

Association for Women in Mathematics

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NEWSLETTER

March-April 1984

PRESIDENT'S REPORT

Louisville Meeting. Here are some highlights of AWM activities at the joint American Mathematical Society - Mathematical Association of America annual meeting which was held in Louisville, Kentucky, January 25-28, 1984.

Regional meetings fund. The Executive Committee voted to make small grants available to AWM members who would like to organize regional meetings. The funds could be used to pay expenses of guest speakers, for refreshments, for postage and mailing costs, and other purposes. Also, AWM is happy to send a mailing list of all members in a given region to any member who is thinking of organizing a regional meeting.

MAA citation. In lieu of their Distinguished Service Award, the MAA this year presented a citation "honoring those who have furthered the progress of mathematics by enhancing significantly the status of women in mathematics". AMS President Julia Robinson and I both spoke at the MAA business meeting to thank the MAA for the citation.

The Lipman Bers Symposium. The lecture hall was filled with people who wanted to find out the secret of the "Bers mystique". We learned first that the statistics are truly remarkable: Professor Bers has had 48 Ph.D. students, of whom 16 were women. The panelists, Tilla Milnor, Irwin Kra, Jane Gilman, Jozef Dodziuk, and Linda Keen (moderator), all former Bers students, told fascinating stories about their own experiences in graduate school. We all shared some of the feeling of what it was like to join the Bers family. Since the proceedings will be published in a later issue of the Newsletter, I will say no more here.

Emmy Noether Lecture. Professor Mary Ellen Rudin of the University of Wisconsin gave this year's Emmy Noether Lecture with the title "Paracompactness". Those of us who are nonexperts in the area were fascinated by the interplay between topology and set theory. Professor Rudin also traced the history of a number of interesting problems.

AWM party. As usual, our cocktail party was a great success, with well over one hundred guests. It was held in the "pool area" of the Hyatt Regency, which turned out to be not quite what we had expected, since it consisted mostly of pool and not so much of solid area. I am happy to report that, nevertheless, no one fell into the water.

Mathematical Collaborators. The excellent article by Professor Ralph Boas on how to publish mathematics, which appeared in the January-February 1984 issue of this Newsletter, has received wide praise from many who would like to see more such informative pieces. The Newsletter would like to publish more articles offering career advice to our younger colleagues. In the hope of inspiring one of you to write, I would like to suggest a possible, but difficult, topic: how to collaborate on a mathematical research project.

Clearly this is a matter which varies very much with the individuals concerned, but there are some basic questions which could be addressed:

1. How to choose a possible collaborator.
2. How to start working together.
3. What to do if one of you feels that s/he is doing all the work or providing all the key ideas?
4. What happens if your joint efforts lead nowhere?
5. How do the results get written up?

I will close by relating how my first mathematical collaboration came about, the year following my Ph.D. A friend who had received his degree a couple of years before me, and who had been a college roommate of my husband's, dropped by our apartment to borrow some chairs. While there, he asked me about a problem he was working on. It was related to a part of my thesis, and we sat down at the kitchen table to work on it for a few minutes. The minutes stretched into hours, but by 2:00 a.m. the problem was not only solved, but written up in a neat paper of just a few pages. Within a week it had been typed and submitted to a journal. You may not have heard of it, since it did not win us the Fields Medal, but for me it was the start of an idea which led to a series of future papers with other collaborators.

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LETTER FROM THE EDITOR

Correction to my last letter: Rózsa Péter was Hungarian.

Katherine Heinrich of Simon Fraser University sent me a job ad she had received from the University of Adelaide. The cover letter concerned the need to find qualified women applicants; it sounded more sincere than the usual such letter. Also, the job ad states:

Holders of full-time tenured or tenurable academic appointments have the opportunity to take leave without pay on a half-time basis for a specific period of up to ten years where this is necessary for the care of children.

From the cover letter:

These possibilities are part of a package of measures endorsed by the University Council in 1982, stemming from an inquiry on "Women at the University of Adelaide", and aimed at (inter alia) redressing problems arising from the under-representation of women in "non-traditional areas".

It sounds as if this university may be putting its money where its mouth is.

Roberta M. Hall and Bernice R. Sandler of the Project on the Status and Education of Women of the Association of American Colleges have written a paper called "Academic Mentoring for Women Students and Faculty: A New Look at an Old Way to Get Ahead." Individual copies are available for \$2 from PSEW, AAC, 1818 R St., NW, Washington, DC 20009. I found it to be very interesting and well-written.

I quote from the introduction:

[O]ne of the more striking differences between women and men on campus is that women students and faculty are less likely to advance as far or as fast as their male peers. In fact, women students often suffer a decline in academic and career ambitions during their college years; they are less confident about their chances for success in and less likely to apply to graduate school than men of equal ability and achievement.

Women faculty, meanwhile, remain clustered at lower ranks in non-tenure-track positions and/or in less prestigious institutions. In science, for example, although the chances for a first faculty appointment for a woman Ph.D. are only slightly worse than those of a comparably credentialed man's, his chances of attaining tenure are 50 percent better than hers.

What accounts for these disparities? The reasons are numerous and complex, but much anecdotal evidence and recent research suggests that in academe, as in the business world, success often depends not only on what you know but whom you know—not only on hard work, but also on encouragement, guidance, support and advocacy from those who are already established in the system. These persons can offer advice, constructive criticism, and provide an overview of departments, institutions or disciplines. They can warn about substantive and political pitfalls; and they can give information about, as well as entree to, informal lines of communication and a variety of professional opportunities. Such career helpers—often termed mentors or sponsors—have increasingly been seen as crucial to professional development in general. The help they provide can be especially important to women's success in the postsecondary setting.

Academics, like other professionals, operate primarily through "colleague systems." Standards for professional behavior and criteria for evaluating teaching, research and publications are largely determined by "unwritten" rules handed down from one generation of scholars to the next, and communicated informally from one colleague to another. Interrelated networks of senior persons—both within institutions and across the disciplines—not only determine in an informal way what issues are considered important, what journals prestigious and what research valued; they also often control access to positions, publications and promotions on the strength of their own reputations and their shared contacts. Those who are already established tend to act as "gatekeepers." Admission to and advancement through a colleague system is easier when newcomers have the support of an already-established member of the system, and thus are presumed to fit the system's shared norms and standards. In order for newcomers to succeed, merit alone is rarely enough; they must also be "socialized" into the profession.

Articles of the sort Linda referred to in her report might be written on how to find a mathematical mentor if you need one, how to be a mentor to younger colleagues, or (a more difficult task) what you perceive as the "unwritten rules" of some aspect of our profession.

Two other articles for which I see a need at this time of year are "how to write a job application" and "how to write a letter of reference". Letters I read in job applicants' files alternately make my heart bleed (for the candidate who has written a bad cover letter) and my blood boil (at the sight of the knife sticking out of the candidate's back).

The majority of the bad letters I see appear in the files of these categories of applicants: women, non-native speakers of English, and the "walking wounded" (here I mean people of my mathematical generation who have had eight jobs in eight years or who have been teaching 15 hours a week or who have otherwise suffered during the period when jobs were so tough to get). I have a few suggestions and remarks to make, although I'm stopping short of writing an article.

1. If English is not your native tongue, get a native speaker to read your cover letter and rewrite it if necessary. If you have a foreign colleague or student, volunteer to perform this service. I don't consider this to be deceitful; not getting a cover letter into normal English shows a lack of common sense. People are automatically concerned about the classroom abilities of non-native speakers; a letter in substandard or weird English creates a terrible first impression.

2. If you are one of the "walking wounded" who wants a job with a better research environment, don't put in your cover letter a wistful comment about how much more research you'll be able to do at a nicer place. Stress your strong points, and let your vita tell the story of why you couldn't do research the last few years.

3. If you are writing a letter of recommendation for a woman, pretend she's male. You wouldn't talk about his divorce or family tragedy, so don't talk about hers. The

percentage of a letter devoted to personality and character is much higher for a woman than for a man, in my experience. Don't unintentionally label every woman as primarily a teacher rather than a researcher by your tone.

4. Remind your colleagues who are reading files that people write letters differently for women.

5. Consider refusing to write a letter of reference if you can't say anything nice.

6. It is probably true that reference letters would be more helpful if they were written more honestly. However, if you are one of the small minority writing "honest" letters, your crusade is killing those for whom you write letters, not reforming the rest of us. Don't say "so-and-so has not proved a major theorem"; no one will know how you interpret "major", but the remark is certainly a major stab in the back.

