File

Association for Women in Mathematics

* *

DUES! DUES! REMEMBER TO PAY YOUR DUES! DUES! DUES! REMEMBER TO PAY YOUR DUES!

* *

PRESIDENT'S REPORT

Duluth meeting. The 1979 AWM summer meeting was held at the joint mathematics meetings at the University of Minnesota in Duluth on August 22 and 23. We had a party on the night of the 22nd, a panel discussion and business meeting on the 23rd, and an AWM table throughout the meeting. Special thanks to Sabra Anderson for organizing the table, and to all the people who staffed it. Thanks also to our panelists, Diane Resek, Lenore Blum, and Deborah Hughes Hallett, who together presented an upbeat summary of techniques and programs encouraging women to do mathematics. For a report on the business meeting, see the minutes in this issue.

Change of officers. Judy Wason has resigned as AWM treasurer and clerk. She has done a fine job and has all of our appreciation. The executive committee, following the proposed new by-laws, has split her position and has appointed Donna Beers of Wellesley College to be the new treasurer, and Martha Jaffe of Boston State College to be the new clerk. Both women will serve for the remainder of Judy's term.

San Antonio meeting. It is an honor to announce our first annual Emmy Noether lecturer, the distinguished mathematician Jessie MacWilliams, of Bell Labs. Dr. MacWilliams' specialties are coding theory and combinatorics. The Emmy Noether Lecture will be an hour talk on a mathematical subject, sponsored by AWM, to be given at each annual winter joint mathematics meeting.

I am also pleased to announce that we are sponsoring an hour talk by Dana Angluin, of Yale University, on the life and work of Ada Lovelace, one of the inventors of computer science. Dr. Angluin is a theoretical computer scientist in the Yale math department who wrote a series of articles on Lady Lovelace some years ago for this newsletter.

Also at San Antonio will be an AWM table - we need people to staff it - a party, and a business meeting. Come on by.

A side-note: we are dickering with the AMS office to change the AWM schedule at San Antonio, so be warned that the times announced in early Notices are not accurate, and that not all events are announced.

New career booklet. The Math/Science Network at Mills College has found a writer for our new career booklet. She is Judy Askew, 2074 Union Street, San Francisco, CA 94123. At the moment she needs leads on women with math BA's or MA's who have math-related jobs; on women who worked at math-related jobs before going back for a more advanced degree; and

on new women PhD's. If you, a friend, or a student fits any of these descriptions, please write to Judy and tell her.

AWM elections and by-laws. In this issue is a ballot for electing AWM officers and for approving (or disapproving) the new by-laws. For economic reasons we couldn't send everyone a complete copy of the old by-laws and the rather extensive proposed changes, but if you are interested you may obtain a copy from the Wellesley office. A summary of the changes in the by-laws can be found in the minutes of the Duluth meeting (this issue). The AWM candidates have each prepared a statement which can also be found in this issue.

Judy Roitman
Math Department
University of Kansas
Lawrence, KS 66045

MINUTES OF THE AWM ANNUAL MEETING

August 23, 1979, in Duluth, Minnesota

The meeting was called to order at 5:15 p.m. by Judith Roitman. The first order of business was the new by-laws. The changes were outlined as follows.

1. The new by-laws provide for a Council, members to be anyone who is ready to take an active part in the organization. This is a voluntary or appointed membership rather than an elected one.
2. The time of the annual meeting is changed from August to the January joint mathematics meetings because of the larger attendance at that time.
3. The new by-laws require minutes of each meeting to be available on request.
4. The term "directors" of AWM will be specifically designated to mean the elected executive committee members, with the term of office the same as on the executive committee.
5. The executive committee will have the following changes:
    a. The treasurer-clerk, formerly an appointed position, will be split into the treasurer, an elected office, and the clerk, which will remain appointed. Having such an appointive position makes it easier for us to comply with the incorporation laws of Massachusetts, which require that one of our officers reside in that state.
    b. The number of at-large members will be fixed at 5.
    c. The offices of vice president and past-president which now have concurrent two-year terms will be changed to the offices of president-elect and past-president, which will have one-year terms and be held alternately. Thus, every two years a president-elect shall be elected to hold that office for one year. She then becomes president for two years, and past-president for another year. In this way, during the first year of a president's term there is a past-president on the executive committee; and during the second year of a president's term there is a president-elect on the executive committee.
    d. The length of the other terms of office will remain at two years. There will be a maximum of five consecutive terms per office. The term of office will begin at the annual meeting.
6. The new by-laws make the following changes in the election procedure. There will now be a nominating committee, with additional nominations allowed if accompanied by a petition with at least 20 member signatures. Elections are by mail ballot, and will take place in the fall.
7. The new by-laws allow for affiliation with other organizations when such an affiliation is approved by the majority of those voting in a mail ballot.

