Pfizer Inc., Birkhäuser/Springer-Verlag, W.H. Freeman, Academic Press, and Houghton-Mifflin Company for their support of the Sonia Kovalevsky High School Mathematics Day. We are especially grateful to Alice T. Schafer, Helen Day Gould Professor of Mathematics Emerita, Wellesley College and Lecturer in Mathematics, Simmons College, for initiating the Sonia Kovalevsky Day and serving as its primary organizer.

A lively account of the full day's events appeared in the *Boston Sunday Globe* on April 12, 1987 under the title "Females plus math equal success" by Marty Carlock. The following excerpt is from that article.

The corridor at Park Science Center at Simmons College was as packed with young women as the hall outside the dressing room door of a rock star. When the door of room 309 opened, there was a little rush and some genteel jostling, but not to see an entertainment idol—merely to get a seat for a workshop in the mathematics of random numbers.

...
The seminar with the crowd outside the door was called "Bet on Random Numbers—and Win." Taught by Dr. Michael L. Brown, associate professor of mathematics at Simmons, it was popular enough to be offered in triplicate.

"I'll make you a bet," Brown told the group. "We'll take a set of random numbers, such as the statistics in this book of physical and chemical tables. We'll open to any page and look at the first digit of every number. "Every time the digit is 1, 2, 3 or 4, you pay me a quarter. Every time it is 5, 6, 7, 8 or 9, I'll pay you a quarter. Would you like to take that bet?"

The students thought they would. It looked like odds of 5-to-4 in their favor. On the first page they checked, Brown (theoretically) made \$15.50. Further analysis revealed that the odds are really about 70 percent in Brown's favor.

"What this shows is that the first digits of random numbers are not evenly distributed. I first learned this in high school, and I found it really surprising. I've showed it to able mathematicians, and their intuition was the same as yours, that the odds are 56 to 44 against me."

ELAINE TATHAM'S MATH MIRACLES

by Christine Riccelli

reprinted from *Corporate Report/Kansas City*, September 1985, pp. 61-62

Elaine Tatham, president of ETC Institute in Olathe, says she wouldn't be where she is today without the former chairman of the math department at Carleton College in Northfield, Minn.

"There were times I had doubts about what I was doing because, in those days, girls just weren't math majors," says Tatham, who graduated from Carleton in 1958. "But the chairman, Kenneth O. May, took a lot of interest in me and really influenced my life. He was instrumental in helping me establish my career."

That career has spanned 25 years and consisted of teaching and consulting in a variety of places—from Japan to Hawaii to Ottawa, Kan. In December of 1982, Tatham decided to use those years of experience to start her own management consulting firm.

"Like most people who start their own business, I wanted to try something out on my own," says Tatham, an amiable woman with an easy conversational style. "It was scary at first, but so far it's going well."

ETC Institute specializes in market research, providing services in questionnaire design, trend analysis, forecasting and data processing. The staff includes one other full-time researcher and several part-time researchers and data entry programmers who work on an as-needed basis.

Tatham feels the skill in her job is in interpreting results of the collected data. "A lot of people don't know what to do with data once it's collected," she says. "We help companies and organizations figure out how to *use* the information for short- and long-term planning."

Since going into business, Tatham has conducted studies for a variety of businesses and government agencies, including a study of the rental housing market for the U.S. Army; a feasibility study (which received a 99.6 response rate) for a new elementary school for the city of Lenexa; and a population forecast and trend analysis for Johnson County.

Currently, she is providing an ongoing statistical analysis of the local real estate market for the Commercial Brokers of Kansas City. She is also studying demographic changes in the Westport-Plaza area as part of a feasibility study by Hollis & Miller architectural firm. Sponsored by Community Christian Church on the Plaza, the study will be used by the church for long-term planning.

In addition to running her business, Tatham is teaching a management course in the engineering master's degree program at the University of Kansas. In the past few years, she has also taught health services management at Webster University and a quantitative methods course at the University of Missouri-Kansas City.

After graduating from Carleton, Tatham studied on scholarship at the University of Oslo in Norway. "I had the travel bug," she remembers. "It really was a delightful experience."

Upon returning to the United States, she decided to go on to graduate school at Kenneth May's urging. She laughs when she recalls why she chose the University of Kansas in Lawrence. "I wanted

to pursue a career, but I also wanted to get married," she says. "And the University of Kansas had a high proportion of men to women at that time."

