ASSOCIATION FOR WOMEN IN MATHEMATICS

NEWSLETTER

Volume 8, Number 3 September 1978

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AMS ELECTIONS

Questions have been sent out to candidates for AMS office. These candidates' answers will appear in an "election special" edition of the AWM Newsletter. We hope the special will reach you around October 15 or so. Please hold on to your ballots, read the candidates' answers, and make an informed choice.

A write-in campaign for Alice Schafer for Secretary of the AMS has been organized. More about this in the special. (Everett Pitcher is the official candidate again.)

CHARLESTON-NOVEMBER 3-4 AMS MEETING

by Bettye Anne Case, AWM Executive Committee Member-at-Large
Tallahassee Community College

An AWM lunch is planned for the Sat. lunch break!

Why --- Since South Carolina has not ratified the Equal Rights Amendment? We certainly do not wish to encourage spending money at a meeting in non-ratified South Carolina, but we do plan to get together so that those AWM women and men who necessarily must attend the meeting may get to know each other better. (This region of the AMS has only one ERA-ratified state--Tenn., which has attempted to rescind.)

The program will be informal. Want to participate? Evelyn Silvia (University of California, Davis) is attending this meeting (for the Special Session on Complex Analysis) and will share plans for Biloxi. I will discuss some current AWM concerns and gather suggestions for future action in the south by AWM members. If you would like to talk about something in particular and would let me know ahead, it would be helpful. (2405 Idyllic Terrace; Tallahassee, FL 32303; 904-385-0627)

Frank Birtel (Associate Secretary, AMS) will see that the lunch is listed in the NOTICES schedule for the lunch break time on Saturday. (The meeting will run approximately 1-5 p.m. on Friday and 9-5 on Saturday.)

W. Hugh Haynsworth (Math Department Chair, College of Charleston) has arranged for us to use the private dining room in Craig Union Cafeteria on campus; the cost of lunch is $2.75 for "all you can eat."

NOTICES OF INTEREST

The Autumn 1978 issue of the quarterly, SIGNS: Journal of Women in Culture and Society, will be entitled "Women, Science and Society." The price for an individual issue is $4.00; institutional, $5.00. Send to SIGNS, University of Chicago Press, 11030 Langley Ave., Chicago, Ill. 60628.

On page 2 there is a list of our institutional members. If your institution is not included among them, we suggest your encouraging them to join.

INSTITUTIONAL MEMBERS OF THE ASSOCIATION FOR WOMEN IN MATHEMATICS

Adelphi University, N.Y.
Aero. Research Association of Princeton, Inc.
Asso. of American Colleges, Inc.
Bryn Mawn, Pa.
University of Calgary, Canada
California State Univ., Fullerton
Univ. of California, Berkeley
Univ. of California, Santa Barbara
Chatham College, Pa.
Colgate University, N.Y.
Dartmouth College, N.H.
University of Dayton, Oh.
Howard University, D.C.
University of Illinois, Urbana
University of Maryland
Mass. Institute of Technology, Ma.
Michigan State University
Mount Holyoke College, Ma.
New Mexico State University
State Univ. of New York, Buffalo
State Univ. of New York, Stony Brook
Northwest Missouri State University
Northwestern University, Ill.
Ohio Wesleyan University, Oh.
College of the Pacific, Ca.
Russell Sage College, N.Y.
San Francisco State University
Smith College, Ma.
Southern Illinois Univ., Carbondale
Southwest Minn. State College, Minn.
University of Oklahoma
Stanford University, Ca.
Syracuse University, N.Y.
University of Tennessee
University of Texas, Austin
Tufts University, Ma.
University of Utah
Union College, N.Y.
Vassar College, N.Y.
University of Virginia
University of Washington
Wayne State University, MI.
Wellesley College, Ma.
Univ. of Wisconsin, Madison
Worcester Polytechnic Inst., Ma.

LETTER FROM THE PRESIDENT

by Judy Roitman, Math. Dept., University of Kansas, Lawrence, Kansas 66045

Introductory rhetorical statement

During my first few years in graduate school, I met no tenure-track women in the math department. Passing the poster announcing the Noether/Hill research assistant professorships, I assumed that Emmy was diminutive for Emanuel. Why not?

Today, Julia Robinson is a vice-president of the American Mathematical Society; Dorothy Bernstein is president-elect of the Mathematical Association of America; Shirley Hill is president of the National Council of Teachers of Mathematics; Maxine Rockoff is chairman of the Board of Trustees of the Society for Industrial and Applied Mathematics. At least on the organizational level, women are more visible in mathematics.

Yet a recent study of physics students shows that women still set lower goals for themselves than men of equal achievement. And despite all the talk of affirmative action, it is still true that the unemployment of women in the mathematics professions is higher than that of men, and that the percentage of women employed at various ranks in the profession drops as the status and salary increase. We still have a long way to go.

Who's who

There have been a lot of changes in the AWM executive committee and council. The current executive committee members are: Judy Roitman (president); Lenore Blum (past president); Judy Green (vice president); Judy Wason (treasurer); Anne Leggett (newsletter editor); Mary Gray (affirmative action office); and members-at-large, Bettye Anne Case, Martha Smith, Alice Schafer, and Bhama Srinivasan.

The AWM council consists at this writing of the executive committee plus: Ruth Afflack (interest area: math education), Evelyn Boorman, Jacqueline Dewar (career counseling; teacher education; Southern California Network), Etta Falconer, Judith Jacobs (teacher education), Harriet Kagiwada (applied mathematics), Linda Keen (New York), Patricia Kenschaft (4-year state colleges, ERA), Judith Longyear (midwest), Bertha Mather (retired women), Katherine Merseth (secondary math education), Jill Mesirov (pure and applied research), Susan Montgomery, Teri Perl (history of women in mathematics) Vera Pless (midwest), Sandra Pulver, Lucy Rakov (high school math teachers), Karen

Rappaport (2-yr. community colleges), Ann Stehney, Marjorie Stein, Christine Stokes, Rebekka Struik, Evelyn Syliva, and Stepanie Troyer (in charge of speakers bureau). Due to the July 15 deadline for this article, there will probably be additions to the council before the publication date.

Biloxi, Blacksburg, and the ERA

The invitation for the AMS and MAA to meet in Blacksburg , Virginia in August 1979 has been withdrawn, and the AMS/MAA will meet in Colorado instead. A letter sent by Evereet Pitcher, AMS Secretary, to people who wrote to protest the Blacksburg meeting indicates that the mathematical organizations will in the future abide by the resolution passed at the January 1978 AMS business meeting: to try and hold meetings in states which have passed the ERA.