A discussion followed about the meaning of the word "affiliation", and whether we should affiliate with any or all of the other three women's groups, one in statistics, one in computer science, and one in math education. It was explained that the whole question arose because an officer of the association for Women in Mathematics Education had suggested such an alternative.

The consensus was that lines of communication should exist between the groups, for purposes of information exchange, for advertising, and to encourage cooperation and make the most of "strength in numbers". However, affiliation should not involve financial considerations (such as AMS reciprocity does, for example) or voting rights.

It was decided to initiate an exchange of newsletters between groups, to encourage representatives from these other organizations to come to our open meetings, and to invite the other officers to attend our officers meetings. The meaning of the word "affiliation" in the by-laws should remain purposely vague.

In closing, it was announced that ballots for this year's election will be mailed out at the end of October [ed. note: see last page of Newsletter]. The meeting was adjourned at 5:45.

Respectfully submitted, Helen Strassberg, Department of Mathematics, St. John's University, Staten Island, NY 10301

AWM CANDIDATE STATEMENTS

Bhama Srinivasan (Professor, Clark University; Univ. of Ill., Chicago Circle '79-'80)

Thanks to the dedicated efforts of many of its members, AWM is alive and well and we have made progress in our goals of making women more visible and of making life easier for women mathematicians at all levels. We are involved in several projects, e.g. running workshops for high school girls, pushing for more women editors of journals, setting up the Emmy Noether lectures to be given by distinguished women, etc. I think it would be a good idea to set up several committees, along the lines of the AMS committees, to deal with all the activities that we are engaged in. In other words, I think we have reached a stage when the President can delegate responsibilities, but at the same time be ready to tackle any issue that might come up unexpectedly (e.g. the Olympiad issue that Judy Roitman came up against).

Louise Hay (Professor, University of Illinois at Chicago Circle)

I would like to see more AWM activities at the local level--especially in the direction of encouraging girls to take more math at the high school level, which is where the big attrition occurs.

Rhonda J. Hughes (Assistant Professor, Tufts University)

Through its many Newsletter biographies and panel discussions, the AWM has significantly increased women's awareness of their mathematical heritage. I feel that it is important to broaden the effort to include contemporary women mathematicians; ironically, men are often more aware of who the "good" women are than are the women who stand to gain the most from such knowledge. Recent AWM projects, such as Bhama Srinivasan's letters to journal editors, are steps in this direction. As a member of the Executive Committee, I would explore additional means to achieve this goal. In particular, there is still scant opportunity for women (and men) graduate students to encounter prominent women

mathematicians, unless the students are fortunate enough to have tenured women in their departments. Possible programs would be to arrange, perhaps at regional meetings, opportunities for young women to meet and informally talk with women who have "succeeded" as mathematicians. Also, I would like to see more contributions to the Newsletter from (and about) young women, longer articles about the achievements of living women, interviews with women mathematicians, and more concrete support for those seeking employment.

Joan P. Hutchinson (Assistant Professor, Smith College)

I am particularly concerned about the following two issues: 1) the mathematics training of women in college and 2) the support of faculty research at undergraduate colleges. First, there is clearly a need to encourage more women to major in math and to continue on in mathematical fields, both academic and professional, and in addition there is an urgent need to see that women students learn sufficient math skills to enable them to enter fields, scientific, technological and those which have been perceived in the past as non-mathematical, but which now require quantitative expertise. Secondly, it is well-documented that research money and support is concentrated in the large universities of this country where women and minority mathematicians are not concentrated. Many mathematicians at colleges are eager to keep up their research activities, but have little free time or money. The powers that be (e.g. the AMS and the NSF) need to realize and address the inequities in the existing system and the fact that these inequities fall disproportionately on women and minority mathematicians. Indeed because I teach at Smith College, a women's undergraduate college, these two issues concern me daily and directly. I have received a great deal of support from the AWM and (whether as a Member-at-Large or not!) will continue to try to extend the support network for women mathematicians.