She did indeed meet her husband there and received her master's in math in 1960. From there, she moved to Honolulu to teach in the math department at the University of Hawaii. "It was a lot of fun to go to faculty meetings then," remembers Tatham. "My husband would be with me, and everyone assumed that my husband was the one on faculty, but he was the student and I was the teacher."

In 1964, a professor at the university received a grant from the National Science Foundation to teach continuing education courses for secondary school teachers of military dependents in the Far East and asked Tatham to participate in the program. Anxious to travel, Tatham accepted the offer and spent three months teaching near Tokyo.

After she left Japan, she joined the staff of Franklin College, near Indianapolis, where she and her husband lived in a men's dormitory as resident directors.

After two years, Tatham moved to Ottawa, where she juggled teaching part-time at Ottawa University, going to school to earn her doctorate and raising a family. "Things were a little wild then, but I managed to do it all," she says. "I've always been a good time manager, which was really useful at that time."

She learned the art of managing time at a young age. "I come from a big family, and when I was in high school my mother became very ill. I managed all the household chores and still was the valedictorian of my class," says Tatham, who grew up in a small town about 60 miles south of Minneapolis. "I'm good at anticipating work; I do it as I go along so I don't end up in a crunch."

Upon receiving her doctorate in 1971, Tatham moved to Kansas City and joined Johnson County Community College, where she developed the college's Institutional Research Office. While there, she met Harold Finch, who was one of the founders of Padgett-Thompson, a management seminar firm. In 1981, he asked her to join the firm as vice president.

When she decided to start her own company, she converted what once was a house on a quiet street in Olathe into offices. She says her business has grown primarily through word of mouth. "Through my years of research experience, I have gained a good reputation," says Tatham in a modest way.

Tatham expects her business to keep growing and this fall plans to hire another full-time person, install a larger phone system—an important tool in the research business—and buy more data processing equipment.

For the future, Tatham is interested in establishing an exchange program between companies in Kansas City and Europe. While she was in Europe this past year, "I found that most Europeans have never even thought about Kansas City," she says. "I would like to find a way that Kansas City can know about Europe and Europe about Kansas City, both for tourist trade as well as investment and development.

"Besides that," she admits, "I'm looking for a way to travel to Europe on a regular basis."

GENDER AND SCIENCE PANEL

by Marian Greenspan

reprinted by permission from *AWIS/New England Newsletter*

Transcripts of the presentations and subsequent audience discussion are available from the AWIS National Office, Suite 303, 2401 Virginia Ave., NW, Washington DC 20037.

Our February meeting was an extremely well-attended panel discussion on gender and science. It was pleasant to have this many lively and articulate female colleagues in the same room. The panelists included two scientists and two philosophers. The scientists were our president, Mary Beth Ruskai, a mathematical physicist and professor at the University of Lowell, and Barbara Liskov, a professor of computer science at MIT. The two philosophers were Libby Potter, a feminist philosopher from Haverford College, and Caroline Whitbeck, a philosopher from the Center for Technology, Policy, and Industrial Development at MIT. The panel was moderated by biologist Harlee Strauss of Gradient Corp.

The first speaker was Beth Ruskai. She voiced her concern at the lack of communication between women scientists and those who study women in science or describe us in the popular press.

Social scientists, among them feminists, who seek to explain the reasons that more women do not become scientists frequently see science as incompatible with what they label feminine nature, without understanding how science is done or justifying their narrow definition of "feminine nature." Beth gave examples which show that these social scientists often fail to realize that science is creative and intuitive, seeing it as a dull process of collecting facts and manipulating numbers. She cited *Ms. Magazine's* failure to name a female Nobel laureate in a list of outstanding women of the year as a noteworthy example of the neglect by feminist women who are not scientists of the achievements of women scientists.

Because our self-concept is an important factor in deciding whether women will become scientists or engineers, the second panelist, Libby Potter, discussed different ideas of what the "self" is. She contrasted the Cartesian theory that the self is a natural attribute, unaffected by society, with the post-modernist idea that the self is a social construct, strongly affected by the culture in which we live. In the post-modernist view, social theories and stereotypes can be self-validating: if people are expected to behave in a certain way they tend to fulfill those expectations. She gave the "feminine image", which does not include scientific ability, as an example of such a stereotype, one which fits a few women, which most women battle to varying degrees, and which a few women manage to ignore. Potter discussed briefly the work of Evelyn Fox Keller. Keller claims that women scientists who live out certain "feminine" characteristics do science differently than women who repress these characteristics to fit the cultural stereotype of a scientist, and differently than male scientists.