However, this resolution was passed too late to affect the contracts for the January 1979 meeting in Biloxi, Mississippi. The AWM is therefore caught between the need to clearly support the ERA and the need to get together at a large math meeting in the winter. Here's our compromise:

We will be co-ordinating a pro-ERA protest from the AWM table by passing out green armbands - at least one invited hour speaker has agreed to wear one. There will be an AWM-sponsored panel tentatively to be about the ERA and Bakke. These will be the only official AWM events. If it is possible, we will not even officially call our presence in Biloxi an AWM meeting. Those of us who plan to boycott the Biloxi meetings are encouraged to do so.

Those of us who do attend the winter meetings are encouraged to spend as little money as possible - the NOW boycott is an economic one - sharing rooms, minimizing time there, etc. Evelyn Sylvia has been collecting suggestions on what we can do in Biloxi and they should be sent to her c/o Math Department, U.C. Davis, Davis, California. If you are not going to Biloxi because of the ERA, let Evelyn know. There are forms for this in a previous newsletter.

The Bakke decision

I write this within a week of the Bakke decision. It seems to me a decision we can live with if it is interpreted by our social institutions in a reasonable fashion. It is up to us to watch our institutions and see how they respond - to the clear mandate for affirmative action, or to the fear of having anything remotely resembling a quota.

Education

At various math education meetings this spring a strong need was felt for women in math education to organize. Whether this will come about from a new organization or within the AWM is not clear. An organization or caucus of people concerned with women's math education can be an exciting opportunity for educators, mathematicians, and educator/mathematicians to get together. Or it can lead to further polarization along the lines feared by many scientists commenting on the new federal Department of Education vis-a-vis the educational programs of the National Science Foundation. It is crucial that women mathematicians outside the schools be available as role models, as liaisons with industry and higher education, as experts in their fields to be resources in the schools.

There is also the questions of what the goals are in special programs for girls and women. Now that math anxiety has become well-known, many programs are springing up all over the country, and because there are not alot of professional women mathematicians all over the country, many of these programs are necessarily being run by people with little mathematical knowledge and no-one to turn to. Is the goal of a university program compensatory high school algebra? or is it compensatory high school algebra leading to calculus? Is it clearly understood why people who are not mathematicians should study mathematics, and what mathematics they should study?

There is also the subtle line between recognizing that many people are anxious about doing mathematics, and accepting this as a natural state. Here is where the very existence of women mathematicians can do a tremendous amount of good: if we are visible to the broader educational community, then it is harder to perpetuate stereotypes that mathematics is unnatural for women, and that careers using mathematics are closed to women.

TREASURER'S REPORT

by Judy Wason

Expenses have exceeded receipts for the past fiscal year. As we cannot sustain another such deficit, it is necessary for us to raise dues for the coming year. Those on our mailing list will receive postcard bills by early fall. Please pay! We are particularly desirous of contributing and institutional memberships. How about donations in memory/honor of a favorite mathematician or teacher?

AWM has a new secretary, Ms. Margaret Munroe. Office hours are 8:30 - 4:30, Tuesday and Friday, and 8:30 - 12, Thursday, phone 617-235-0320 ext. 430.

Accounting for the period June 1, 1977 - May 31, 1978

Balance, June 1, 1977		$3531.90
Receipts		
Dues - individuals	$3883.10	
- institutions	720.00	
Advertising fees	405.00	
Contributions	77.00	
Polaroid grant for Speakers' Bureau	1000.00	
Careers Booklets	112.00	
Interest	234.98	
Misc.	111.36	
Total	$6543.44	
Expenses		
Wages (1)	$3454.71	
Newsletters (2)	2869.21	
Dues & Fees (3)	222.50	
Speakers' Bureau (4)	37.31	
Scholarship (5)	73.00	
Entertainment (6)	234.04	
Operating Expenses (7)	1172.90	
Misc.	89.87	
Total	$8153.54	
Balance, May 31, 1978		$1921.80

(1) Part-time secretary
(2) Postage and printing for 5 issues (includes 2 from F.Y. 1976, $539.20)
(3) CBMS, Fed. of Org. of Prof. Women, Mass. Incorporation Fee
(4) Mailing to recruit speakers
(5) Study of Mathematically Precocious Youth, Johns Hopkins Univ.
(6) Parties in Seattle, Atlanta
(7) Postage, phone, supplies, duplicating

AWM COUNCILMEMBER STATEMENTS

Name: Katherine K. Merseth **Interest Area:** Secondary Math Education

Address: 31 Princeton Street
No. Chelmsford, MA 01863

Affiliation: Chelmsford Public Schools

Position: Coordinator of Mathematics K-12

Statement: I am interested in joining the AWM Council to represent the area of pre-university mathematics education for women. Much of the current research tells us that elementary and secondary mathematics classrooms have a tremendous effect on the career choices of college women. I would like to work to help increase the positive aspects of mathematics at these levels.

Name: Thelma Estrin, Ph.D.

Address: Brain Research Inst., UCLA
Los Angeles, CA 90024

Affliation: University of California, LA

Position: Director, Data Processing Laboratory

Interest Area: Electrical Engineering
Computer Engineering,
Biomedical Engineering

Statement: I would like to help AWM acquaint women with opportunities for careers in in the fields of Engineering and Computer Science. Engineering offers the opportunity to apply knowledge of the mathematical sciences for the benefit of mankind through improved utilization of human and material resources.

I am a long-time member of the Society of Women Engineers and the Institute of Electrical and Electronics Engineers (IEEE). As Chairperson of the IEEE Committee of Professional Opportunities for Women (COMPOW), I have initiated a number of activities to promote the entry and advancement of women in engineering.

Name: Dr. Adelaide T. Harmon-Elliott

Address: 2990 Hemlock Avenue
Morrow Bay, CA 93442

Affiliation: California Polytechnic State University

Position: Associate Professor

Interest Area: College, Math
Education

Statement: After many years of teaching in the applied mathematics area, I am now concentrating my interests and efforts in teaching mathematics courses for elementary teachers. Through an NSF program for in-service training of teachers I have an additional opportunity to become actively involved in "promoting" good mathematics.

Presently, I am the President of Delta Kappa Gamma, Alpha Mu Chapter, of Chi State and the faculty advisor for Kappa Mu Epsilon (the mathematical sciences honor society at California Polytechnic State University in San Luis Obispo). The latter involvement has afforded me the opportunity to implement my concern for women's advancement in the mathematical sciences career field. It has been my happy experience to see our female graduates successfully enter the job world.