Judith Q. Longyear (Professor, Wayne State University)

We have made enormous gains over the last ten years in several areas. Women are now regularly called on to moderate, to speak at special sessions, and to give hour talks. We are better represented than ever before. However, it is of the most extreme importance to avoid complacency. We must be ever more vigilant and ever more militant. Now that we have established a power base we must both consolidate it and also reach out for new territories.

Jill Mesirov (Institute for Defense Analysis)

As a woman and a mathematician, I feel a responsibility to support other women mathematicians. There are many ways this can be done by individuals and organizations such as the AWM. It is important that we provide a system of both moral and professional support for young women mathematicians and graduate students. Many women complete their undergraduate education, and sometimes most of their graduate training, without having any contact with a woman mathematician. Sharing our experiences in dealing with difficult situations can help the next person who encounters one. The AWM provides a formal method of publicizing job opportunities, but an informal network is also needed. This is especially true now that more mathematicians are seeking jobs in the non-academic sphere.

CONFERENCE ON MATH ANXIETY

California State University, Fresno held a two-day conference in May, 1978 for educators to explore math anxiety/math avoidance. Several AWM members spoke at the meeting. A paperback book of the proceedings from that conference is now available for purchase at only $6.30 a copy. It includes articles by such well-known educators in the field as Diane Resek, Nancy Kreinberg and Lucy Sells plus much more. Send name, address, and

a check made payable to "Kennel Bookstore" to Dean of Natural Sciences, California State University, Fresno, Fresno, CA 93740.

LETTERS TO THE EDITOR

I disagree with the premise of Catherine Folio (May-June '79 AWM Newsletter) in which she suggests that programs to actively encourage mathematics and science pursuits among young women are making a mistake by not including boys as well as girls.

These programs are not designed to encourage women and men equally since they are based on the observation that women are not equally represented in these fields. Figures from many sources show that far fewer women than men are presently employed in mathematics and science related fields. Sex differences in ability and achievement (measured when women are taking the same mathematics courses as men) are nowhere large enough to explain these differences in numbers. Sex differences in attitudes toward these subjects seem to do so. From my work I know most about the situation for mathematics. Here we find that research shows women are not aware that mathematics will be useful to them in their lives, and the variable "usefulness" is an important one affecting both girls and boys with respect to their continuing study of mathematics.

I am happy to hear that the school system where C.F. is involved does encourage girls as well as boys to take mathematics courses. However those of us interested in the programs being criticized are inundated by tales of counselors and teachers who have actively discouraged girls from continuing to take mathematics courses. I agree that this is probably not the case for female geniuses nowadays, though we know such has been the case in the recent past, even for this group. However, the programs to encourage girls to explore mathematics and science are concerned also with the next level of student... ordinary intelligent young women who should certainly be able to learn mathematics at levels beyond high school algebra.

Folio says the only people being discouraged are those with inadequate aptitude and interest. Again research shows that many more young women, of equal aptitude with young men, do not elect mathematics courses. As far as "enduring interest" is concerned, one of the important aspects of these programs is to increase the interest of women in math and science. The question again, why do boys seem to be more interested than girls? We have some ideas ... "perception of usefulness" for example. Programs such as these mentioned are designed to increase the awareness of girls, of the usefulness of mathematics in their future lives.

Folio questions the truth of the "active discouragement" of girls by teachers, counselors and parents. We need not quibble about whether such is indeed the case. Rather, we believe that girls, in particular, need active encouragement, since society in many subtle ways, and from many subtle sources, tends to present math-related careers as stereotypically male. Thus the chain of effect ... since math is only required for stereotypically male fields, math is not useful to women—therefore "why knock myself out and risk a 'B' when I know I can get my 'A' in English."

These programs are designed to answer this question ... to tell girls why it is important that they should risk the "B".