The third panelist, MIT professor Barbara Liskov, was concerned with causes of attrition among women graduate students at MIT, and among women in science in general. As one source of the problem, she gave women's lack of self-confidence, citing a study of graduate students at MIT in which women consistently ranked themselves lower in ability than male students although objective criteria did not support this. Liskov stated that science has a masculine image, a fact to which we women scientists must reconcile ourselves. However, she reminded us that science requires creativity and intuition, traditionally feminine or sex-neutral traits. Dr. Liskov does not feel that there is such a thing as "feminine science", but rather good and bad science done by both sexes.

Philosopher Caroline Whitbeck, the final speaker, decried the dualistic thinking behind attempts to categorize everything in the world as either masculine or feminine. She feels that classifying styles of doing science as masculine or feminine may be such an artificial dualism. Whitbeck voiced her concern that the proportion of women in technology has not increased as much in the last few years as the number of women in pure science. As an example of the technological achievements of which women are capable when their culture encourages them, she gave the invention by Shaker women of the clothespin and the circular saw. Whitbeck feels that women scientists' status as outsiders may make it easier for us to question received wisdom, and to avoid placing things into accepted categories.

The four panelists' presentations were followed by a lively discussion. Unfortunately, I could capture only a few of the comments. Biologist and AWIS-NE president-elect Eva Kashket pointed out that the distribution of human abilities falls on a bell-shaped curve. Eva said that although it is possible that the mean values for certain abilities are different for men and women, this is likely to be overshadowed by the variation about the mean within each sex. Obviously there are very able male and female scientists. Eva related that she had learned, eventually, to ignore those who expect her to conform to their stereotype of femininity. She recalled one incident in which she was told that because she was a scientist, she was unfeminine, although she was very obviously pregnant at the time. Eva pointed out that male scientists are driven by their hormones too.

Panelist Beth Ruskai said the problem is a lack of tolerance for human diversity. She told of a nightmarish vision, in which work by Camilla Benbow suggesting a link between testosterone and mathematical ability becomes accepted, and girls who get A's in high school algebra are treated with estrogen to "cure" them. Graduate student Jill Schneiderman said that we need more women in science so that we can provide each other with moral support. AWIS-NE newsletter editor Kris Templeman stated that we should not feel guilty about the lack of self-confidence mentioned by panelist Barbara Liskov, that this lack of self-esteem is imposed on women by society. Past AWIS-NE president Holly Hine, who has two daughters in school, deplored the state of science education in public schools. Melissa Goodman, a graduate student in astronomy at Harvard, remarked that she and the other women in her program are wondering what all the fuss is about, that to this point in their careers they have not experienced significant discrimination. She was assured by various members of the audience that things get worse later on, when more people are chasing fewer positions.

Next month's speaker, historian Ann Koblitz, pointed out that the rate of attrition among women in graduate programs in non-scientific fields is also high. She said that we are not experiencing the

second wave of feminism, but rather the fifth or sixth, and that we must not let down our guard against losing the gains we have made. Another audience member commented that audience and panel remarks show clearly that women scientists do experience discrimination. Thus our experience is different from that of male scientists, and this may have an effect on how we do science. Stephanie Bird, who majored in both philosophy and biology as an undergrad, said that she had experienced much more discrimination in the philosophy than in the biology department. Moderator Harlee Strauss, who works in risk assessment, said that men are usually the subjects in risk-a studies, and that the results may not be valid for women. Harlee stated that to change this situation, we need more women toxicologists, and more women experimental subjects. Finally, a courageous audience member raised the question of whether physiological differences between men and women affect the way we do science.

THE TRIUMPH OF DOROTHEA KLUMPKE

by Kenneth Weitzenhoffer, Brooklyn, New York
reprinted by permission from *Sky & Telescope*, August 1986, pp. 109-110
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Thanks to Susan Friedlander for bringing this article to our attention.

The balloon *La Centaure*, bathed in the light of the full Moon, rose over Paris into a bitter wind a few minutes after 1:00 A.M. on November 16, 1899. Its task was to carry an astronomer above the autumn ground fog to observe the last great sky show of the 19th century, the Leonid meteor shower.