If any of you have any further suggestions, comments, reactions--send them to me.

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NEW JERSEY AWM IS ACTIVE

by Pat Kenschaft, President AWM-NJ, Montclair State College

The New Jersey Section of the AWM had a dinner meeting (organized by Helene Walker) in June, 1983, a breakfast meeting before the MAA meeting in November, and a dinner meeting in January. We found that the lunch and late afternoon meetings attached to state MAA meetings distracted energy from the MAA events, and although the attendance was large at such meetings, we wanted opportunities to relax with more congenial companions. The thirty-three state dues-paying members are now getting to know each other better and learning from each others' experiences.

We have also sent three letters to newspapers, one urging more women to consider a career in mathematics, one refuting the widely publicized Stanley-Benbow conclusions, and one supporting state legislation to finance high school teachers who study further mathematics and science. The first, signed only by Priscilla Haindl (who originated it) and me, apparently appeared only in our own regional paper, so we have organized regional representatives in other parts of the state who cosign AWM letters and whose home addresses are used as return addresses. My word processor enables us to send identical letters to many regional papers, one for each regional representative. Each letter invites people to write to Mary Hesselgrave at Bell Labs for further information on women and minorities in mathematics. We have designed a packet of information and reading lists, and as people request it, we are developing a mailing list.

We are also investigating the possibility of obtaining scholarships for prospective secondary teachers of mathematics from nearby private corporations. I would appreciate help from anyone who has experience with such a project or suggestions as to how to do this.

MORE METROPOLITAN COORDINATORS FOR THE SPEAKERS' BUREAU

Louise Raphael, Dept. of Math., Howard University, Washington, DC 20059
Jacqueline M. Dewar, Dept. of Math., Loyola Marymount University,
Loyola Boulevard at W. 80th St., Los Angeles, CA 90045

HONORS, ETC.

Captain Grace M. Hopper Honored at Brewster Academy in her Hometown of Wolfeboro, New Hampshire (press release)

Brewster Academy welcomed on November 7 hundreds of guests to honor Commodore Grace Murray Hopper, noted computer software figure and the U.S. Navy's oldest active duty officer. The ceremony officially dedicated "The Grace Murray Hopper Center for Computer Learning" in the honoree's hometown at this small, secondary institution. New Hampshire Governor John Sununu's executive assistant issued a proclamation at the ceremony declaring November 7, 1983 "Captain Grace Murray Hopper Day" throughout the state.

Attending as the personal representative of President Reagan was Rear Admiral Paul E. Sutherland, Jr., Commander of NAVDAC, the Naval Data Automation Command in Washington, D.C. and also Commodore Hopper's immediate superior.

Kenneth H. Olsen, president and founder of Digital Equipment Corporation, the world's foremost minicomputer producer and the number two computer company in the nation, delivered the keynote address on behalf of his friend and colleague, Grace Hopper. A number of other corporate data processing officials attended the event.

An internationally recognized scholar, teacher and computer programmer, Grace Hopper received her Ph.D. in Mathematics at Yale University and began her career as a Vassar professor. During World War II she was assigned to the Navy as a Lieutenant, Junior Grade where she, along with Richard Bloch and Robert Campbell, programmed the enormous Mark I at Harvard University. Her co-programmers were present at today's ceremony.

Later she worked for what is now the Sperry-Univac Corporation as head mathematician, leading to the development of the Univac I, which was used to take the first electronic U.S. Census and to predict national election results. She continued at Sperry until 1971, during which time she served as an adjunct professor at several major universities and was highly instrumental in the creation of the COBOL or computer-oriented business language, now in wide-scale use by both large and small companies.

Nearing her 77th year, Commodore Hopper serves as advisor and travelling ambassador to NAVDAC, logging some 300 days and 100,000 on-the-road miles each year speaking to and advising military and private organizations and institutions.

Brewster Academy is one of those institutions to which she has offered her assistance and wisdom. The academy, consisting of around 225 students and 40 faculty, provides college preparatory work. Brewster plans to expand its computer offerings and community programs through an endowment fund for the Grace Hopper Center.

The recipient of numerous achievement awards and honorary doctoral degrees, this is the first time Captain Hopper has been honored in her own community. She is among a third generation of Murrays to have lived as seasonal and permanent residents on Lake Wentworth in this town of around 2,500 people. It is the town to which Captain Hopper plans to retire, "if I ever retire."

Given Commodore Hopper's recent promotion from Navy Captain and her intense involvement in the computer field to this day, that retirement date may be postponed indefinitely. As she has often noted in her speeches, there is much to be accomplished in the relatively young computer industry and "we have just begun."

from Manchester, N.H., Union Leader, Nov. 8, 1983, article by Nancy West:

There is a ship's clock of a different sort at U.S.N.R. Captain Grace Murray Hopper's Washington office—it runs counterclockwise.

"It's to remind people that you don't always have to do things 'that' way all the time," said Captain Hopper.

Outspoken on many issues, Captain Hopper said teachers' pay has to increase to lure and keep excellent teachers in the classroom as well as the respect they are accorded.

from Wolfeboro, N.H., Granite State News, Nov. 9, 1983, article by David Isgur:

She said businesses need to give something back, when they take math and science teachers from the schools. She cited places in Maryland and Arizona where businesses provide computer internship programs or loans of instructors and equipment.

from Rutgers Newsletter, Dec. 16, 1983, p. 3:

Dr. Daniel Gorenstein of the department of mathematics, FAS, was named the Jacqueline B. Lewis Professor of Mathematics.

The professorship is named for the late Jacqueline B. Lewis, who died in 1982 after having served Rutgers in a variety of academic and administrative roles.

In 1963, she joined the department of mathematics of University College, New Brunswick, and later served as coordinator of mathematics for the Open University Program from 1971-74.

She also served University College as associate dean, vice dean, and dean, and was acting dean during the formative years of the Faculty of Professional Studies.

Dr. Lewis received her Ph.D. in mathematics at the Courant Institute for Mathematical Sciences of New York University and at the time of her death was a candidate for a second Ph.D. in clinical psychology at Rutgers.

Jean Taylor sent us the above news item. She asks, "How many other named professorships are there named for women in mathematics?" Mary Ellen Rudin is the Grace Chisholm Young Professor at the University of Wisconsin, Madison; however, she was allowed to choose the name of her professorship.

Rebekka Struik became chair-elect of the Rocky Mountain Section of the MAA in April, 1983.

T.E. Bradford, a mathematics instructor, was one of the nominees for the W.W. Rankin Award given by the North Carolina Council of Teachers of Mathematics. She is also one of about 300 persons selected for the distinguished Alumni Award of the National Association for Equal Opportunity in Higher Education. Bradford has been an instructor at North Carolina A&T State University for twenty-four years. She teaches math for elementary teachers K-8 and geometry for teachers 7-12.

news from Lee Lorch:

Professor Olga Oleinik of Moscow State University, recently elected as Foreign Member of the Royal Society of London, gave a series of lectures in Paris in November and December 1983.

Professor Mary Gray, Founding President of the AWM, visited Uruguay in November 1983 as part of an international delegation of mathematicians seeking to procure freedom for Professor José Luis Massera who has been imprisoned by the military dictatorship there for eight years, frequently under torture. She has published a letter in the January 1984 AMS Notices giving further details of the mission.

Wonder Woman Awards (press release):

The Wonder Woman Foundation announces for 1984 the Third Annual Wonder Woman Awards Program. The Foundation will provide 10 to 20 financial awards totalling \$125,000 to assist and honor individual American women forty years old and over whose pattern of growth and achievement suggests further contributions to American society. The Awards are suited to each woman's needs and situation and are not restricted as to their use.

The Foundation's second Awards Ceremony was held November, 1983 in New York. Seventeen women each received an Award of \$7,500. A special "Woman of Courage" award was accepted by Ms. Cicely Tyson. She was honored for her integrity and her personal and professional commitment to the fate of black women and their image in American culture.

The Foundation is a non-profit public foundation dedicated to advancing the principles of equality and leadership for women. Awards are given not in traditional areas of accomplishment, but in much more personal ones that indicate that the real achievement is how a person lives her life. The categories are: Women taking risks, Women striving for equality and peace, Women pursuing truth, Women working creatively, and Women helping women.