Teri Hoch Perl, University of Wisconsin-Madison, WI 53706
July, 1979

I was shocked and disturbed by the fact that the AWM Executive Committee did not endorse M. E. Rudin for AMS Vice-President and K. Uhlenbeck for the AMS Nominating Committee. I can only speculate as to the reasons for this lack of endorsement. However, it seems to me that one of the main successes of the AWM has been its influence in getting women slated for AMS offices (which did not use to happen very often, if at all, before the AWM existed). I consider this of major importance, not so much because

of what these individuals are able to accomplish within the AMS, but because their visibility makes <u>all</u> mathematicians aware that mathematics is not an exclusively male preserve. This can only improve the educational and employment prospects for other female mathematicians. The potential effect is all the greater when the women to be elected are truly first-rank mathematicians, as are Rudin and Uhlenbeck. It seems to me that the AWM is subverting its own objectives by not urging members to vote for them.

> Louise Hay, University of Illinois at Chicago Circle,
> Chicago, Illinois 60680 September 12, 1979

AMS ELECTION: more answers to questions

Karen Uhlenbeck

1. Any issues of interest to a group of members of the extended mathematics community are appropriate for consideration by the Council. The AMS should take stands on issues its members see as relevant, especially when such stands are useful. I have changed my opinion on this in the past ten years.

2-3. Don't care. I see mathematics as an "old boy" school, but in my experience these are not top items to protect and encourage outsiders.

4. Encourage students who want to enter the system. The most effective way I can think of with my knowledge of the system is to fund scholarships at Princeton for minority students! And then encourage them.

5. The mathematics community has a responsibility to the future. For younger mathematicians the four items of uncertain employment, uncertain research environment, uncertain tenure and certain age-related economic discrimination are very discouraging. I fear help is <u>not</u> available from outside the community, at least the entire academic community. Personally I favor

  1) Weakening of the meaning of tenure ⎱
  2) Equalizing pay scales ⎰ within universities
  3) An AMS recommendation for a ceiling on summer salary collected from an NSF grant. The excess should be used by the principal investigator to alleviate the problems above among his students or junior collaborators, give it to the AMS fellowship fund, or send it back to the mathematics section of NSF, which does have better things to do with it than give back 50% to the Internal Revenue Service in income tax.

THE PREGNANCY DISCRIMINATION ACT

> by Rhonda Hughes, Tufts University

Women are now protected by law from any form of employment discrimination on the basis of pregnancy, childbirth, or related medical conditions. Under the Pregnancy Discrimination Act of 1978, an amendment to Title VII of the Civil Rights Act of 1964, pregnant women must be treated on the same terms as other job applicants or employees in the areas of hiring, promotion, leave, job reinstatement, and fringe benefits. The law overturns the decision by the Supreme Court in Gilbert vs. General Electric, in which it ruled that an employer's failure to provide pregnancy benefits did not constitute sex discrimination.

More specifically, a woman cannot be denied employment or promotion, fired, forced to leave a job if she is still able to work, or denied reinstatement simply because of pregnancy or related medical conditions. Her fringe benefits must be the same as those of any similarly qualified employee, and disability benefits, sick leave, and health insurance must apply to her exactly as to any employee who is unable to work for medical

reasons. Therefore, a pregnant woman is entitled to paid maternity leave as long as she is medically unable to work due to her pregnancy or childbirth. During her absence, she may not suffer loss of status or seniority, and must be fully reinstated if reinstatement is the usual practice in cases of absence for medical reasons.

Once a woman is physically able to return to work, she need not be paid for additional leave for child care purposes. However, if unpaid leaves are usually granted for other non-medical purposes, then a woman is entitled to voluntary leave for child care. As such voluntary leaves must be provided on a non-discriminatory basis, a man would also be entitled to such a leave. Wives of male employees are subject to maternity benefits only to the extent to which they are covered for other disabilities.

In the case of a woman who has had or is contemplating an abortion, all of the above conditions apply, with the exception that health insurance need not cover the cost of an abortion except where the life of the mother is endangered, or medical complications arise from an abortion.

All employers with 15 or more employees had to be in compliance with the P.D.A. by April 29, 1979. Additional information is available from the EEOC: Office of Policy Implementation, Room 4002A, Equal Employment Opportunity Commission, 2401 E St., N.W., Wash., D.C. 20506.