The seven-hour flight was a scientific disappointment: only 15 Leonids were observed. But it was a great milestone for women in science, because the astronomer aboard *La Centaure* was Dorothea Klumpke. At age 38 she had become the first woman to make astronomical observations above the Earth's surface, augmenting an illustrious career that would continue well into the 20th century.

Dorothea Klumpke was born in San Francisco in 1861, one of seven children of a forty-niner who ran out of luck in the gold fields but made a fortune in San Francisco real estate. Each of the five Klumpke sisters was extraordinarily gifted. Their mother believed her daughters should have the same educational advantages as men but could find no suitable schools in post-gold-rush San Francisco. Therefore, she took her talented brood to Europe, placing them in schools in Germany, Switzerland, and France before settling permanently in Paris.

Each of the Klumpke sisters forged a distinguished career. Augusta became a neurologist despite intense resistance by physicians of that time to women in their ranks. Mathilda became a concert pianist, Julia a concert violinist and composer, and Anna a painter of landscapes and portraits. Dorothea initially followed her musically inclined siblings but, like Caroline Herschel a century before, switched to astronomy.

Soon after she received a bachelor of science degree in mathematics from the Sorbonne in 1886, Klumpke joined the staff of the Paris Observatory. There she assisted pioneer astrophotographers Paul and Prosper Henry. The Henrys had recently completed a new 13-1/2-inch refractor designed to facilitate their asteroid hunting by providing photographic star charts. Klumpke's assignment was to measure and reduce the star-field plates.

In April, 1887, an international congress of astronomers from 17 countries convened at the Paris Observatory at the invitation of its director, Adm. Ernest Mouchez, to discuss the role that photography would play in mapping the heavens. Dorothea used her talents as a linguist to translate papers presented at the conference into French for the official record. Out of this first congress was born the *Carte du Ciel* project for a photographic atlas of stars down to 15th magnitude (*S&T*: September, 1982, page 237).

By 1891 the *Carte du Ciel* program was well under way. So many plates awaited measurement that Mouchez found it necessary to establish a special bureau to clear up the backlog. Klumpke applied for its directorship, competing as a foreigner and a woman against some 50 men. Despite the formidable odds, Klumpke won the post, becoming the first woman to head a department of the Paris observatory. For the next decade she managed the work of assistants who measured and reduced star positions for the accompanying star catalogues.

On December 14, 1893, Dorothea was again at the Sorbonne, standing before an expectant gathering of professors and several hundred spectators. The treatise she read on Saturn's rings won her a doctorate in mathematics that day. "Your thesis," one of the examining professors said during the award ceremony, "is the first which a woman has presented and successfully sustained with our faculty to obtain this degree. You worthily open the way. ..." The *New York Times* carried a front-page article under the headline, "An American Woman's Triumph."

New Heights

Nearly a century before the nations of Europe collaborated on a spacecraft mission to Comet Halley, the scientists of Russia, Germany, and France made plans to launch balloons so that astronomers could observe the Leonid meteor shower of mid-November, 1899. "I do not know what good fairy overheard my wish to take a trip in the blue sky," Dorothea wrote of her voyage in *La Centaure*. "My surprise was great when I learned the French Society of Aerial Navigation had chosen me for the astronomical expedition of the Leonids. After reflection I accepted the unexpected invitation. I had the mysterious and alluring anticipation of an ascent in a balloon."

The Leonids, magnificent in their displays of 1799, 1833, and 1866, were confidently predicted to fill the skies with shooting stars once again. But reality fell far short of these predictions. By 1:00 A.M. on November 16th, as Klumpke waited to go aloft in *La Centaure*, she already knew of disappointing reports from a flight on the previous night. Undaunted that the Leonids had failed to appear, she resolved to go ahead with her planned observing program. *La Centaure*, carrying the balloon's pilot, a secretary, and Klumpke, ascended to a height of more than 1,600 feet and drifted westward over Normandy, toward the English Channel. They saw only 30 meteors during five hours of observing, of which half were Leonids. Seven hours after launch *La Centaure* made a dawn touchdown near a small coastal village. The three voyagers, who had logged 176 miles at an average speed of 25 miles per hour, celebrated with a breakfast of cold chicken and champagne. The flight brought Klumpke accolades as the leading woman aeronaut of France. The next year her account, "A Night in a Balloon: An Astronomer's Trip from Paris to the Sea in Observation of the Leonids," appeared in the prestigious American *Century Magazine*.