Application forms and information are available upon request from:
The Wonder Woman Foundation, Inc., Awards Program, 200 West 57th St., Suite 801,
New York, NY 10019. The application deadline is June 1, 1984.

NAS exchanges with USSR and eastern European academies:

The National Academy of Sciences (NAS) invites applications from American scientists who wish to make visits beginning during the period January 1, 1985 through December 31, 1985 in the USSR, Bulgaria, Czechoslovakia, the German Democratic Republic, Hungary, Poland, Romania, and Yugoslavia. Long-term research visits of five to twelve months' duration are encouraged, particularly those where contact with colleagues in the other country has already been established.

Applicants must be US citizens and have a doctoral degree or its equivalent by the time of the intended visit in mathematics; the physical, biological, or engineering sciences; social or behavioral sciences; or biomedical sciences. For the purpose of the exchange programs, emphasis in the social and behavioral sciences is placed on those which are oriented toward empirical and quantitative analysis and which focus on the analysis of individual and group behavior. All necessary expenses will be met by the NAS and the foreign academy, including reimbursement for salary lost up to a predetermined maximum and expenses for accompanying family members on visits of five months or more.

NOTE FROM ABROAD

part of a series on the experiences of European women mathematicians
obtained by Bhama Srinivasan, Foreign Editor

Bhama asked me to write this short article. It will be on my personal experiences in West Germany. For eight years I have been teaching as an associate professor in pure mathematics at the University of Ulm. There is a friendly group of algebraists with whom I meet once or twice a year for three days in an intensive mathematical workshop. Besides this group there is no support for a career woman—professionally, none for getting through with a career as a full professor and personally, none in finding a sociable environment. Both aspects keep young female mathematicians from thinking about a career. There is no understanding that a women's association could alter things. Among my three (former) Ph.D. students I have just one (very gifted) woman. All she expects from her future life is to be married and raise her children. I checked in the Oberwolfach Research Institute for the number of female Ph.D.'s in mathematics: until 1970, there were extremely few; from the 70's to now the number increased to a total of about 70. Most of them had a teaching assistant ("Assistentin") position for some time, but failed to find a higher or continuing position. On the assistant-associate professor levels there are a couple, on the full professor level practically no females in pure mathematics.

Gudrun Kalmbach
Ulm University, W. Germany

ANNOTATED GUIDE TO WOMEN'S PERIODICALS

The Annotated Guide to Women's Periodicals in the U.S. & Canada lists over 250 publications from across the United States and Canada. Each publication is briefly reviewed by category and indexed both alphabetically and by state. Write:
Annotated Guide, c/o N.S.I.W.S., Box E-94, Earlham College, Richmond, IN 47374.

GRANTS: GETTING THEM AND KEEPING THEM

panel discussion, joint summer meetings, Albany, August 1983

Funding for Projects, Programs, and Symposia

by Alice T. Schafer, Member, AWM Fundraising Committee

When President Linda Rothschild asked me to participate in the panel discussion at Albany, she asked if I would speak on obtaining funds for non-research grants. I decided to speak from the standpoint of a member of the AWM Fundraising Committee, of which Eleanor G. Palais is the Chair, as well as from my limited experience in fundraising at Wellesley College, primarily in connection with the Mathematics Project of the Mathematics Department.

The AWM Fundraising Committee began by making a list of foundations to which it would apply for funding. To obtain a starting list we consulted The Foundation Directory published annually by the Foundation Center in New York. For each foundation the Directory lists the name of the chief executive officer; the name of the person to whom applications for funding should be sent; whether the foundation prefers to receive a preliminary proposal or a full proposal; how many copies of the proposal to submit; to which organizations funds were awarded by the foundation as given in its last annual report; the kinds of groups to which funds are given; geographic limitations if any; and, finally, whether the foundation makes its awards on a more or less continuous basis or a periodic one. The Directory also indicates whether a foundation has instructions for writing proposals for its consideration. This can be very helpful, particularly to someone preparing a proposal for the first time. Often the amount to be requested for a project is a problem. The Directory list amounts awarded previously. [The Fundraising Committee wishes to express its appreciation to AWM member Esther Comegys for her invaluable help in compiling the list of foundations to which the fall 1983 fundraising letter was sent.]

Many national businesses and industries have set up foundations in their names; some are members of a foundation formed by several businesses. All of these are listed in the Directory. If one wishes to contact a national business or industry which has no foundation associated with it, it is usually possible to obtain the name of the chief executive officer and the address of the company's main office from their local office.

Many local businesses are interested in donating only to organizations active in their locality. Names of these companies can be obtained in many ways; for example, in the Boston area we tried to think of any business which would be likely to employ people with training in the mathematical sciences. When the Committee first began its work, Eleanor Palais went through the yellow pages. Newspapers usually carry stories about gifts made by local businesses to local non-profit organizations; local theatre and opera groups include in their programs lists of donors. On the local level it is a good idea to ask for funding for a pilot program, which if successful can be duplicated in other areas of the country. This approach was used by the Fundraising Committee in its proposal to the Raytheon Company for a grant to be used to help cover the expenses of women high school mathematics teachers who wanted to learn the computer language PASCAL. We felt that it was important for women to be able to teach PASCAL, particularly now that it is being offered in the Advanced Placement Program in many high schools. With the grant from the Raytheon Company approximately twenty women in the Boston area were able to take a course in PASCAL last summer. We hope to receive a grant for a similar program this coming summer. Copies of the Raytheon proposal have been sent to at least two AWM members who are planning to try a similar program in their areas.

Government agencies should certainly be contacted. As AWM members are aware, the NSF funded the very successful Emmy Noether Symposium held at Bryn Mawr College in March of 1982. The AWM committee organizing the Symposium is most grateful to the NSF for its support of that Symposium, and to Alvin I. Thaler and Judith Sunley of the NSF

for their help and advice in writing the proposal. (I am sure that Judy Sunley, the Acting Deputy Division Director, Mathematical Sciences Division of the NSF, will be willing to give advice about applying to government agencies to anyone who asks her.) A list of government agencies which most often award grants for work connected with the mathematical sciences appears in the annual Mathematical Sciences Professional Directory. If AWM members wish to sponsor programs or symposia in their own regions, they might well contact state and local governments to determine whether they have sources of funds for projects having to do with the mathematical sciences.

A preliminary proposal for funding should probably be short. Many foundations request that a proposal be no more than five pages, double spaced. If you are applying for funding for a specific project, then state its purpose, tell how it is to be carried out, and give projections for its long-range effects. For example, the Fund for the Improvement of Postsecondary Education (FIPSE) of the Department of Health and Human Services, requires that a specific form be filled out. (FIPSE and the Alfred P. Sloan Foundation funded the Mathematics Project at Wellesley College.) On the other hand, the Sloan Foundation did not require such a detailed proposal outline, neither for the Wellesley project nor for the AWM Speakers' Bureau. What proved invaluable in working with the Sloan Foundation on each occasion was the opportunity to meet with a program officer at Sloan. Stephen B. Maurer, currently at Sloan on leave from his position on the mathematics faculty at Swarthmore College, handled the AWM Speakers' Bureau proposal. The entire Fundraising Committee was able to meet with him at the Emmy Noether Symposium, which was great. He was exceedingly helpful with suggestions and ideas for the proposal and the operation of the Bureau.

Last summer the Committee decided to divide its fall fundraising letter into two parts: the first describing the AWM and its purposes, the second listing the projects which the AWM would like to undertake should funding be available. To date we have received a contribution from the Arthur D. Little Company for the general work of the AWM, and have heard encouragingly from several others. We are, of course, hopeful that the Raytheon Company will wish to continue its support for the program which it funded last summer. We also hope that the Polaroid Corporation will make an award for one of our projects; Polaroid was the first contributor to the AWM when it gave funds for the publication of the first Speakers' Bureau.

The Fundraising Committee has found it useful to suggest to foundations that they telephone the AWM Office if they have any questions. Before the IBM Corporation awarded its grant for travel funds to the Noether Symposium, a member of their staff called several times to obtain information for the IBM award-granting committee. Eleanor Palais had numerous phone conversations with the officer at the Raytheon Company who handled the AWM proposal. In addition, she and I went to Raytheon on one occasion to meet with the officer personally. We have also found it useful to call the foundations and businesses to which the AWM fundraising letter was sent and to ask if the proposal were received, if there were any questions, and to suggest that a member of the Committee visit the foundation or business to discuss the proposal.