Comments. The amount of time a woman is unable to work due to pregnancy and childbirth depends, of course, on the individual and the nature of her job; the standard time recommended for recovery from a normal pregnancy is six weeks. However, if for medical reasons a woman needs longer than the standard recovery time, she must continue to be paid as if she were sick or disabled. If she chooses to return to work sooner, or to work until she goes into labor, she must be permitted to do so.

In the case of academic positions, it is particularly important that institutions carefully establish procedures for replacement in what may amount to a considerable absence from teaching and administrative duties.

The notorious "leave without pay", which is little comfort to women who are sole wage earners or whose incomes represent a significant contribution to their family's income, is now in violation of the law. (Evidence introduced in the Gilbert case showed that 2/3 of the women in the labor force were either sole wage earners or had husbands who earned under $7000 per year.)

I have encountered several negative reactions to the law:

(i) Men (or women who do not plan to have children) object to the additional cost for something which will never affect them.

(ii) New and expectant fathers feel they should be entitled to paid leave as well; however, the law deals only with disability of the woman for medical reasons due to pregnancy.

(iii) Some women have expressed fear of a backlash: "No one will want to hire women now; they'll be too expensive."

(iv) Some women object to the labelling of pregnancy as a "disability". Although I have some sympathy with the last objection, I find it tolerable in light of the fact that pregnancy and childbirth must now be openly acknowledged by employers as legitimate reasons for absence from work, but not for the impairment of a woman's ability to earn a living.

Employees, regardless of their views toward childbearing, should ensure that their own employers are in compliance with the law, and that women employees are fully aware of their new and long-overdue rights.

ERA PANEL

talk by Mary Gray, American University, at the AWM panel in Biloxi,
January 27, 1979 (see July-Aug. '79 issue for C. Davis's talk)

Someone pointed out to me earlier this afternoon that we have changed the title of this panel. It is now "ERA and the Mathematics Community", whereas previously the title was "ERA and the Bakke Decision". Having had this pointed out to me, I think I should start out by saying something about the Bakke decision so that those of you who came under false pretenses should not be sent away without hearing something about the Bakke decision. The two matters are, of course, interrelated. One of the issues which arose in the Bakke decision was whether the admissions policy of the medical school at the University of California, Davis, was unconstitutional or merely illegal under Title VI. Title VI is a law which has been passed by Congress, signed by the President, and has to do with the policies, including those in admissions, of institutions which receive Federal funds. The decision of the Supreme Court, difficult as it was to figure out, apparently rested on Title VI grounds rather than on constitutional grounds. What the decision said was that under Title VI one could not have an admissions policy such as the University of California had. Whether Title VI standards are the same as Constitutional standards was not decided.

The decision does, however, bring into question the whole issue of constitutional treatment of classification. In the Bakke decision there was a great deal of gratuitous discussion about the different standards which are applied to decisions on the basis of race or on the basis of sex. The 14th Amendment to the Constitution, which among other things guarantees equal protection of the laws, was, of course, passed in the post-Civil War context, and it is quite clear from the legislative history of the 14th Amendment that what Congress had in mind as equal protection was to guarantee protection to blacks equal to that received by whites. That was the setting in which the amendment arose and that was the understanding of the people who originally voted on it. It began to be applied to other things with varying degrees of success. There were a series of cases called the Slaughter House Cases having to do with slaughter houses in New Orleans which essentially said that certain provisions of the 14th Amendment really did not apply to classification based on anything other than race.

With respect to the equal protection provisions of the 14th Amendment, the Supreme Court has essentially held to an interpretation of the 14th Amendment which treats race differently. It has done this by applying two different standards when faced with cases involving discrimination. When an alleged discrimination involves classification on the basis of race and the challenge is constitutional (that is to say there is no legislation such as Title VI (education) or Title VII (employment)), the test which the court applies is called "strict scrutiny". Under "strict scrutiny" there are two prongs of a test. First of all the court must find that the classification which is in question is based on a compelling state interest. The phrases are sometimes different, but compelling state interest usually covers the standard which is used. Once it has decided that there is a compelling state interest in classifying on the basis of race, then it must decide there is no less restrictive way of accomplishing this purpose of classifying on the basis of race. So, for example, in the school segregation cases which are probably the ones most of us know the most about, the Supreme Court decided that there was no compelling state interest in having segregated schools. In doing so, it decided that separate (on the basis of race) was inherently unequal, overturning many years of tradition in the courts.