The Realm of the Nebulae

In 1896 Dorothea sailed the Norway aboard the *Norse King* to observe the total solar eclipse of August 9th. Among her fellow passengers was Isaac Roberts, a successful Welsh businessman-turned-astronomer who had been a delegate to the first *Carte du Ciel* conference. Struck by the camera's potential in astronomy, he had retired from his business to become an expert in the near-virgin field of deep-sky photography. In 1888 he used his 20-inch reflector to take the first photograph showing spiral structure in the Andromeda nebula, M31. The eclipse was clouded out, but Dorothea and Isaac, a widower more than 30 years her senior, became friends on the voyage. In 1901 they were married.

The newlyweds settled at Isaac's home south of London, dubbed "Starfield." At his observatory there, they collaborated on expanding his already extensive deep-sky program, with emphasis on William Herschel's 52 "fields of nebulosity."

Isaac died in 1904 at the age of 75, leaving his widow well provided for. Dorothea returned to France, bringing with her Isaac's vast plate collection. She published two photographic atlases and associated catalogues of deep-sky objects as memorials to her husband.

No less than 12 learned societies in Europe and the United States elected Dorothea Klumpke Roberts to their memberships in recognition of her scientific achievements. She was the first woman to become an officer of the Paris Academy of Sciences, and the first recipient of the Prix des Dames from the Astronomical Society of France. A final accolade came in 1934, when she was made a chevalier of the Legion of Honor for her long service to French astronomy. Soon afterward, Dorothea and her sister Anna returned to San Francisco, ending more than 50 years of life abroad. In 1942, just a few months after the death of her sister, Dorothea Klumpke Roberts died at age 81.

After her dramatic night flight aboard *La Centaure*, Dorothea had found herself "safe back in my little student's room at the Observatory of Paris. ... My body seemed lighter than ever, and I had the sensation of floating in air, and my heart was filled with gratitude." These words of joy are the best valediction for this true pioneer, whose spirit lives on in today's woman astronomers.

AN OVERVIEW OF THE SOUTHEAST ASIAN SEMINAR ON WOMEN AND SCIENCE IN DEVELOPING COUNTRIES (HANOI, 8-10 JANUARY 1987)

by Ann and Neal Koblitz

reprinted from *Kovalevskaia Fund Newsletter* Vol. II, No. 1, May 1987

Address for Correspondence: Dr. Ann Hibner Koblitz, Director, Kovalevskaia Fund, 6547 17th Ave. N.E., Seattle, WA 98115

The Southeast Asian Seminar on Women in Science in Developing Countries took place as planned in January, and it was a tremendous success. There were 47 delegates from Algeria, Cuba, Kampuchea, Laos, Mongolia, the Philippines, the Soviet Union, Sweden, Thailand, the United States, and Vietnam, as well as representatives from UNICEF, ESCAP, and other international organizations.

As we walked from the Air Vietnam plane that had brought us from Bangkok for our fourth visit to Hanoi, we heard a voice from behind us: "Are you for the Women's Seminar? Come this way please." A special van whisked us from the tarmac, past passport control to the reception area, where representatives of the Vietnam Women's Union helped us retrieve our luggage with no customs formalities—much to the bewilderment of the envious diplomats from our plane who were accorded no such VIP status.

This red carpet reception set the tone for the treatment of foreign delegates by the Vietnamese throughout the Southeast Asian Seminar on Women and Science in Developing Countries. Reports on the seminar were carried on Vietnam's national evening news all three days of the conference; the first day it was the lead item on the network news. *Nhân Dân*, the leading daily newspaper of Vietnam, ran front page articles on January 10th and 11th. All foreign participants were interviewed by Vietnam TV and/or radio, and the journal of the Women's Union conducted some in-depth interviews as well. The seminar was held in the best hotel conference facilities in Hanoi, and teams of typists, technicians and translators were brought in to work full-time through the conference. In a country with acute shortages of paper, typewriters and audio equipment, each seminar participant had earphones to receive high-quality simultaneous translation (either Vietnamese-English or English-Vietnamese) of all reports and discussions. Moreover, English language versions of 24 out of the 27 talks were typed, reproduced, and distributed to all participants before the end of the three-day seminar.