My husband sums me up in this way:

There was a young math prof from Poly
With classes exceedingly jolly.
The numbers she'd serve
With fervor and verve,
Differentiate integral folly.

LETTER FROM THE EDITOR

Thanks to everyone who has sent me material over the last year. Both articles which you have written and articles of interest which have appeared elsewhere are always welcome.

This year we will have 6 regular issues of the Newsletter and an election special.* The AMS election special will (we hope) arrive in time to be useful. Deadlines for the next 5 issues are as follows: Sept. 22 for Nov.-Dec., Nov. 22 for Jan.-Feb., Jan. 24 for Mar.-Apr., Mar. 23 for May-June, and May 24 for July-Aug. Copy should be sent to me, Anne Leggett, Dept. of Math., Univ. of Texas, Austin, Tx. 78712. Anything else (including ads) should be sent to AWM, c/o Dept. of Math., Wellesley College, Wellesley, MA 02181.

*up from last year's 5 issues!

There has been some confusion about the time newsletters are due to appear. It takes at least 5 weeks from the deadline date to the day you receive the newsletter:

1 week for composing and typing (please don't think of the deadline as a mailing date)
3 weeks for printing and mailing
1 week: extremely optimistic view of transit time.

Owing to the vagaries of delivery of bulk-rate mail, 6 or 7 weeks is a more realistic estimate. Hopefully, you will receive the Nov.-Dec. issue in November, etc. This means that, for example, an event in early January should be publicized in the Nov-Dec. issue, which has a Sept. 22 deadline. I know this seems early - I felt a little strange writing letters in May warning people of July deadlines for the September issue - but due to postage and printing costs, it's the best we can do. Please help by sending in notices as soon as possible.

MATH ANXIETY CONFERENCE: FRESNO

The School of Natural Sciences of the California State University at Fresno sponsored a conference devoted to the problems of math anxiety/avoidance. The conference was held on May 19 and 20, 1978. It was designed to allow faculty and staff in the California region working in the area of math anxiety/avoidance to share descriptions of instructional and counseling projects, research activities, and funding information. Conference participants represented not only California but many other western states including Nebraska, Colorado, Missouri, Arizona and Utah, as well as representatives from several well-established eastern programs.

Individuals and groups presented the aims and format of their projects to the participants. Time was allotted for question-and-answer periods. Presentations included "Math Without Fear," "Combating Mathophobia," "Fundamental Algebra and Some Characteristics of 'High Risk' Students," "Strokes for Mathophobic Folks," and many others. Small group interest sessions focused on questions raised by conference participants in such areas as: research, funding and curriculum concerns; new program possibilities; math anxiety in teacher/counselor education; and working with tutors. Also included was a simulation exercise designed for Math Anxiety in Teacher Education.

Presentations by people involved in some of the original math anxiety projects of national interest highlighted the Friday evening sessions. Dr. Alice Schafer spoke about the origins and current status of the Wellesley College Project, and Ms. Susan Auslander described the Wesleyan University Math Anxiety Clinic and classes. Dr. Nancy Kreinberg talked about the projects sponsored by the Lawrence Hall of Science in Berkeley, and Dr. Lenore Blum joined her in describing the community outreach work of the "Bay Area Network for Women in Science." Dr. Blum also described the Mills College projects which have led to the founding of the Math/Science Resource Center. Dr. John Ernest from the University of California at Santa Barbara highlighted his original research which documented the correlation of math learning with sex of the student and updated that work. He stressed problems which still exist.

The final session on Saturday once again considered the national scope of the concerns of the conference. Dr. Lucy Sells from the University of Maryland, in a presentation entitled "Political Use of Data as Implications for Change", reported on new results from her research and indicated growing congressional interest in math anxiety as it affects learning potential.

Participants then spent the final conference session discussing means of continued sharing of project information and results and the question "where do we go from here?". The decision was made to use the AWM Newsletter (rather than to publish another one) as a means of reporting on the conference and as a vehicle for future information and sharing of project news.

Proceedings of the conference will be sent to participants about September 1, 1978. Persons interested in purchasing a copy of the proceedings should contact: Office of the Dean, School of Natural Sciences, California State University, Fresno, Fresno, CA 93740.

MATH ANXIETY WORKSHOPS

On April 15, 1978, 5500 women attended the 5th Annual Women's Employment Options Conference at the Los Angeles Convention Center. This event, presented by the Career Planning Center Inc., of Los Angeles, offered both workshops and interview opportunities. One of the workshops was a panel discussion entitled "Counteracting Math Anxiety". The 200 + women who attended were well aware of how their poor math backgound limited their job opportunities. They were very interested in a cure for themselves and a prevention of this handicap in their children. It was heartening to see such a large group of strongly motivated women but discouraging to realize that so few programs are available to fill their specific needs. Perhaps high priority should be given to developing "math without fear" course offerings in the adult education and continuing education programs.

On May 21, 1978 at the 2nd Annual Conference of the Pacific Southwest Women's Studies Association a workshop on math anxiety was presented. Those present discussed the causes, economic consequences, and cures of math anxiety along with the role of women's studies in combating the problem.

For further information contact: Jackie Dewar, Dept. of Math., Loyola Marymount Univ., Loyola Blvd. at W. 80th, Los Angeles, CA 90045.

INVENTORY OF PROGRAMS IN SCIENCE, MATHEMATICS AND ENGINEERING FOR WOMEN AND GIRLS

The National Science Foundation has asked the American Association for the Advancement of Science to survey programs in science for women and girls. The results will appear in a publication that describes all efforts made between 1966 and the present to improve the science, mathematics, and engineering education of girls and women in the United States and to increase their participation in science related careers. For purposes of this project, natural science will include the biological and physical sciences, interdisciplinary and problem-centered efforts in these fields, applied sciences, and engineering. Only medical and health fields will be excluded. All levels of science and mathematics education will be surveyed.

The kinds of efforts to be incorporated will include provision of career information, improvement of mathematics or science counseling, innovations in science and mathematics curricula directed toward women, new methods of teaching science and mathematics to women, recruitment of women into science education programs, assistance to women with degrees to reenter the workforce, major institutional changes involving some combination of all these approaches, and research studies related to the participation of women in science. Features of special interest to minority and handicapped women will be highlighted.

The inventory, which will be widely distributed, is expected to be useful to the National Science Foundation and to other organizations for planning and policy purposes. In a preface to the inventory proper, a short analytical section will interpret and make use of the insight and information accumulated in the process of compiling the inventory.