Now an easy example of how things are treated differently: A case came up in the Supreme Court only a few years ago which involved schools in the city of Philadelphia which were segregated on the basis of sex. In Philadelphia there are two high schools for gifted students, one for girls and one for boys. Something which clouded the issue was whether the program in science and math at the girls' high was really as good as the program in science and math at the boys' high. But that was never really clearly articulated so basically for all purposes one assumed that they were equal and the question was whether when one is classifying on the basis of sex, separate but equal is constitutional, and the court said it was. Actually what the court did was by an equally divided decision refuse to overturn the circuit court decision which said that sex-segregated high schools were all right. Thus the court is applying a different standard on the basis of race than they are on the basis of sex. The strict scrutiny test is so

severe there has been only one case in which the U.S. Supreme Court decided that it was
O.K. to classify by race. That involved the issue of treatment of the Japanese-Americans
on the West Coast during the 2nd World War. There is a case called Korimatsu v.
United States which involved a Japanese-American who had been moved away from his home
under the restrictive laws which were enforced during the 2nd World War. The Supreme
Court said there was compelling state interest, namely the protection of our coast. The
only way this compelling state interest could be accomplished was to assume that all
Japanese-Americans were disloyal rather than trying to make individual decisions and there-
fore to impose curfews and then to move them to the interior of the country. In all
other cases that have come up, the classifications on the basis of race have been unable
to pass this strict scrutiny test. That is not the case when classifications on the basis
of sex have been in question, as in the example I just gave. As I said, in particular
just very recently in the Bakke decision, although it had nothing whatsoever to do with
the case, there was a lengthy discussion of the fact that the same standard is not applied
in sex cases as in race cases.

The other frequently applied standard for judgment is what is known as a rational
basis test. For example the state can classify optometrists differently than other
people who make glasses if it has some rational basis for doing so. It need not be a
compelling state interest and it need not be the least restrictive way to meet the
interest. All the state must do is to have some rational basis for its classification.
Actually, the courts in recent years have said that for classifications based on sex
you'll have to do a little bit better than that. There is an intermediate level test
between rational basis--which is applied in most things--and strict scrutiny--which is
applied to classification on the basis of race. So we have been living with Supreme
Court decisions which have decided cases of sex discrimination on this intermediate test.
There are a number of very recent cases that have done this. That's one reason why people
think that the ERA is necessary because under the ERA you would accord to cases of
discrimination by sex the same very strict standard applied to cases on the basis of race.
I should add that strict scrutiny is also applied to classifications based on alienage
and to cases where a so-called "fundamental right" is at stake. As illustrations--the
right to travel is fundamental, but the right to an education is not.

There are some matters which are covered by statute and in those cases the additional
constitutional protection of the ERA may not be necessary. Many things in employment are
covered by Title VII or the Equal Pay Act or state legislation or something else. Matters
in education are covered by Title IX. Many areas that would be covered by the Equal
Rights Amendment, including such things as insurance, are not covered by current statutes.
Insurance is largely state regulated in our country. There is very little Federal
regulation of insurance aside from the fairly recently passed ERISA, which has to do with
pensions only in the sense of keeping pension funds viable. Insurance is one of the
areas where there is a great deal of discrimination on the basis of sex both in access
to insurance and in the rates which one pays. Alimony, child support and things which
Chandler mentioned, of course are areas in which there is discrimination. One of the
things that you might not think about is the issue of domicile. Domicile is a legal
concept which means different things in different contexts, but basically domicile is
something a little bit more than residence. In contrast to residence, you can only have
one domicile at a time, and you always have at least one domicile. The laws in most
states either by statute or by common law provide that if a child is legitimate it takes
the domicile of its father; if it is illegitimate it takes the domicile of its mother.
That kind of law, of course, would not be allowed if we were forbidden to pass laws that
make classification on the basis of sex. I should note also that the ERA would apply only
to governmental action--the words are "shall pass no law"--not to private action.

I am going to close now because I have to catch a plane back to a ratified state, or
actually to a ratified non-state. There is still, as you know, one place in the
continental United States which is not a state (we oppressed people in the District are
working on that!). I want to thank you.