The person who has never written a proposal benefits greatly from seeing proposals which have received funding. At the Albany meetings President Rothschild held a workshop for members who wanted to talk about writing proposals for research grants. Several AWM members who currently hold research grants from the NSF had lent their proposals for people to see. These were not only helpful to those who had never applied but also to those who had applied and had not received awards. When the Organizing Committee for the Noether Symposium was preparing its proposal for submission to the NSF, the American Mathematical Society kindly lent copies of some of its proposals for symposia which had been funded by the NSF. An increasing number of academic institutions now have offices whose sole purpose is to help faculty and staff write proposals. Foundations have even occasionally been known to help in the writing of a proposal if they were convinced that the proposed project was a good one.

The Chair of the Fundraising Committee, Eleanor G. Palais, has asked me to say that the Committee welcomes suggestions and ideas for obtaining funds for AWM projects. She invites AWM members to volunteer for help on either the national or the local level.

She wishes me to say, for the Committee, that we have been gratified that local businesses have contributed to the work of the AWM. She feels that there must be similar groups in other localities which would be happy to support AWM if they were approached. She urges all AWM members to contact organizations in their regions and to let her know about their efforts. You can reach her by writing to her in care of the AWM Office.

OBITUARY: GERTRUDE KATHERINE STANLEY

by R.A. Rankin, University of Glasgow
reprinted by permission of the author and the London Mathematical Society
from the Bulletin of the London Mathematical Society 14(1982), pp. 554-555
Thanks to Lee Lorch for bringing this article to our attention.

Gertrude Stanley was born on 18 September 1897. Her family home was in Sowerby, by Thirsk, in Yorkshire, and she returned there to live after her retirement in 1964. She entered Westfield College, University of London, as a student in 1916 with an Open Scholarship in Mathematics and was awarded a University Exhibition in Mathematics and Physics the following year. After graduating with First Class Honours in Mathematics in 1919 she spent the next six years as Assistant Mistress in Mathematics at the County School for Girls in Gravesend. While there she read for an M.Sc. in the Geometry of Surfaces and Higher Plane Curves under the direction of Professor Harold Hilton at Bedford College and was awarded the degree in 1923.

In 1925 she came to Oxford, where she spent the next two years as a member of the Society of Oxford Home-Students; this was a society for women students at Oxford University, of less than college status, which became St. Anne's Society in 1942 and St. Anne's College in 1952. She was a research student of G.H. Hardy (whose interest in cricket she shared) and obtained the B. Sc. degree in 1927; at that time this degree was a postgraduate one corresponding to the present degree of M.Sc. She appears to have resided in Oxford during the following year 1927-28 also, and to have come to London for two days a week to lecture at Bedford and Westfield Colleges; she had earlier, while teaching in Gravesend, helped out at Westfield for a term during the absence of a member of staff. It is not clear why she did not become a candidate for an Oxford D.Phil., but it may be that financial circumstances prevented her from spending the necessary three years on full-time research.

In 1928 she went as an Assistant Lecturer to Manchester University, where Professor L.J. Mordell was Professor of Pure Mathematics, and returned to Westfield three years later as Head of the Mathematics Department and University Reader in Mathematics. Thereafter she devoted all her energies to the College and her students, by whom she was known affectionately as "G.K.", and served twice, in 1945-48 and 1953-57, as Vice-Principal. She died at her home in Yorkshire on 28 May 1974 and is remembered by her colleagues and pupils as a charming, friendly and unpretentious person. She carried out her duties as Head of Department with wisdom and tact, supporting her staff and giving them full responsibility in the execution of their duties.

Miss Stanley published five papers, all in journals of the Society, of which she became a member in 1925. With the exception of paper (3), all her work exploits the Hardy-Littlewood circle method, which was at that time the most powerful tool in the analytical theory of numbers. In (1) she extended Hardy's work on five squares to seven; this amounted, essentially, to showing that the seventh power of the relevant theta-function is identical with an Eisenstein series, whose coefficients are expressed as "singular series". Paper (2) is a preliminary announcement of the more important paper (4), in which she extended the work of Hardy and Littlewood by showing, for example, that, under the "extended Riemann hypothesis" every sufficiently large number is expressible as a sum of one square and two primes. In (5) she considered a problem analogous to Waring's problem and obtained inequalities for the associated lower bounds $G(k)$. In

(3) she proved the falsity of two assertions made by Ramanujan, who, misled by the presence of the logarithmic integral in the Prime Number Theorem, believed that a similar integral provided better estimates in two other problems.

Her published work, which has now largely been superseded by the work of Estermann, Hooley, Linnik and others, shows her to have been a very competent analytical number-theorist. She appears to have given up mathematical research on returning to Westfield in 1931, although it is known that she had been working before that date on other problems suggested by Hardy and Mordell.

For help in preparing this notice I am indebted to Professor L.S. Bosanquet, Dame Mary Cartwright, Dr. A.W. Ingleton, Lady Jeffreys and Professor E.H. Sondheimer.

Publications

1. "On the representations of a number as a sum of seven squares", J. London Math. Soc. 2(1927), 91-96.
2. "On the representations of a number as a sum of squares and primes", J. London Math. Soc. 3(1928), 62-64.
3. "Two assertions made by Ramanujan", J. London Math. Soc. 3(1928), 232-237.
4. "On the representation of a number as a sum of squares and primes", Proc. London Math. Soc. (2), 29(1929), 122-144.
5. "The representation of a number as the sum of one square and a number of k-th powers", Proc. London Math. Soc. (2), 31(1930), 512-553.

PLANNING TO GET THE MOST OUT OF THE ASA ANNUAL MEETING

by Arlene Ash, Boston University

reprinted from Caucus for Women in Statistics Newsletter, Aug. 1983 by permission

Perhaps someone could write a similar article directed at AMS/MAA meetings. Thanks to Rebekka Struik for bringing this article to our attention.

The annual ASA meetings offer important professional opportunities. YOU should make a commitment to doing them--on your own time and money if no one else will pay. There's no sense in scrimping on your career! These meetings are not only professionally important--they are intended to be enjoyable and invigorating. If you take some care in planning, you will be repaid amply--with both fun and profit.

I put these notes together because I always used to be intimidated by all the choices to be made before sending in my forms--and so I vacillated and procrastinated. It never got any easier or done any better for having put it off. Also, because Dick Taeuber offered to turn my scribbles into an article, which made it seem feasible--and he implied that maybe it would be useful to others, which I hope it is.

Think of this as a first draft and please send additions or improvements to me or to Dick.

A meeting has many potential uses. Consider which ones are your top priorities for this meeting:

- a. finding a job;
- b. reviewing new books, computer paraphernalia, and other professional tools;
- c. seeing friends and making new/other professional contacts;
- d. letting other people know about your work, and/or research interests;
- e. learning from the work other people are doing, (1) in your own area, or (2) in a new area of interest;

- f. figuring out how to get more out of the next meeting; or
- g. exploring a new part of the country, having a vacation, getting refreshed.

When the first piece of paper relating to the meeting appears, I start a file folder for that meeting. On the cover I write important deadlines as I learn them. Everything relating to the meeting goes in this folder as it arrives.

I. Advance planning for next year.

A. Early warning: Send ideas for invited topics for next year's meeting to the appropriate program organizer by August 1 of this year. (See the June AMSTAT News for the names and addresses of the Section organizers for next year's meeting.) It's your meeting--why shouldn't there be sessions planned on the topics of greatest interest to you?

B. You should be presenting something--if not in an invited paper session which you organize, or someone else's, then think about a contributed paper talk or a poster session that you might give next year. Get on the program--some people will hear your presentation, but many more will read the abstract or see your name and research interest on the program in June and at the meeting.

Many people find it easier to do a poster session than a talk--it also provides more opportunity for talking to interested people about your ideas. It is especially appropriate for "works-in-progress."

Go to this year's poster sessions to learn what is involved. Notice which displays are most successful and interesting and what makes them that way. On Sunday and Tuesday this year, ASA is running free workshops on "Improving Statistical Presentations"--with advice for Poster Sessions as well as talks.

If you have ideas this year about what you would like to give a talk about next year, talk to people who are presenting similar material about that topic, and maybe get yourself to be an invited speaker.