The symbolic climax of the seminar was our hour-long meeting in the Presidential Palace with His Excellency Prime Minister Phạm Văn Đồng, who is not only head of state but also one of the legendary historical personalities of the twentieth century. Despite his advanced age, the Prime Minister talked directly with each questioner, unassisted by aides.

His answers and comments were sharp and to the point, and often witty. In addition to expressions of friendship and solidarity from women from Cuba, the Soviet Union and the Philippines—and a statement about the need for regional peace and increased trade by the representative of the National Council of Women of Thailand—he was asked questions of a more argumentative sort. When, asked a Filipina scientist and feminist, would there be a socialist country with a female head of state? Why, asked an American statistician, had the TV interviewer asked her about her role as wife and mother, and then seemed unhappy to learn that she was neither? Couldn't a woman be a suitable role model because of her success in her career and her social activism, whether or not she chose to have children? Even though the Prime Minister's answer to the latter question revealed a disagreement with the prevailing view held by women's rights advocates in the West, everyone agreed that he responded to all of our questions and statements with a combination of seriousness, warmth and informality. A picture of Mr. Phạm Văn Đồng surrounded by the women from the seminar appeared the next day on page 1 of *Nhân Dân*.

Why did the leadership of the Vietnamese government and media attach such importance to a conference which in other countries would have attracted little attention outside narrow academic circles? We can suggest some possible reasons, reasons which also explain why we proposed to hold the seminar in Vietnam in the first place.

(1) Vietnam, like China, has an ancient scholar-statesman tradition. The extreme respect for scholarly attainment was illustrated in our excursion to Van Miêu (Palace of Literature), a secular university founded in 1070 whose most successful graduates staffed the royal courts over the centuries. Unlike in China, which in the 1960's went through a period of repudiation of the special status of intellectuals, in Vietnam the universal popular esteem for scholarship has been continuous and uninterrupted.

(2) Vietnam also has a long and well-known history of women's leadership. An avenue and a pagoda in downtown Hanoi bear the name of the Trung sisters, who in 40-43 A.D. led a rebellion against the Chinese occupation. Continuing this tradition, the current President of the Vietnam Women's Union, Her Excellency General Nguyễn Thị Định, was formerly the supreme commander of the army of the National Liberation Front of South Vietnam. Her colleague, Her Excellency Mme. Nguyễn Thị Bình, Vice-President of the Vietnam Women's Union, was the Foreign Minister of the Provisional Revolutionary Government of South Vietnam and its chief delegate at the Paris peace talks. They are the best known of a large group of women in Vietnam who wield considerable political power and moral authority. We know of no other country with a women's organization having the clout that the Women's Union has in Vietnam.

(3) In particular, in scientific, medical and technical fields there are now many women in Vietnam who enjoy international reputations and occupy positions of responsibility and influence. They played a vital role in generating support for the seminar.

(4) Vietnam is eager to build ties—scientific, cultural and economic, as well as political—with other countries of the region, most of which are under pressure from the U.S. and China not to enter into such relations. The Seminar on Women and Science provided an opportunity to show that Vietnam can provide crucial leadership in bringing together people from different countries to work constructively on questions of social, economic and scientific development.

The extraordinary visibility of the seminar means that it can be expected to have an impact in Vietnam much greater than it would have had anywhere else. School teachers throughout a nation of over 60 million people are getting the message—from TV, radio, newspapers, the journal of the Women's Union—that it is important to encourage girls to study science and mathematics. And women students and scientists are being reassured that they are acting in the best interests of their country when they struggle against remnants of backwardness and traditionalism among their friends, family and male colleagues.

This trend toward greater visibility and encouragement of women's role in science, technology and medicine was further reinforced by the attention given by the Vietnam Women's Union and the government and media to the Kovalevskaja Prize. The prize, which includes books and supplies for scientific purposes, is to be awarded each year to two outstanding women professionals. The first two laureates of the Kovalevskaja Prize were Bùi Thị Tý, a high school mathematics teacher of advanced students, and Nguyễn Thị Kim Chi, director of a pharmaceutical factory which specializes in extractions from native medicinal plants. The books which the two prizewinners had requested were formally presented to them at the closing ceremonies of the seminar, and the event was highly publicized throughout Vietnam.

Of course, all the publicity surrounding the seminar did not by itself guarantee that it would be intellectually productive. With participants coming from such diverse political and cultural backgrounds, there was a danger of conflicting styles, of talking at cross purposes.