The inventory will be compiled by the staff of the Office of Opportunities in Science and will be completed in late spring 1979. An analogous effort resulted in the 1976 publication of Programs in Science for Minority Students 1960-1975, which included 325 entries. An inventory of science education programs for handicapped students is also underway.

Persons who know of projects which might be within the scope of this inventory are asked to contact Dr. Michele L. Aldrich, OOS-AAAS, 1776 Massachusetts Avenue N.W., Washington, D.C. 30036, 202/467-5431.

NOBEL PRIZE WINNER Dr. Rosalyn S. Yalow said in her acceptance speech:

> "We cannot expect in the immediate future that all women seek it will achieve equality of opportunity. But if women are to start moving toward that goal, we must believe in ourselves or no one else will believe in us, we must match our aspirations with the competence, courage and determination to succeed, and we must feel a personal responsibility to ease the path for those who come after us."

BLACK WOMEN IN MATHEMATICS

Pat Kenschaft (Montclair State College), editor and moderator

Over 150 people attended the AWM panel on "Black Women in Mathematics" in Atlanta on Saturday evening, January 7, 1978. The five women who spole were Eleanor Jones, Geraldine Darden, Evelyn Roane, Elayne Idowu, and Delores Spikes. Two other scheduled panelists were unable to appear due to unforeseen circumstances. One of them, Etta Falconer, was one of the organizers of the panel. The other, Joella Gibson, is a co-author of the book Black Mathematicians and Their Works, recently published by Dorrance & Company, Ardmore, PA, 19003.

The observation was made during the question period that there are now twelve black women in the U.S. holding a Ph.D. degree in mathematics. More, of course, hold degrees in math education.

The first three talks of the program, transcribed from tape recordings and edited only slightly, are printed here. The remaining two will appear in a later edition of this Newsletter.

The first speaker was Dr. Eleanor Jones of Norfolk State College in Norfolk, Virginia. She earned her Ph.D. degree from Syracuse University with a specialty in abelian groups.

It might surprise some of you when I begin by stating that I cannot claim that prejudice in graduate school was an important hurdle in my life. Unfortunately, I did encounter difficulty with some of my subjects, but I don't think that this was related to prejudice.

Some people think that a black Southern woman with two children to support must have been strongly motivated to go North to a strange city to undergo the rigors of graduate study in mathematics. However, when I decided to enroll at Syracuse University I was already employed as a mathematics instructor in a private black liberal arts college in Virginia and was aware that a Ph.D. degree would enhance me professionally. Since black people -- not just black females -- were not allowed to pursue further studies in mathematics or other academic disciplines in Virginia, the most feasible thing to do was to go outside the South. It should be mentioned that it was a policy of Virginia and most other Southern states to pay the tuition and travel costs of black citizens who went out of state for graduate study.

My first semester at Syracuse I worked as a grader in the Department of Mathematics. The second year I had a National Science Foundation scholarship and the last two years I was a graduate teaching assistant. Income from these sources plus the Virginia state aid grant provided adequate assistance for me and my two sons.

My elementary and secondary schooling were in a completely segregated black situation. All of my classmates, teachers, and principals were black. When I went to college at Howard University in Washington, D.C., my fellow students were black but I did encounter a few white teachers. However, the graduate students at Syracuse were not my first white classmates as I had previously attended several NSF summer institutes in various parts of the United States. Since my family was Roman Catholic, I had known some whites throughout my entire life. In the small black parish of my childhood, the priests and nuns were white.

I became interested in mathematics and entered Howard University with one scholarship from Howard and another from the Pepsi Cola Company. My father was a letter carrier and I was the second oldest of six children. Having graduated from high school at age 15 with good grades, I was quite eligible for scholarships. In college I majored in mathematics and minored in physics and education. After receiving a Bachelor of Science degree, I remained another year at Howard and received a Master of Science degree in mathematics.

My teachers at Howard included Dr. Elbert Cox, who was the first black person in the United States to receive the Ph.D. degree in mathematics. He received his doctorate from Cornell University in 1925. I also studied under Dwight Woodard and William Claytor who had Ph.D. degrees from the University of Pennsylvania and David Blackwell, who was eminent enough to occupy later positions at Stanford University and the University of California at Berkeley. It was Jeremiah Certaine, the black Harvard Ph.D., who helped me see the beauty of algebraic structure.

Leaving Howard, I taught at an all Black public high school for three years before becoming a college teacher. Presently I am employed in Virginia with the rank of Professor at a predominantly black state college with 7000 students. I do hope I can be an inspiration to some of my students as my teachers were for me. Thank you.

The next speaker was Dr. Geraldine Darden of Hampton Institute. She also received her doctorate in mathematics from Syracuse University and her specialty is group theory.

Good evening. When I was contacted to appear on this panel, I was a bit apprenhensive because I wondered what they wanted to know about black women in mathematics, especially those fortunate enough to have earned a doctorate. There have always been black women in mathematics, but it wasn't until 1949 that two black females were able to earn a Ph.D. One was Dr. Evelyn Boyd Glanville who earned her Ph.D. at Yale and the other was Dr. Marjorie Browne, who earned her degree at the University of Michigan. These two people are representative of other women who are struggling to help youngsters learn the beauty of mathematics in this space age.

I too grew up in the south, went to all-black elmentary and secondary schools and attended a private black institution in Virginia. I am not bragging, but I was a good student; even so, nobody ever suggested that I go to graduate school to earn a graduate degree. My role models were the usual role models that black kids had during that time (this was in the fifties) and the natural vocation for me to choose was teaching.

So I "wanted" to be a teacher -- a secondary teacher -- for those were the people that I knew. When I finished Hampton Institute, I received a job as a teacher, but after about six months I began to question whether I had made a mistake. You may remember that in 1957 Sputnik went up and the federal government became very generous with funds. One result was that in the summer of 1958 I was given a grant to attend a summer institute.

It was there that I met two people who had a great influence on my life. One was the late Dr. Walter Talbot and other was Dr. Marjorie Browne, one of the first black women to earn a Ph.D. Because I was working and the institute started two days before my school would close, I had written to the director telling him that I would be two days late. When I reached Dr. Browne's office, I said to her, "Good morning, I'm Geraldine Darden."

She was sitting at the desk, and she looked up and said, "Why aren't you in graduate school?"

So I looked around to see who else was in there, because we had never met. She didn't know me. Obviously she had looked at my records. Finally I said, "Are you talking to me?"

She said, "Yes."