But it's better to start small than not at all. If you belong to ASA, you are entitled to give a contributed paper talk at the meeting next year just by indicating that interest and meeting the deadlines for the submission of the appropriate materials. An abstract must be in by around the third week of March. A draft of the paper you will be presenting (it need not be wonderful, but should be reasonably complete--and you don't have to stick to it in your talk) is due by June 1--at which time you may revise your original abstract if called for.

Between June 1 and the meeting, there is plenty of time to improve the draft, AND TO WORK ON THE ORAL PRESENTATION VERSION OF YOUR MATERIAL. The needs and limitations of oral presentations are different from those of the written version--so write your paper, and then prepare your talk which should not consist of reading all or portions of your written paper.

Consider publishing your written paper in a Proceedings volume, if the Section sponsoring your talk has Proceedings. A look at a previous Proceedings volume will show you the standard and length you should aim for. Notice also that there is an "interactive" workshop on "Writing ASA Proceedings Papers" offered Wednesday, August 17. Although it is free, preregistration is required--but, if interested, you might stop by to see if there is room.

II. Pre-meeting planning for the current meeting.

A. Get in your reservations early (try for the end of June). Interesting special sessions and the choicest room accommodations disappear quickly.

Send in your forms as soon as possible after receiving (a) registration forms and (b) the June (Program) issue of AMSTAT News. People put off registering because they are not sure exactly which days they want to attend, which (if any) luncheons, special courses, etc. Make your best guess at these things early and send in your forms. It doesn't get any easier to decide later and your options are reduced. If need be, you can make changes later.

B. What to sign up for? The registration materials offer a bewildering array of possibilities. To minimize bewilderment, establish your own agenda. Decide on a short list of things you especially would like to get out of the meeting. Consult the program to set up a schedule that accomplishes these things. Then, browse through the program to see if it offers something new and exciting which you would like to fit in. Be sure to leave plenty of unscheduled time to follow-up interesting leads and just to not "burn-out".

III. Choices you have to make before sending in the forms.

A. HOTEL. If you register early, you get your first choice. The best choice is always the central hotel at the convention site. If you are not sure of which days, reserve for all of them—and change your reservation when your plans are more certain and you make travel reservations. One other hint: once you are set in your plans, send a check to the hotel to guarantee your reservation for the first night, so that if there are any snags in travelling, you still have a room on your "late" arrival.

If it is too expensive, plan to find one or more roommates. Even if you haven't yet located a roommate, send in your reservation. The request for a single, double, or whatever, as well as the days, can be changed later, if necessary. (The potentially most difficult change might be switching the arrival time to a later date—leaving earlier is not a hotel problem for you, but the earlier flights might be booked.) If you can't find a roommate for this time, on your own or through the Caucus, use this meeting to find one for next time.

B. JOB REGISTER. For some, this will be the top priority, otherwise you probably want to skip it. The deadline for getting in as a potential employer or employee is July 15— but you can browse the employer forms to see what is open without having done anything in advance. In any case, the decision to participate in the Job Register, either looking, recruiting, or browsing, can be made later than, and separately from, the registration decision.

C. SHORT COURSES. ASA is trying something new this year. Tutorials and workshops offered during the technical meeting (Monday-Wednesday) instead of just on the previous weekend. Before registering, however, check your schedule to see that they don't overlap with a "must attend" regular session.

Airline "supersaver" fares often save \$100 or more if your trip spans a Saturday night—this can cover a substantial part of the extra cost associated with the weekend short courses. Remember to book the flights early!

D. LUNCHEON ROUNDTABLES. Don't be put off by the \$12 for lunch. If any of the topics interest you, or if you want to get to meet any of the discussion leaders, sign up. It's a great way to make contacts with others of similar interest—cheap at twice the price!

E. TOURS. You're here for fun, too. If there's no time conflict with your top priorities, sign up. It may be a less formal way to meet people, too. On the other hand, sightseeing can be done before or after the meetings just as well. The comment on "supersaver fares" (see short course remarks) applies here as well.

F. PROCEEDINGS. Don't hold up sending in your registration form because of this one. Order what you're sure you'll want and let it go at that. It doesn't cost that much more to order later.

FINAL COMMENTS

As an aid, sketch out a tentative schedule using the June AMSTAT News and the Registration materials—but be sure to check the final program given you when you register, because there is always some fine tuning of the program between May and August.

The meeting is like a 20-ring circus, and you need to plan because you can't do it all.

If there's an interesting talk you will have to miss, you can write to the author either to ask for a copy of the paper or to suggest that you meet and talk at the meetings. Don't be shy--liking to talk about one's own work is almost universal. You can just try to make contact at the meeting itself, but things do get hectic there, so advance planning here, as elsewhere, will be advantageous.

And a final comment: meetings have their own social rules, and you should be more assertive and more aggressive in introducing yourself, in asking questions, or in meeting authors or others you want to speak to. The program may tell you where a person will be at a given time, or leave a message in their hotel/room, or use the meeting message board. Especially at meal time, many attendees are also soloing, so assertiveness in suggesting sharing a meal is also appropriate.

CONFERENCES AND MEETINGS

A meeting was held Wednesday, December 14, 1983 at the Graduate Center, City University of New York. At a public session, talks were given on Mathematics and Computing. The speakers and titles of the talks were:

- Dr. Karen Vogtmann, Columbia University, Computing the homology of Bianchi groups
- Dr. Susan Landau, Wesleyan University, Solvability by radicals is in polynomial time
- Myong-hi Kim, Ph.D. candidate, Grad. Center, CUNY, The tractability of finding roots of polynomials
- Dr. Lisa Goldberg, Queens College and Grad. Center, CUNY, Polynomials dynamically approximating exponential maps
- Dr. Lucy Garnett, Baruch College, CUNY, On the Hausdorff dimension of Julia sets
- Dr. Jeanne Ferrante, IBM Watson Research Center, Yorktown Heights, Using dependence to represent programs
- Dr. Anni Bruss, IBM Watson Research Center, Yorktown Heights, Graph-theoretical aspects of VLSI design.

At a buffet supper and get-together, introductory remarks were made by:

- Dr. Lenore Blum, NSF Visiting Professor, Grad. Center, CUNY
- Dr. Linda Keen, Lehman College and Grad. Center, CUNY, President-elect of AWM
- Dr. Anneli Lax, Courant Institute of Mathematical Sciences, NY
- Dr. Mina Rees, Professor Emerita and Past President, Grad. Center, CUNY.

The event was sponsored by the NSF Visiting Professorships for Women Program; the Mathematics Department, Grad. Center, CUNY; and AWM.

The Baltimore-Washington Section of the Society of Women Engineers will host the 1984 International Conference of Women Engineers and Scientists which will be held in conjunction with the Annual Society of Women Engineers Convention and Student Conference. The Tri-Conference is scheduled for June 17 through 24 at the Shoreham Hotel, Washington, DC. This will be the seventh ICWES and will coincide with the 20th anniversary of the first of these international conferences, held in New York, chaired and organized by SWE members.

The conference theme will be "Technology - An International Bridge." Attendees from over 30 countries are expected to participate in the ICWES.

Topics for technical seminars will include diverse aspects of engineering and science which concern the world community: transportation, education, agriculture, computers, communications, energy, and medicine are some of the topics which will be presented.

Professional development sessions will focus on topics such as the problems facing women in technical fields, the fulfillment of career goals through continued education, and management vs. technical career paths.

Advanced registration is due by April 1, 1984. For information, call 301-765-3400.

The New York College Learning Skills Association is hosting its Seventh Annual Symposium on Remedial/Developmental Education at Grossingers, NY on April 1-4, 1984. Keynote Speaker: Martha Maxwell

Presymposium Institute Leaders: Frank Christ on Microcomputers and Edward Kelly on Program Evaluation

Special Workshop Leaders: Larry Dolaz, Susan Leffler, Curtis Miles, Jay Sommer and Alfred Pasteur

For registration and information contact: Anne Parsons, Learning Skills Center, SUNY at Brockport, NY 14420, 716-395-2471.

The University of Maryland, Center for Management Development is offering a two-day seminar series on women's issues. They are Women and Organizational Politics, May 10, 1984, and Women and the Law: Legal Issues Involving Women in the Workplace, May 11, 1984. Both cost \$225 at the Columbia Inn, Columbia, MD.