NOTES FROM AWM MEMBERS

Letitia Korbly, University of Alabama, Birmingham: She is trying to set up an AWM luncheon for the AMS Regional Meeting, November 9-10.

Jackie Dewar, Loyola Marymount University: Los Angeles Report: In an effort to broaden the base of support for women in science, math and engineering four AWM members founded the Math Science Interchange in September 1978. M/SI is patterned to some extent after the San Francisco Bay Area Math/Science Network. The membership list has grown to over sixty. The organization has supplied speakers for four career days, published two editions of a semi-annual calendar of math, science and engineering events and organiza-tions related to women, provided a tremendous amount of support for the WAM program, organized two AWM meetings at the Southern California Section meeting of the MAA, and co-sponsored a career day with the LA Unified School District. M/SI will use the AWM Newsletter to report activities and project news. The Math/Science Interchange meets on the first Tuesday of the month (usually at Loyola Marymount University) from 7 - 9 p.m. All interested people are invited to attend meetings and to become involved in M/SI projects. For more information contact Jackie Dewar (642-3007) or Ruth Afflack (498-4721).

Stephanie Troyer, University of Hartford: Will Speakers Bureau participants please send additions, corrections, and address changes to the Wellesley office this month, so we can run an update in January? I am looking for funding for a complete reissue in Fall '80. Suggestions for new speakers should also go to the Wellesley office, with position, address, phone, degrees and field, additional qualifications, and suggested topics.
    On another note: I am completing the final report on an NSF "Women in Science Careers" Workshop that I ran last spring for freshmen and sophomores in area colleges. The effort was rewarded a hundredfold; I've never been part of anything quite so gratifying. The barriers may be down in the professions, but there is still a lot of work to do in getting women to brave the skepticism and anti-science bias of counselors and parents, and especially the sheer ignorance (theirs as well as others) about what scientists do. The intent of this NSF program is to keep women with some interest in scientific careers from dropping out along the way, by providing role models, encourage-ment, and, above all, information--about career options, preparation, professionalism-- from women making their lives in the sciences. About twenty workshops are funded a year (last year at the $12,000 level), at colleges around the country. Applications are available now (see announcement, p. 312 of the Notices for August, '79) from the National Science Foundation Women in Science Program, Washington, DC 20550, and will be due in December. (Ask for the "Guide for Preparation of Proposals and Project Operation".)

INNER-CITY WOMEN FLOCK TO STUDY MATH

by Annie Nakao, San Francisco Examiner education writer;reprinted
by permission of author from S.F. Examiner, June 10, 1979

    A new study shows that women comprise a higher percentage of the enrollment in advanced math courses in the predominantly black Castlemont and Oakland Technical high schools than in more affluent, suburban Bay Area communities.
    Calling the findings in the study by Stanford Research Institute a "total surprise," Dr. Jane Stallings, an SRI education researcher, said, "There is obviously something at work here that is making young women see their future a little differently."
    At Castlemont and Oakland Technical, both in the Oakland Unified School District, women constitute 57 and 64 percent, respectively, of advanced math enrollments.
    A survey of some 130 public and private high schools in the Bay Area showed that on the average, women constituted 40 percent of enrollments in such courses.
    Stallings said that math used to be thought of as a male domain. By not taking advanced courses such as calculus and trigonometry, girls were shut out of such careers

as architecture, science, engineering and medicine.

Attempting to explain the case of Castlemont and Oakland Tech, she said, "An inner-city black woman may be more apt to enroll in math classes because she may be the first member of her family to attend college and also is not constrained by a 'role model.'

"In Palo Alto and Berkeley, there are many educated mothers—most of them have taken a degree in liberal arts or the social sciences. Black women do not as frequently have such role models and therefore do not see any limits to what they can do."

Birdie Williams, chairwoman of Castlemont's math department, offers another view of role modeling. She says women students are often encouraged by examples of successful black women around them—such as Oakland Schools Superintendent Ruth Love.

Castlemont encourages women to take advanced math courses.

Stallings noted that heavy math enrollments among women don't extend beyond the two schools. She cited strong tutoring and counseling programs as the difference.

Stallings' findings are part of a major study, not yet complete, on student motivation.