An example is the different conceptions of a presentation at an international conference. In some parts of the world it is customary to regard participants from a given country as a "delegation" which is expected to present a unified position stressing the positive achievements in their country. Others see participation as primarily an individual matter, and give reports of their own research or experiences with no attempt to summarize all aspects of the topic or to represent their country. But as it turned out, the two approaches complemented one another.

Here a role was played by the rapport and feeling of trust that developed quickly as the seminar progressed. The feeling emerged that the difficulties and aspirations which the women have in common are greater than the cultural and political issues that separate them.

The Vietnamese organizers shared with us a desire to encourage uninhibited exchange. They invited all Vietnamese as well as foreign participants to lunch together in the hotel. Foreign guests of the Women's Union were all quartered in the same hotel where the seminar was held. The two of us were given a two-room suite so that we could entertain. Each night of the seminar we had a party in our room, bringing together women from the various participating countries in an atmosphere of warmth and good humor.

PROCEEDINGS: The *Proceedings of the Southeast Asian Seminar on Women and Science in Developing Countries* is available. It contains about two dozen papers, along with a 20-page photo section, and appears in a magazine format. The cost is \$5, but it will be sent free of charge to anyone who has made a donation to the Kovalevskaja Fund, and also to subscribers from developing countries.

NEW PUBLICATIONS

Recent years have seen dramatic advances for women in the workplace: the Equal Pay Act, anti-discrimination laws, voluntary affirmative action policies, victorious lawsuits against sexual harassment on the job. But these achievements haven't yet overcome hundreds of years of inequality. Women's earnings average 60 cents for every dollar earned by a man. Women remain segregated in certain occupations, have barely penetrated upper levels of management, and are often subject to subtle or blatant stereotyping. A new collection of research studies on these issues is available: *Working Women: Past, Present, Future* from BNA Books, a division of The Bureau of National Affairs, Inc.

The contributors to the volume, prepared for the Industrial Relations Research Association Series, are specialists in industrial relations, economics, history, business administration, psychology, and sociology. They carefully review and evaluate the existing literature on women and work, point out areas in need of further study, and comment on the future for working women. The result is an interdisciplinary report on half of America's labor force.

Working Women examines a diverse set of questions and concerns: sex roles, stereotypes, status, and power in the business world; occupations and earnings of women; family and health issues; the problems and progress of women in management; how middle-aged and minority women fare in the workplace; historical and current perspectives on women in the labor movement; comparisons with other industrialized nations; the status of women in industrial relations and higher education; and the evolving policy towards women and work.

Working Women: Past, Present, Future (441 pp./\$35.00) may be ordered from BNA Books Distribution Center, 300 Raritan Center Parkway, C.N. 94, Edison, NJ 08818. Please include state sales tax and shipping charges of \$2.50 for the first book and \$1.00 for each additional book. Telephone orders call 201-225-1900.

Else Høyrup has published a book *Women of Science, Technology, and Medicine: A Bibliography* (which is free). It is a 132-page bibliography of works about women in scientific fields, including many in mathematics. Write Else Høyrup, Roskilde University Library, P.O. Box 258, DK-4000 Roskilde, Denmark.

NSF FELLOWSHIPS

NSF Postdoctoral Research Fellowships in the mathematical sciences will be offered only to persons who 1) are U.S. citizens or nationals as of January 1, 1988; 2) will have earned by the beginning of their fellowship tenure a doctoral degree in one of the mathematical sciences; 3) will have held the doctorate for no more than five years as of January 1, 1988; and 4) will not previously have held any other NSF postdoctoral fellowship.

For copies of the application brochure or further information, contact the Special Projects Program, Division of Mathematical Sciences, National Science Foundation, Washington, DC 20550, 202-357-9764; or the American Mathematical Society at 401-272-9500.

The deadline for applications is November 16, 1987.

The Visiting Professorships for Women program is designed to provide opportunities for women to advance their careers in the disciplines of science and engineering and to provide greater visibility of women scientists and engineers employed in industry, government, and academic institutions. The program addresses the need to make full use of the scientific and technical resources of the nation.

In addition to research and teaching, the visiting professors will be available to offer advice and to act as mentors to women students and faculty and will engage in other interactive activity to increase the visibility of women scientists in the academic environment. Proposals will be evaluated on the basis of their plans for such activities, as well as the scientific merit of the proposed research.