GAMMA

GAMMA (Girls and Mathematics Association) is a British association which aims to publicize the facts about girls' participation in mathematics, evolve strategies and create resources aimed at improving the situation, and set up a national network for the exchange and sharing of ideas.

GAMMA holds several day conferences a year, in London and regionally, and produces a newsletter which is circulated to all members. A bibliography of relevant writings is being compiled which will be available to members by the end of 1983.

Working groups have been set up to look at such things as sexism in mathematics materials and to examine teacher training. The emphasis in the groups is on action and producing resources. Further groups will be established as members identify areas of interest and need.

The annual subscription for membership in GAMMA is £2 and £1 for students and unwaged. To join GAMMA or obtain further information please write to us at: Girls and Mathematics Unit, University of London, Institute of Education, 58, Gordon Square, London, WC1H 0NT.

ON CAMPUS WITH WOMEN

reprinted from the publication of the same name published by the Project on the Status and Education of Women, Association of American Colleges, 1818 R St., NW, Washington, DC 20009

Spring 1983

Myth-Shattering Report

Among the myths shattered by facts (from a new report on working women) are:

- * the wage gap between men and women is narrowing;
- * men and women doing the same work earn the same pay;
- * women now have access to all types of jobs;
- * minority women move ahead faster because they benefit doubly from affirmative action;
- * women earn less because they don't stay in the job market;
- * women don't have the education needed to get ahead; and
- * the large influx of women into the labor force is the cause of high unemployment.

The report, Women at Work: The Myth of Equal Opportunity, profiles the economic status

of women, using statistics on labor force participation, marital status, percentage of mothers who work, families maintained by a divorced or separated parent, child care and unemployment rates. The data reveal an increase in the number of women in poverty, with women still relegated to the lowest paying jobs in the economy, and with no sign of a shift in the wage gap. Copies of the report, published by Women Employed Institute, are available at \$4 plus \$.50 postage and handling from The Women Employed Institute, 5 South Wabash, Suite #415, Chicago, IL 60603.

Over a Lifetime...

A recent study by the Bureau of the Census shows that a man with a bachelor's degree can expect to earn twice as much in a lifetime as a woman could. A male who is now 18 and eventually receives a college degree can expect lifetime earnings of \$1,190,000--\$329,000 more than a man with a high school diploma (who can expect \$861,000 in earnings).

However, an 18-year-old female who goes on to get a college degree can expect to make \$523,000 in a lifetime--\$142,000 more than a woman with a high school education (who can expect to make \$381,000).

The Sky is Not the Limit for Women Astronomers--Rather, the Family is, British Study Shows

After examining long-term employment profiles of doctoral students of radio astronomy, researchers have concluded that the relative lack of career success shown by British women astronomers is more likely to result from social factors concerning their role within the family than from any inherent lack of ability as a scientist or direct discrimination in employment. In Women in Science--The Astronomical Brain Drain, authors Ben R. Martin and John Irvine, of the University of Sussex note that, while the great majority of women do as well as men in their first jobs, with no significant differences with their male colleagues, the divergence in career paths between men and women occurs fairly rapidly after this point, as the demands of their husband's career severely restrict the employment choices available to women. (All but one of the women in the study were married by this stage.) Family-related pressures were the principal determinants of women's choices of jobs, with "husband moved" (27 percent) and family commitments such as babies (17 percent) together accounting for 44 percent of the changes in jobs, compared with a figure of only one percent for men. The authors suggest that only if men accord greater priority to family commitments in their careers can a complete and permanent solution be achieved, and noted sociologist Alice Rossi's observation that it is only when work is less dominant in the lives of men that it can become more dominant in the lives of women. The 27-page article appeared in Women's Studies International Forum, Vol. 5, No. 1, 1982.

OF POSSIBLE INTEREST

Beacon Press, 25 Beacon St., Boston, MA 02108.

Women's Studies, Virago Press, The Women's Press. Merrimack Publishers' Circle, Box 827, 47 Pelham Rd., Salem, NH 03079. Interesting list.

The History of Science Society's Committee on Women is compiling a guide to bibliographies on the history of women in science, technology, and medicine. Anyone with references to published bibliographies or private bibliographies available for circulation is requested to send the references and, if possible, copies of the bibliographies to Helena Pycior, History Department, University of Wisconsin-Milwaukee, Milwaukee, WI 53201.

DEADLINES: Mar. 24 for May-June, May 24 for July-Aug., July 24 for Sept.-Oct.
AD DEADLINES: Apr. 5 for May-June, June 5 for July-Aug., Aug. 5 for Sept.-Oct.
ADDRESSES: Send all material except ads to Anne Leggett, Dept. of Math. Sciences,
Loyola University, 6525 N. Sheridan Rd., Chicago, IL 60626.
Send everything else, including ads, to AWM, P.O. Box 178, Wellesley
College, Wellesley, MA 02181.

Job Ads

Institutional members of AWM receive two free ads per year. All other ads are \$10 apiece and must be prepaid. The vacancies listed below appear in alphabetical order by state. All institutional members below are Affirmative Action/Equal Opportunity employers.

Arizona State University. Dept of Mathematics, Tempe, AZ 85287. Applications invited for positions at ranks of Asst. & Assoc. Professor. Possibility of appts. at Professor rank. Visiting positions are also expected. Send vita & direct 3 letters of recommendation to J. Bustoz, Chair.

Loyola Marymount University. Dept of Mathematics. Loyola Blvd at 80th St., Los Angeles, CA 90045. Possible two Asst. Professorships, one tenure track & one visiting asst., fall, 1984. Duties: teach wide variety of undergraduate courses. Dept has a small master's program in applied math. Ph.D. required. Send resume to Prof. Dennis G. Zill, Math Dept. Dept.

San Francisco State University. Dept of Mathematics, 1600 Holloway, San Francisco, CA 94132. Two tenure track positions in either pure or applied math. Required: Ph.D. in math & demonstrated competence in teaching & research. Teaching load 12 hours/week. Rank & salary dependent on experience & qualifications of candidate. Send vita, graduate transcripts & 3 letters of recommendation to Newman Fisher, Chair, by 3/15/84.

University of New Haven. Math Dept., 300 Orange Ave., West Haven, CT 06516. W. Thurmon Whitley, Chair. Full time tenure track position 9/1/84. Prefer Ph.D. in math with background in comp sci. Required: excellent teaching & research ability. Teaching load: 24 credit hours per academic year. Salary & rank dependent on qualifications. By 4/2/84 submit vita, transcripts & 3 letters of reference to Chair.

University of Delaware. Dept of Computer & Information Sciences, Newark, DE 19716. B. F. Caviness, Chairperson. Openings for tenure track & visiting faculty 9/1984. Special interest in candidates with research expertise in artificial intelligence, networks, distributed systems, symbolic computation, languages, graphics, parallel architectures, software engineering, data base systems or other applied areas. Required: Ph.D. & excellence in teaching & research. Rank & salary commensurate with qualifications & experience. Send vita & names of 3 references to Chairperson. Applications accepted until position is filled.

University of Hawaii. Dept of Math, Honolulu, Hawaii, 96822. Prof. William A. Lampe, Chairman. Two tenure track Asst. Professorships, 8/15/84. Salary range: \$16,872-\$25,296 per year. If warranted, higher pay or rank may be possible. Duties: teach 2 courses per semester & do research. Required: Ph.D. in math or equivalent; commitment to good teaching; research promise. Desirable: research interest matching or complementing UH's. By 2/1/84 apply to Chairman. Have 3 letters of reference sent directly to Chairman.

Northeastern Illinois University. Dept. of Mathematics, Chicago, IL 60625. One or more tenure track positions. Minimum qualifications are a Master's degree in math or stat and 30 hrs. of additional course work towards a Ph.D. Ph.D. will be required for tenure. All fields would be considered, but preference will be for candidates who can design & teach Masters Level courses in statistics, operations research or numerical analysis. Position starts Sept., 1984. Please write or phone (312)583-4050 Ext. 723, Barry Dayton, Chairperson by 3/23/84.

Northeastern Illinois University. Dept of Mathematics, Chicago, IL 60625. Instructor/Assistant Professor, Math Lab. One tenure track position to teach developmental Math & help administer the Math Lab. Minimum requirements are a Masters degree in mathematics or a closely related field and a genuine interest in teaching Prealgebra through Intermediate Algebra. We are especially interested in applicants holding a D A. or Ph.D. in Mathematics Education who desire to do research on our computer managed course system. Starts 9/1/84. Application deadline, April 2, 1984.