I said, "What did you say?"

"Why aren't you in graduate school?"

I was still a little flustered, so I thought a bit and answered, "Well, I had to go to work when I finished school."

"So you could earn that big car you are driving out there?"

"No, I came from a big family and I needed a car, but I had to go to work because I had little brothers and sisters home and they needed some help."

"Okay." From that time on she encouraged me, and during that summer I had one of the most intense studies in linear algebra that anyone has ever had in any institution. She was a very good teacher; she knew her algebra and she was demanding. As a result of that I went to graduate shool at the University of Illinois in September 1959, on an Academic-Year Institute. I was still leary about this mystical Ph.D., however; it frightened me to death. The institute at Illinois was good and although I did very well, I was still not sure that I could go to a regular graduate mathematics class and compete. So I accepted a job back at Hampton Institute after earning a degree at the University of Illinois and found that I really did enjoy teaching. It was just the previous situation that had me doubt what I had chosen to do; I decided that college teaching was what I wanted.

But in order to stay on the college level, I would have to return to graduate school, and there was that graduate education in mathematics again. So I wrote to the president of Hampton Institute and asked if I could have a leave to earn a Masters in mathematics; I thought I would start out gradually.

He called me in and said, "No, I won't give you a leave to study for a Masters. I will give you one if you go back to study for a Ph.D. Do you want the leave?" I said, "Okay" and decided to go to Syracuse.

Since some credits from Illinois were transferred to Syracuse, I didn't start out in the first year algebra class, but in the advanced algebra course. I put in many hours and at the end of the year I went to pick up my final exam. I told my professor that I came to see how I had done.

He said, "You did pretty well. You came in third."

I said, "Are you sure you know who I am?" I was the only female and the only black in the class.

He laughed and said, "No, you did well!" There are some people in the class that had some high reputations in the department, and having come in third, I knew I had beaten somebody out. He continued, "What are you going to do? What are you going for?"

I said, "A Masters."

He said, "You're not going to get a Ph.D.?"

"I don't know if I can do that."

"You can do it!" And it was at that moment that I really believed that I could do it. From that point on, even though there were many times that I doubted I would do it, I believed that I could do it.

I took time to relate this to you because I want to urge those of you who are teachers -- on any level -- to please not make pre-judgements. If you see a good student, please encourage that student. It must begin right away because we don't see many minority students in science or mathematics. If you do for others as Marjorie Browne, Walter Talbot, and that professor Dr. Arthur Sagle in Syracuse did for me, I think you will see many more black women in mathematics. Thank you.

The next speaker was Professor Evelyn Roane from Northern Virginia Community College. She is currently working for her doctorate at the American University.

I was surprised and pleased to be asked to speak, but when I looked at the bulletin I wondered if I could back out. There was doctor this and doctor that and everybody was so prestigious! But I think you will find what I have to say interesting anyway, because my story is so different from that of the last speaker.

As an undergraduate, I was very naive about the problems we are facing. I thought that everybody in mathematics competed the same and there was no prejudice toward women. When I went to graduate school, I found that wasn't true.

The first experience that threw me was a graduate class in which there were two females and ten males. After about a week, the professor had a conference with each of the students. Of course, after a professor has a conference with students, everybody gets together and tries to figure out what was said. I found that the professor had said to the females of the class, "Are you sure you want to major in mathematics?" Then he told us that we did not have the background for the course and if we stayed in the course that we probably would not get ahead.

After speaking to the males with a similar background, we found that the professor had told hem, "You're going to have to work hard because fathers have to." At that point I felt that the professor was trying to get us to drop the course, but unfortunately I decided to stay in. Unfortunately for him -- because I received an "A" for the course.

The next time I caught a similar attitude I was in a graduate course in algebra and we were looking with some fear at the book we had borrowed; we had to initial it below the person who had it in the previous course. Looking at the previous initial, I asked the professor if he knew who she was. He answered, "I don't know exactly who the person is, but one thing I do know. It was not a woman."

After that I had to make some comment, so I asked, "How do you know this?"

Unjokingly he said that a woman would not have the mentality to do this. After noting that he was making the females in the class angry, he said that of course he was only joking. But somehow I did not find that statement funny. Sometimes women are very turned off by male mathematicians who fail to encourage them in the same manner that they encourage their male counterparts.

After I received my Masters degree, I applied for a position with the state. When I went for the interview, I found that there was another applicant, a male applicant, for the job. Civil Service gives you ratings up to 100; the male applicant had received a rating of 82 and I had received a rating of 86.

I figured I had the employment, but two weeks later the Board called up to tell me that the male had received the position. I thought that was a little strange, so I asked the reason. Personnel talked to someone higher up, because when Civil Service rejects an applicant with a higher rating for an applicant with a lower rating, some reason has to be given.

The reason given in this case was that the female applicant was not interested in the position. It was a position as a mathematician and she had stated she had no interest in any position that involved computers. This was really ironic, because I was interested in any position. I needed a job!

Eventually I was called back for another interview, and this time I was offered a position, but by that time I had already made other committments. After I didn't get that position, I decided to go back to graduate school and get my Ph.D. So even though this experience was detrimental to me, at least it forced me back to graduate school.

After each incident, I became more determined to remain in school. In a predominantly male Caucasion field, one must have drive and determination. It is sad to say that Black women do not receive these at home, so they must come afterward. We can only hope that with more women in mathematics, more women will be able to overcome these obstacles, and that eventually the obstacles will disappear.

SPEAKERS BUREAU

by Stephanie Troyer, AWM Councilmember

A $1000 grant from the Polaroid Corporation has made it possible for us to expand the Speakers Bureau and to make the listings available in a booklet that we will distribute to colleges and to other possible users. The purpose and philosophy of the Bureau remain unchanged: to provide a source of information to those schools (at whatever level) wanting to provide diversified (i.e. female) role models for their students, in the person of visiting lecturers; and to provide women mathematicians interested in lecturing a way to publicize their availability. We hoped to be able to do more, but funds requested for the actual financing of visits were not granted, so that the honorarium and reimbursement of travel expenses still must be arranged between visitor and host.

We are currently preparing the booklet, which will be ready for distribution during the fall semester. The response to our request for new listings was terrific. The Bureau now lists some sixty women, from 25 states and two provinces, in all areas of math and in some related fields, with special qualifications ranging from membership in a delegation to China through the ability to sign for deaf audiences. I hope that AWM members in a position to influence the issuing of invitations (running a department or club, or able to request a speaker on mathematics or on math problems or on career information) will make use of the list, which will be available at AMS/MAA meetings and from the Wellesley office.