The deadline for applications is October 1, 1987. For further information about guidelines and eligibility, contact the Program Director for Visiting Professorships for Women, National Science Foundation, Washington, DC 20550, 202-357-7734.

OF POSSIBLE INTEREST

A review of *Science and Gender, A Critique of Biology and Its Theories on Women* by Ruth Bleier appeared in the *American Journal of Physics* 55 (2), February 1987, p. 188. A review of *Reflections on Gender and Science* by Evelyn Fox Keller appeared in the same *Journal*, 55 (3), March 1987, pp. 284-286.

Both these books were reviewed in *Signs* 11 (4), Summer 1986, pp. 780-783.

Feminist Teacher is a non-profit, multidisciplinary magazine committed to combating sexism, racism and other forms of oppression in the classroom. The magazine is designed for teachers at all grade levels, preschool through graduate school, and for those in traditional as well as nontraditional settings.

We urge you to send: articles and short essays about teaching, educational projects and personal experiences; course syllabi, lesson plans and annotated bibliographies; news of conferences, publications, research, teaching resources, legislation and events of interest to feminist educators; information about the activities of political and cultural organizations; and photographs, drawings and other artwork. Write Feminist Teacher Editorial Collective, Ballantine 442, Indiana University, Bloomington, IN 47405.

Women's Studies. Greenwood Press, Inc., 88 Post Rd. West, Box 5007, Westport, CT 06881.

Women's Studies. Methuen, Inc., 29 West 35th Street, New York, NY 10001.

DEADLINES: Sept. 24 for Nov.-Dec., Nov. 24 for Jan.-Feb., Jan. 24 for Mar.-Apr.
AD DEADLINES: Oct. 5 for Nov.-Dec., Dec. 5 for Jan.-Feb., Feb. 5 for Mar.-Apr.
ADDRESSES: Send all Newsletter material except ads to Anne Leggett, Dept. of Math.
Sci., Loyola University, 6525 N. Sheridan Rd., Chicago, IL 60626.
Send everything else, including ads, to AWM, Box 178, Wellesley
College, Wellesley, MA 02181.

JOB ADS

Institutional members of AWM receive two free ads per year. All other ads are \$10.00 apiece and must be prepaid. The vacancies listed below appear in alphabetical order by state. All institutions advertising below are Affirmative Action/Equal Opportunity employers.

University of California, Berkeley. Dept of Statistics, Berkeley, CA 94720. P.J. Bickel, Personnel Committee. One tenure-track asst and one tenured assoc or full professorship. Begin 7/1/88. Any area of theoretical and applied statistics, computer-intensive statistics, probability and applied probability theory. Interdisciplinary interests encouraged; joint appointments possible. Send resume and 3 references by 1/15/88.

University of California, Santa Barbara. Dept of Math, Santa Barbara, CA 93106. Alex Rosenberg, Chair. (1) Two-year non-renewable asst professorship with research stipend beginning 7/1/88. Required: Ph.D. by 9/88. Selection primarily on research achievement, teaching experience desirable. Teaching load: 4 one-quarter courses per year. Send vita, publications list, 3 letters of recommendation to Chair by January 11, 1988. (2) Tenure-track asst professorship beginning 7/1/88. Required: Ph.D. by 7/88. Junior candidates in all areas of mathematical sciences considered, applied discrete math especially sought. Selection for outstanding research and teaching accomplishments and potential. Send vita, publications list, and 3 letters of recommendations to Chair.

Colorado College. Dept of Math, Colorado Springs, CO 80903. Steven Janke, Chair. Tenure-track position beginning 9/88. Both research and teaching valued. Required: Ph.D. & strong ability and interest in undergraduate teaching. Desirable: ability to teach some computer science. Salary and rank depend on experience. Send vita & 3 letters (2 concerning teaching ability). Review of applications begins 1/4/88, continues until position filled.

University of Colorado at Boulder. Dept of Math, Campus Box 426, Boulder, CO 80309-0426. James Curry, Chair Search Committee. Director, Center for Applied Math. Begin Fall 1988. Exceptionally strong applications at all levels welcome, preference given to senior applied mathematicians with international research reputation and demonstrated success in program development. Especially soliciting applications from women, ethnic minorities, and disabled individuals. Send vita and supporting information by November 1, 1987.

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