Sangamon State University. Mathematical Systems Program. Tenure track Asst/Assoc. Professorship in Statistics 8/15/84. Required: Ph.D. in Stat. & familiarity with computers. Expect commitment to excellent teaching at graduate & undergraduate levels, public service and/or applied research. By 4/10/84 send resume & 3 letters of reference to Dr. Rasule Hadidi, Sangamon St. Univ, Springfield, IL 62708.

Briarcliffe College. Dept of Math & Com. Sci., Sioux City, IA 51104. Need computing professional to teach upper & lower level courses & assist in implementation & further development of new comp. sci. major. Major includes courses in Systems Analysis, Data Base Management, computer Organization, Distributed Data Processing. Master's Degree in computing or related field with commitment to undergraduate teaching. Computer Center houses a DEC VAX 11/750, an IBM System/36 and APPLE II micro-computers. Send application, resume, transcripts & 3 letters of recommendation to Sr. Margaret Wick, Academic Dean.

University of Iowa. Dept of Comp. Sci., Iowa City, IA 52242. Regular faculty positions and visiting positions. Required: Ph.D. in Comp. Sci. & strong research commitment. Departmental research facilities include a UNIX-based VAX-11/780, a PDP-11/23, a cluster of HP9836 workstations, and a HERO-1 robot. Other university facilities include an IBM 370 & a network of Prime 750 & 850 computers. Send resume, names of 3 references & copies of any recent publications or technical reports to: Douglas W. Jones, Chmn., Faculty Search Committee.

Kansas State University. Dept of Mathematics, Manhattan, KS 66506. Richard Summerhill, Dept. Head. Tenure track Asst. Professorship for 84-85. Starts 8/13/84. Salary commensurate with ability. Required: demonstrated research ability in math & strong commitment to excellence in teaching. Prefer candidates in field of algebra, but will consider all fields. Ph.D. in math or equivalent is required. By 3/15/84 apply to Head.

Northeastern University. College of Computer Science, 161 BT, 360 Huntington Ave., Boston, MA 02115. Invite applications for full-time & visiting positions from computer scientists with Ph.D. in comp. sci. preferred & strong interest in research. College of Comp. Sci. is only independent unit in U.S. offering both an accredited Bachelor of Science Degree in Comp. Sci. and a Cooperative Education Plan. College of Comp. Sci. has 16 full time & 6 part time faculty. Current faculty research interests include graphics, graph theory, artificial intelligence & robotics, computer aided instruction; cryptography, database systems & software engineering.

Northeastern University (contd)

Plan to staff number of positions in areas of parallel computation, communication networks, operating systems, VLSI design, and text processing.

The College of Comp. Sci. has 2 student labs, one equipped with 60 Corvus microcomputers and another with 5 CDC Plato systems for CAI. In addition faculty & students can access Univ-owned DEC Vax 11/780's and a DG MV/8000. The faculty lab is equipped with 4 networked Apollo computers, 12 68000-based Corvus workstations linked via Omninet, a Three Rivers PERQ with laser printer, a PDP 11/23, and a Raster Technologies high resolution color graphics systems. We have working relations with several computer corporations in Boston area, as well as with MIT & Harvard. Salary & benefits are highly competitive; rank is open. Send resume to Chair, Hiring Committee.

Wellesley College. Dept of Math, Wellesley, MA 02181. One three-year and one two-year position at Asst. Professor level beginning Fall 1984. Requirements include Ph.D. in mathematics (completed, or expected by June, 1984), excellence in and commitment to mathematical research & undergraduate teaching in a liberal arts environment. Applicants should send a curriculum vitae and at least three letters of recommendation that address both teaching and research. Contact Chairman, Dept of Mathematics.

Western Michigan University. Dept of Mathematics, Kalamazoo, MI 49008. Dr. James H. Powell, Chairperson. Tenure-track Asst. Professorship, Fall, 1984. Ph.D. in math or related area with thesis topic in applied math. Preference may be given to those in numerical analysis and/or continuous modeling. Training in comp. sci. is desirable. Duties: teach applied & theoretical courses at grad. & undergrad. levels; research & course/curriculum development. Competitive salary. Excellent fringe benefits. Contact Chairperson.

University of Michigan. Dept of Math & Stat, 4901 Evergreen Rd, Dearborn, MI 48128.(1) Search Chmn, John Riordan. Tenure track position 9/1984 teaching and research in Comp Sci. Prefer Ph.D. in Comp. Sci, but will consider Ph.D. in math with substantial background in Comp. Sci. Rank & salary dependent on qualifications. Computing facilities include remote batch & terminal connections to Ann Arbor campus, Amdahl 470, an on campus prime 400, and the department's Apple. Send resume & have 3 letters of recommendation & graduate transcripts sent. (2) Dept. Chmn. S. J. Milles. One or two tenure track Asst. or Assoc. Professorships 9/1984 to teach undergraduate math. Required: teaching & demonstrated research capability. Prefer candidates with applied math background and/or with teaching capability in comp. sci. Teaching load 9 credit hours per semester. Send resume & have 3 letters of recommendation sent.

Winona State University. Dept of Math & Comp.Sci., Winona, MN 55987. Full time, tenure track appt. Sept., 1984. Rank & salary dependent on qualifications & experience. Duties: teach full range of undergraduate comp. sci. courses; some math courses may be included; also some off campus assignments may be required. Required: minimum of M.S. in comp sci or Ph.D. in one of math sciences with demonstrated competence in comp sci (either teaching or business-industrial). Desirable: willingness to work cooperatively with colleagues & interest in curriculum development. Fringe benefits for full time faculty. Send application, transcripts, credentials & 3 to 5 references to Ms. Janet Sill at above address. Position open until filled.

University of Nebraska. Dept. of Math & Stat., Lincoln, NE 68588-0323. David Logan, Chairperson. Three tenure track positions. Ph.D. required, excellence in teaching & outstanding research potential. One position at Asst/Assoc Prof. level in optimization or control; one Asst Prof. in classical applied math; one Asst. Prof. in statistics. Additional one-year positions available in other areas of math. Send vita & letters of recommendation to above person. Closing date: March 15, 1984 or later if not filled.

Dartmouth College. Dept of Math & Comp Sci, Hanover, NH 03755. Prof. Martin Arkowitz, Chmn. (1) Computer Science. Asst. Professor, initial 3-year appt. Possibility of reappointment and eventual tenure. Required: Ph.D; demonstrated research in comp sci, & ability & interest in teaching undergraduate comp. sci. courses. (2) Mathematics. Asst. Professor, initial 3-year appt. Possibility of reappointment & eventual tenure. Required: Ph.D; demonstrated research ability in math & ability & interest in teaching undergraduate & graduate courses in math. Write to Chmn, Attn. Recruiting.

University of New Hampshire. Dept of Math, Kingsbury Hall, Durham, NH 03824. Dr. Richard H. Balomenos, Chmn. Two tenure track Asst Professorships 9/1984. Areas of interest: algebra, applied math & statistics. Ph.D. required in field of specialty. Strong commitment to teaching & research. Send resume & 3 letters of reference to Chmn.

Russell Sage College. Dept of Math Sciences, Troy, NY 12180. (518/270-2328). Dr. Rita Murray, Chairman. Tenure track Asst. Professorship in Comp Sci. Required: minimum of M.S. in comp sci & commitment to quality teaching. Experience & related mathematical skills preferred. Teaching courses in introductory & advanced comp sci in Day & Evening Divisions. Load 3-1-3. Salary negotiable. Deadline: March 1 or until position is filled. Apply to Chairman.

SUNY, Albany. Dept of Math & Stat., Albany, NY 12222. L. N. Childs, Chmn. (1) Tenure track asst. professorship in Stat. Required: Ph.D. in stat., excellent potential for research, interest in applications. Specialty open, but prefer math stat. (2) One Malcolm F. Smiley Asst. Professorship, three year, non-renewable post-doctoral appt.; reduced teaching load. Prefer candidate whose research complements that of current faculty. Send resume & have 3 letters of recommendation sent to Chmn.