AWM NEEDS A GRAPEVINE!

There have been several times recently when you might have liked information more quickly than the next Newsletter--and when your response was needed. Too often as individuals and as an organization we find ourselves"reacting" when we might have "acted" if we had known facts sooner.

Setting up a phone/mail communications network within AWM will be tricky because of all the variables--from time zones to differing calendars to differing school policies on phone calls.

If you will give a try at participating as we try to develop a GRAPEVINE, please answer whatever of the following information you wish to give. Certainly, some of the questions DO "invade your privacy". You may wish to request to be a "terminal" branch except for passing the word along inside your city.

NAME?...SCHOOL & HOME ADDRESS & PREFERENCE? ... HOME & OFFICE PHONES & PREFERENCE? ...Can you make frequent or occasional professionally related calls from work? ... Are you willing to make an occasional call at your own expense? ... Do you get letters off without too much pain? ... Are you involved in any local political campaigns, activist organizations, etc...? ...

Alice Shafer, Mary Gray, and Judy Green offered suggestions in our initial thinking about a GRAPEVINE.

Please reply to: Bettye Anne Case
2405 Idyllic Terrace
Tallahassee, FL 32303

Or phone: 904-385-0627

THE MATH IN HIGH SCHOOL ... YOU'LL NEED FOR COLLEGE

by Ruth Rebekka Struik, AWM Councilmember

Members and friends of AWM should be aware of the two important brochures put out by the Mathematical Association of America (MAA). One of them is entitled "The MATH in HIGH SCHOOL ... you'll need for college" and the other (which is a joint effort with the National Council of Teachers of Mathematics (NCTM)) is entitled "RECOMMENDATIONS for the PREPARATION of high school students for COLLEGE MATHEMATICS COURSES". The first brochure lists several dozen careers together with the high school mathematics needed to prepare for them. For example, the following fields need more than two years of high school mathematics: business, elementary education, food science, nursing, psychology. The brochure states "Be sure you take enough high school math to keep your options open." The other brochure gives recommendations of the Board of Governors of the MAA and the Board of Directors of the NCTM. Among other things it stresses the importance of homework and of maintaining academic standards.

Both of these pamphlets can be obtained free from the MAA, 1225 Connecticut Avenue N.W., Washington, D.C. 20036.

It is very important to get these brochures into the hands of junior high and high school students, teachers and counselors. In particular, women students should be urged to take plenty of mathematics courses in high school.* If you have contact, either personally or professionally, with persons in these categories, be sure they have these brochures.

* Ed. note: Prof. Struik has urged MAA-NCTM to include a sentence or two about women students in future editions of the brochures. Professor Henry Alder, President of the MAA, has agreed to write an article for a future Newsletter on these and other MAA brochures.

THE MATH SCIENCE NETWORK

Press Release

A consortium-based NETWORK and RESOURCE CENTER has been established in the San Francisco Bay Area. Its goals are to increase the participation of women in mathematics and to encourage them to prepare for nontraditional careers in math and science related fields. It is funded by a $180,000 grant over two years from the Carnegie Corporation of New York.

The Math Science NETWORK, an outgrowth of the San Francisco Bay Area Women in Science Network, will coordinate, strengthen and expand the math and science programs for young women developed during the last four years by the cooperative efforts of Network members.

Co-directors of the NETWORK are Lenore Blum, head of the department of mathematics and computer science at Mills College (and AWM past president), and Nancy Kreinberg, coordinator of math and science education for women at the Lawrence Hall of Science. Dr. Blum will coordinate college-oriented activities, while Ms. Kreinberg will have responsibility for the precollegiate programs.

The activities funded by the Carnegie Corporation will encompass a wide range of educational programs. Precollegiate activities undertaken by Ms. Kreinberg will include assisting educators in following-up on students who have attended the network's conferences, and in encouraging more young women to participate in math courses in high school. During the first year, Ms. Kreinberg will also be preparing and disseminating a booklet describing the range of network activities in the Bay Area.

Dr. Blum, who has designed a mathematics course at Mills which successfully prepares students of varied backgrounds for calculus, will be working with representative of colleges, career centers and women's centers who wish to increase the participation of women in math courses at their own institutions.

The NETWORK's RESOURCE CENTER, located at Mills College, is coordinated by Joanne Koltnow, who will be collecting information and resources concerned with math and science education for girls and women, and facilitating contact among people working on similar projects. The RESOURCE CENTER will act as a coordinating agency and research base for projects and studies, and will include a nationwide dissemination program for students, educators, legislators, and the general public.

Resources that have already been developed by the network include a career booklet "I'm Madly in Love with Electricity and Other Comments" by Nancy Kreinberg, and a videotape "Count Me In" produced under Dr. Blum's direction through a grant to Mills College from the Women's Educational Equity Act Program (WEEAP).

Under an additional grant from the WEEAP, Ms. Koltnow is developing a "how to" handbook for conference planners, and Dr. Blum is directing the production of two color films designed to increase the participation of women in math-based fields. A role model film is intended for female high school students, and a training film is directed toward educators and administrators.

The response to the network's programs in the past has been phenomenal. Some 4,500 students, 1,000 educators and scientists, and 300 parents have already participated in network programs and conferences, and it is anticipated that as it grows, the Math Science NETWORK will serve as a model program which can be adapted for use in other communities across the country.

A VISIT TO LOYOLA COLLEGE, MADRAS, INDIA

by Bhama Srinivasan, AWM Executive Committee Member-at-Large

There are Loyola Colleges all over the world, and so it is not surprising that there is one in Madras, India, where I grew up. It was established by a Jesuit mission in 1925 and is an exclusively male college with about 2600 students. Western mathematicians are familiar with the Tata Institute, a prestigious and excellent research institute in Bombay. Many of the distinguished mathematicians there are alumni of Loyola College, and that is no accident. Father Racine, a French Jesuit priest, joined the faculty of the college in 1939. He not only brought with him a knowledge of contemporary European mathematics, but he had an uncanny knack for spotting bright students and giving them every encouragement. He remained a familiar figure on the Madras mathematical scene until his death in 1976. It did not occur to me until recently to speculate on the number of women (including myself) that might have been deprived of the opportunity to learn from such a stimulating teacher.

But change has arrived at Loyola College too, and a year ago two women were appointed to the faculty of the Mathematics Department although there are as yet no women students in the college. During my recent visit to Madras I went over and talked to them. Both women are married and have no children, and both felt that their husbands were supportive and that this made a big difference to them. One of the women had recently finished her Ph.D. at the predominantly male Indian Institute of Technology, and she did not find the environment at Loyola strange or hostile. The other woman had taught in a women's college before coming to Loyola, and she in fact felt that there had been more bickerings and petty jealousies at the women's college than there were at Loyola. Both women felt that the atmosphere at Loyola was very cordial; perhaps the men in the Department did not feel threatened by a small minority of women.

At this point a male faculty member who had been listening to our conversation spoke up and said "If we have hired two women here haven't we deprived two men who have to support their families of jobs?" This sparked off a lively discussion on traditional roles, reverse discrimination and so forth. Everyone was interested in what I had to say about the situation in the USA. I came away with the impression that as long as women were equal but separate and performed the traditional role of teaching in women's colleges, and even as long as they are a small enough minority to be curiosities in a men's college, everything would be fine. But if they start 'taking over' men's jobs and insist on their right to have jobs suited to their qualifications and talents even if they are not 'breadwinners', then it will be interesting to see if the wind of change turns into a tempest.

AWM PANEL: PROVIDENCE

The AWM sponsored a panel on "Women Mathematicians before 1950" at 4:00 P.M. on Wednesday, August 9, in conjunction with the summer meetings in Providence. Pat Kenschaft of Monclair State College moderated the panel. Its members were Dorothy Bernstein of Goucher College, M. Gweneth Humphreys of Randolph Macon Woman's College, Anne F. O'Neill of Wheaton College and Mina Rees of the City University of New York.

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ANNA JOHNSON PELL WHEELER, 1883-1966, part 1 of two

by Louise S. Grinstein, Kingsborough Community
College of the City University of New York
and Paul J. Campbell, Beloit College

From the prairie to Göttingen

Anna Johnson was born in Calliope (now Hawarden), Iowa, on May 5, 1883. Her parents, Andrew Gustav and Amelia (Frieberg) Johnson, were Swedish immigrants who came to this country in 1872 and were married here. The father, initially a farmer, later became a furniture dealer as well as an undertaker in the small town of Akron, Iowa. Anna was the youngest of three surviving children, the others being Esther, four years older, and Elmer, two years older.

Little detail is know of Anna's early life except that she was a shy and delicate child. Her early formal schooling was at Akron High School from which she graduated in 1898. The Johnson children all learned to speak Swedish fluently since their home was often a center for new immigrants arriving in America. Throughout her life, Anna maintained a pride in her Swedish heritage.

In 1899, Anna entered the University of South Dakota in Vermillion. She and her sister, to whom she was very close, were in many of the same classes. Although Anna was impatient with organizations, she participated in some extracurricular activities, being secretary-treasurer of the French club and class historian. One of her teachers, Alexander Pell, recognized that her mathematical ability was out of the ordinary and took an active interest in coaching her into a mathematical career.

The Johnson sisters roomed with the Pells. Both Pell and his wife Emma were very popular on campus. At the time, little was known of his background other than the fact that he had been a Russian revolutionary who sought sanctuary in this country. It was not until many years later, long after his death, that the University community realized that Sergei Degaev, alias Alexander Pell, was a Russian double agent who had been forced to flee not only the Russian government but also his revolutionary compatriots. It reveals a great deal of Anna's integrity and character that she never betrayed his confidence to anyone, not even to her family.

After graduation in 1903, Anna won a scholarship to the University of Iowa where she earned a master's degree in 1904. It was a busy year for her since in addition to taking five mathematics courses and a philosophy course she taught a freshman mathematics course and wrote a master's thesis entitled "The extension of the Galois theory to linear differential equations". Her talent for mathematics was recognized, and she was elected to the Iowa chapter of Sigma Xi. Winning a scholarship to Radcliffe, Anna continued her studies there, earning a second master's degree in 1905. She stayed an additional year on scholarship, continuing to take more graduate courses from such Harvard mathematicians as Bôcher, Bouton, and Osgood. In 1906 she was one of five American college graduate women majoring in various fields who competed for the Alice Freeman Palmer Fellowship offered by Wellesley College. Winning it, she used the money to finance a year's study at Göttingen University. She had to agree, as one of the conditions of the fellowship, that she would not marry during the course of the award. While at Göttingen, she attended lectures given by Hilbert, Klein, and Minkowski. The field of integral equations attracted interest and much of her subsequent work was focused in this area.

Meanwhile, Pell's wife Emma died suddenly in 1904. Both Pell and Emma had kept informed about Anna's career through the years. Pell was very proud of his former student, writing to her sister Esther:

> "I consider her something like a demi-goddess now, for whatever she wants she gets and whatever she studies she makes a success of." (A. Pell to Esther, 1906).

Anna and he continued to correspond and finally, despite family objections to the age differential, decided to marry. At a real risk to his life, considering his fugitive status from Russia, he joined her in Germany and, in July 1907, upon termination of the fellowship, they were married in Göttingen. The couple returned to Vermillion, where by now Pell had become the first dean of the College of Engineering. Anna taught two course--theory of functions and differential equations--during the first term of

1907-8. Returning to Gottingen alone, she hoped to obtain her Ph.D. degree. She ran into conflict with Hilbert, however, and came back to America with a thesis (written independently of Hilbert) but without a degree.

In 1909 Anna enrolled at the University of Chicago. Pell had meanwhile resigned his position at the University of South Dakota and taken a teaching position at the Armour Institute of Technology in Chicago. Anna spent a year in residence and obtained a degree under the auspices of Eliakim Hastings Moore. To fulfill the thesis requirement, she submitted the work that presumably had been unacceptable at Gottingen. The degree was conferred in 1910, magna cum laude. As she wrote:

> "I was the second women to receive a Ph.D. in mathematics at the University of Chicago and the first woman to receive it under Professor Moore." (to Miss Coes at Radcliffe, 1910).

She apparently found her experience at the University of Chicago very pleasant for she wrote:

> "I have had a very delightful time at C.U. and have made very good friends with the math. people." (to Miss Coes, 1910).

Teaching: "...THERE IS SUCH AN OBJECTION TO WOMEN..."

After receiving the Ph.D., she sought a teaching position but soon discovered to her dismay that her sex was against her. She wrote:

> "I had hoped for a position in one of the good univ. like Wisc., Ill., etc., but there is such an objection to women that they prefer a man even if he is inferior both in training and research. It seems that Professor Moore has also given up hope for he has inquired at some of the Eastern Girls' Colleges and Bryn Mawr is apparently the only one with a vacancy in Math." (to Miss Coes, 1910).