SUNY, Buffalo. Dept of Comp Sci, 4226 Ridge Lea Rd., Amherst, NY 14226. Faculty openings at all ranks beginning Jan. 1984 or Sept. 1984. Required: Ph.D. in comp sci (or related Ph.D. with comp sci experience) & superior research ability. Dept. welcomes specialists in all fields, but especially in programming languages, operating systems, computer architecture, and software engineering. Departmental lab includes a Vax 11/780 & two Vax 11/750's as well as various microsystems. SUNY/Buffalo is the largest & most comprehensive research univ center in SUNY system & offers competitive salaries. Send applications & names & addresses of 4 references to P. J. Eberlein at above address.

SUNY-Buffalo. Dept of Computer Science. Position of Chairperson of Dept. Required: broad background & record of significant research in comp sci, as well as experience in group leadership & administration. Faculty of Dept are engaged in research in areas of artificial intelligence & theory of computation. Departmental computing facilities include a VAX 11/780, 2 VAX 11/750's, and a variety of graphics & image processing equipment, all operating under Berkeley UNIX. Academic year salary range is between \$45,000 and \$59,200 for appt at rank of Professor & up to \$71,792 for the extraordinary candidate qualified for appt in the title of Leading Professor. In addition, a 6% supplement salary is provided in recognition of the Chairmanship. Send complete resume & description of current research to Dr. Bruce McCombe, Comp. Sci. Search Committee, c/o Office of the Dean/FNSM, SUNY/Buffalo, 732 Clemens Hall, Buffalo, NY 14260 by 3/31/84.

SUNY/Buffalo. Math Dept. Anticipated opening 9/1984 for Asst Prof, tenure track, to teach undergraduate courses. Earned doctorate or one near completion in mathematical science. Must have teaching ability & desire to contribute to new program in math sciences. Should have a working knowledge of at least one programming language and familiarity with computational mathematics. Salary competitive, at Asst Prof level, depending on qualifications. By 4/1/84 send application, resume, transcripts & 3 letters of recommendation to Prof. Ruth E. Heintz, Chair, 1300 Elmwood Ave., Buffalo, NY 14222.

SUNY, College at Cortland. Dept of Math, Cortland, NY 13045. T. O'Loughlin, Chmn. Tenure track Asst. Professorship (possibly 2) Fall, 1984. Ph.D. or A.B.D. Required: some background in comp. sci., including knowledge of FORTRAN and/or PASCAL. Teaching load 12 hrs/semester of math and/or computer science courses. By 4/6/84 send resume, transcripts & 3 letters of recommendation to Chmn.

SUNY, Stony Brook. Dept of Applied Math & Stat., Stony Brook, NY 11794. Dr. R. P. Tewarson, Acting Chmn. Junior position in statistics available. Evidence of research potential needed. Send resume to Acting Chmn.

Bowling Green State University. Dept of Math & Stat, Bowling Green, OH 43403. Dr. Vijay K. Rohatgi, Chair. Following positions to begin 8/15/84: (1) One probational/tenure track asst. prof; Ph.D. required. (2) Two instructors. Required: Master's degree. Some college level teaching experience desirable but not necessary. (3) Visiting professor. Ph.D. with distinguished research record. Appt. for one semester. Send application/nomination, curriculum vitae & 3 letters of recommendation to Chair by 3/1/84. Late applications will be accepted until positions are filled.

Oberlin College. Dept of Math, Oberlin, OH 44074. George Andrews, Chmn. One year (leave replacement) position at Instructor/Assistant Professor level for the academic year 1984/85. Required: Ph.D. completed or expected by 9/1984, strong interest in teaching (previous experience desirable). Send curriculum vitae, transcripts, and at least 3 letters of reference by 4/16/84. Applications received after that date will be considered until the position is filled. We particularly welcome applications from female and minority candidates.

University of Cincinnati. Dept of Math Sciences, Mail #25, Cincinnati, OH 45221. Tenure track positions 9/1984. Most appts as Asst. Prof, but more senior appts may be possible. Required: Ph.D. with rigorous commitment to teaching & research. All fields complementing work being done in Dept will be considered. Send resume & 3 letters of recommendation to Prof. H. P. Halpern.

Lewis & Clark College. Dept of Comp Sci, Campus Box 14, Portland, OR 97219. Positions in expanding Comp Sci program. Require Master's in Comp Sci or equivalent. Prefer Ph.D. in any of several disciplines such as math, stat, social/physical/life sciences, the humanities or business administration. Teaching duties may be spread over 12 mos. providing time for research & supported continuing education. Salary competitive. Appointee will teach undergraduate comp sci courses & will contribute to development & expansion of curriculum. Current facilities include a large VAX 11/780 & several micro-computers. By 3/15/84 send vita, transcripts, & 3 letters of recommendation to Comp Sci Search Committee at above address.

Carnegie-Mellon University. Dept of Mathematics, Schenley Park, Pittsburgh, PA 15213. Prof. George J. Fix, Head. Two tenure track positions Fall, 1984. (1) Prefer candidates in field of operations research with strong background in one or more of following areas: mathematical programming, applied probability, convex analysis. Candidates should be able to take active part in Dept's undergraduate & graduate teaching efforts in operations research. (2) Prefer candidates in areas of applied logic & discrete mathematics with ability to teach courses in logic, combinatorics & graph theory which support Dept's undergraduate track in comp sci. Send resume & have 3 letters of recommendation sent to Head.

Gettysburg College. Dept of Math, Gettysburg, PA 17325. Dr. L. T. Holder, Chmn. Tenure track Asst. Professorship 9/1984. Required: completed Ph.D. by 9/1984. No specific field required, but some computer background desirable. 13:1 student/faculty ratio. Related to Lutheran Church in America. 4-1-4 calendar, 3-1-3 teaching load. By 3/15/84 send resume & have 3 letters of reference sent to Chmn.

Villanova University. Dept of Math Sciences, Villanova, PA 19085. Dr. Frederick W. Hartmann, Chmn. Asst./Assoc. Professorships, Fall, 1984. Several tenure track appts will be made. Required: Ph.D. & strong interest in undergraduate & graduate teaching as well as research in any of math sciences. Expertise in comp sci, stat or operations research is desirable. Send resume & 3 letters of recommendation to Chmn.

College of Charleston. Dept of Math, Charleston, SC 29424. W. L. Golightly, Chmn. At least two tenure track junior or senior level positions fall, 1984. Required: Ph.D. in math or related field, commitment to undergraduate teaching & potential for continuing research. 12 hrs/wk normal teaching load; course reductions for those engaged in research. Minimum salary \$23,000. Send resume & have 3 letters of recommendation sent to Chmn.

Office of Naval Research. Arlington, VA. Two Civil Service positions at the GM-14 or GM-15 (\$42,722-\$65,327) level are available, one in the area of discrete mathematics and related algebraic methods (including combinatorics, graph theory, enumeration, discrete optimization, finite ordered sets, and combinatorial designs) and the other in the area of mathematical and computational statistics and probability (including asymptotic theory, small sample theory, robustness, design of experiments, multivariate analysis, applied probability, stochastic processes, stochastic differential equations, statistical computing, and simulation) Responsibilities are to formulate, implement, and monitor a contract research program. Applicants must have a Ph.D. or equivalent and at least 3 years of progressively responsible professional experience. Submit a Standard Form 171 or resume to be received by March 23, 1984 to: Office of Naval Research, Civilian Personnel Division, Code 791SC, Attn: Announcement #83-70 (Mathematician) or #83-71 (Mathematical Statistician), 800 North Quincy Street, Arlington, VA 22217. For further information or supplemental forms call (202) 696-4705.

College of William & Mary. Dept of Math, Williamsburg, VA 23185. John Drew, Chmn. Tenure track Asst. or Assoc. Professorship. Required: Ph.D. in operations research & strong background in mathematics. Position involves research & teaching graduate courses in operations research; however, ability to teach some undergraduate mathematics courses if necessary is essential. Practical experience with computer applications of operations research is desirable. Send vita & 3 letters of recommendation to Chmn by 3/15/84.

Marshall University. Dept of Mathematics, Huntington, WV 25701. (1) One year temporary Instructorship or Asst. Professorship 9/1984. Required: Master's Degree, but Ph.D. preferred. Duties: teaching 12-13 credit hours per semester. (2) One tenure track Asst. Professorship. Doctorate required; emphasis on geometry and/or numerical mathematics preferred. For both positions send resume, copies of transcripts & 3 letters of reference by 3/15/84 to Steven Hatfield, Search Committee.

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