It was not then, however, that she went to Bryn Mawr. In the fall of 1910 she taught a class at the University of Chicago. During the spring term of 1911 her husband suffered a paralytic stroke and she substituted for him at the Armour Institute of Technology. Of this experience she wrote:

> "Mr. Pell was sick and they were practically forced to take me for they could not get a man. After a couple of weeks they told Mr. Pell he need not return this semester but take a good rest. I have fifteen hours of subjects in Math and have shown them that a woman is capable of doing a man's work in a technical school. The math men at the Univ. of Chicago were very much pleased that at last a woman had the chance to show her ability in such a place as Armour Inst. But I know it will take a great number of years, to break down the prejudice." (to Miss Coes, 1910).

Even this early in her career, Anna had already earned a reputation for being a fine teacher. An unsolicited letter of recommendation from a former president of the University of South Dakota bore the following praise:

> "She gives all her mind and energy to her teaching and is always willing to assist individual students out of hours. She is instinctively kind and interested thus winning her students to her cause--and her own enthusiasm soon communicates itself to her students." (Garrett Droppers to Miss Coes, 1910).

In the fall of 1911 she accepted a teaching position at Mount Holyoke College where she remained until 1918. Hired initially as an instructor, she was promoted to associate professor in 1914. The years spent at Mount Holyoke College were demanding and hard; teaching loads were heavy. She not only taught classes but also continued to do meaningful research, on top of which she took care of her ailing husband. She read (and subsequently published) a paper on linear equations in infinitely many unknowns. She also published a joint paper with Ruth L. Gordon on the highest common factor of two polynomials. During this period, her husband remained active mathematically, presenting research papers at American Mathematical Society meetings in April 1915 and April 1917. His only teaching, however, was a semester at Northwestern University during the academic year 1915-16.

In the fall of 1918 Anna resigned her position at Mount Holyoke College and started teaching at Bryn Mawr College where she remained, barring short periods, until her retirement in 1948. Initially an associate professor, she was promoted to professor

in the fall of 1925. Her hectic professional pace continued as she functioned first as teacher, later as chairperson (succeeding Charlotte A. Scott in September 1924), and throughout as researcher. From a personal standpoint, her life at Bryn Mawr College was marked with both tragedy and happiness. Pell died in 1921. In 1925 Anna married Arthur Leslie Wheeler, a classics scholar of note. Widowed in 1915, he had been at Bryn Mawr College for many years, but became professor of Latin at Princeton University about the time of their marriage. The couple moved to Princeton, Anna continuing to lecture at Bryn Mawr College on a part-time basis. The marriage was a happy one. Anna was free of heavy teaching responsibilities. She could devote most of her time to her own research and enjoy the mathematical climate at Princeton. It was during this time that the Wheelers purchased land in the Adirondacks and built a summer home there. In deference to both their academic interests, they named the place "Q.E.D." (quod erat demonstrandum--i.e. "which was to be demonstrated"). Anna was to spend many happy hours there in the course of her life, taking pleasure in the natural surroundings. She was particularly fond of bird-watching. Unfortunately, the years with Wheeler, perhaps the happiest in her life were short duration: he died suddenly in 1932 of apoplexy. She returned to live in Bryn Mawr and to take up her teaching duties on a full-time basis once again.

The Bryn Mawr years through 1935 marked the high point of Anna's creative research. She delivered an invited address before the American Mathematical Society in New York in October 1932 on bilinear and quadratic forms in infinitely many variables. She was invited to give the Colloquium Lectures at the Society meeting in September 1927, the only time that honor has been extended to a woman.

JOB ADS

Institutional members of AWM receive two free ads per year. All other ads are $5.00 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.

Stanford University, One Associate Professor or early Full Professor in mathematical logic. Research experience necessary. Submit curriculum vitae & letters of reference to Professor Patrick Suppes, Chairman, Logic Search Committee, Ventura Hall, Stanford University, Stanford, Calif. 94305.

University of Illinois at Urbana-Champaign; openings at Asst. Professor level in Industrial Engineering beginning in the spring or fall of 1979. PhD required. Salary commensurate with educational training and experience. Send applications by 11/1/78 to Professor W. B. Rouse, Chmn., Industrial Engineering Faculty Search Committee, Dept. of Mechanical & Industrial Engineering, Univ. of Ill. at Urbana-Champaign, Urbana, Ill. 61801 (217) 333 - 7474.

Smith College, one Asst. or Instructor position for one year beginning Sept., 1978. 3 courses, 9 hrs teaching per semester. Submit vita, 3 letters, etc., to Chairman, Math Dept., Smith College, Northampton, Mass. 01063.

Michigan Technological University, position of President. Doctorate degree preferred. Apply by Oct. 1, 1978 to Presidential Search & Screening Committee, Michigan Technological University, Houghton, MI 49931.

State University of New York at Albany, Vice President for Research/Dean of Graduate Studies. As Vice President for Research, with aid of Research Council, determines policies aimed at advancing university's research programs; as Dean of Graduate Studies oversees operation and quality of graduate education at the Univ. at Albany. PhD required plus administrative experience in higher education. Please contact Richard H. Hall, Professor of Sociology, Chairman, Search Committee, SUNY, 1400 Washington Ave., Albany, N.Y. 12222.

Brown University, Associate Professor in Mathematics (with tenure). Send curriculum vitae & list of research publications by September 15, 1978 to Jonathan D. Lubin, Chairman, Math Dept., Brown University, Providence, R. I. 02912. Also request 3 mathematicians familiar with his/her work to send letters of recommendation before September 15, 1978.

University of Utah, two senior appointments in applied mathematics for 79/80 academic year. Teaching and research experience necessary. Also 2 visiting appointments for 79/80. Write Hugo Rossi, Chairman, Dept. of Mathematics, University of Utah, Salt Lake City, Utah 84112.

Ohio State University, openings at all professorial ranks. Applicants for junior positions should have significant research accomplishments or exceptional research promise. Please send applications and resumes to Professor Joan R. Leitzel, Dept. of Math, 231 W. 18th Ave., Columbus, Ohio 43210.

University of California, Santa Barbara, tenured position in Statistics, beginning Fall, 1979. Experience needed in research and teaching. Send complete vita by December 1, 1978 to Statistics Committee, Math Dept., University of California, Santa Barbara, CA 93106.

ASSOCIATION FOR WOMEN IN MATHEMATICS
MEMBERSHIP APPLICATION

The AWM membership year is October 1 to October 1.

Name and
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Wellesley College, Wellesley MA 02181

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