The disparity between men and women in math studies has long been observed but only recently been addressed. Recently, a group called "Women in Physics" was formed on the University of California at Santa Cruz campus to "help break the stereotype of science as a bastion of male exclusivity."

Since organizing informally last fall, the group has been touring high school campuses to encourage students, particularly women, to explore careers in science.

"For anyone interested in science, it's important to have a solid background in math—algebra, geometry, trigonometry and calculus," said Marianne Walpert, UC Santa Cruz undergraduate.

PAST PRESENT (WE) - PRESENT FUTURE (YOU)

> talk given by Ethel Ward McLemore, Professor Emeritus of Geophysics at
> the University of Texas at Dallas, to a meeting of the Association for
> Women in Science, Houston, Texas, June 9, 1978
> Thanks to Stephanie Troyer for bringing this to our attention.

About a year ago I attended a luncheon meeting of the Dallas Geophysical Society. Four young women were sitting at one of the tables. I asked to join them, told them that I had been attending the meetings for more than twenty years, this was the first time I had seen another female. They were amazed that I had been in geophysical work so many years. Geophysics in the exploration for oil and gas is a lonely business, anyway. We all try to keep the same secrets from each other.

When Sandi invited me to talk with you I was delighted with the opportunity to meet with more than two or three scientists, who were also female. Not that I have anything new to tell you. You have searched and researched the past and have more to tell me of both past and present than I have to tell you. Perhaps you need to see and hear living examples of those of us who have survived. We are not models for you in your time. Rather, we are freaks, anomalies. Most of us worked alone, or with civilized male scientists who made it possible for us. We are proof that it can be done.

In 1951, because of an article I sold to Fortune Magazine, their first paid female freelancer, I was catapulted into a one-woman crusade against the attempt of business men to take over completely the lives of females who happened to be married to their aspiring male employees. You may have read William Whyte's Organization Man, a product of the series of articles run by Fortune, Editor of Fortune at that time.

Their program was the total commitment of two people for the price and glory of one. One of the talks I made during the fifties was to a meeting of the auxiliaries of the SEG, AAPG, SPE (then becoming the bludgeoning answer to women's discontent). They listened avidly and clapped loudly when I had finished telling them how stupid they were to confine their total identity to being the "wife of". I asked for questions. There

was one: What are you doing in the men's group? Why don't you join the women's group? Groupthink, William Whyte had called it. Such was the climate in which most of you grew to womanhood, and which produced your present rebellion.

There have always been women in science and mathematics. Let's review the contributions of some of them and how they are accepted in the Scientific Community of today.

The Greek Renaissance

Theano, teacher in the Pythagorean School in the middle fifth century B.C. She wrote treatises on mathematics, physics, medicine, and child psychology. Her most important work for us is the principle of the "Golden Section", popularly known as the "Golden Mean". It is our first knowledge of ratio and proportion, of a geometric progression where each term is the sum of the two preceding terms; the famous pentagonal principle, the principle of analogy. It is the basis for the study of morphology, of life and growth in biology, the logarithmic spiral of shell growth. Those of you in engineering will recognize another derivative: Buckingham's theory on dimensional similitude. Theano, who with her two daughters carried on the central school in Southern Italy long after her husband, Pythagoras, had died. There were known to be 28 women classified as Pythagoreans who participated in the school. Pythagoras was known by his disapproving contemporaries as the feminist philosopher. You will find no mention of Theano and the other women in modern writing on "The Pythagorean Brotherhood".

During the pre-Christian era philosophical schools of Plato and Pythagoras created a climate in which the female intelligence could expand and flower. Socrates named Aspasia as one of his greatest teachers. In a current series on public television called "Meeting of Minds" Socrates is portrayed as almost violently anti-feminist.

Hypatia-It was this climate that persisted long into the Christian era which finally squashed it that the genius of Hypatia could flourish in the late fourth century A.D. at the University of Alexandria, where scholars from all over the world gathered to exchange ideas. Students from Europe, Asia and Africa came to hear her lectures. Much of her work was published. To her we owe solutions of indeterminate problems, Diophantine algebra which dealt with first degree and quadratic equations. She lectured in Astronomy, too. Her fame was too much for the dominant Christians. On a fatal day, in their holy season of Lent, they tore Hypatia from her chariot, stripped her naked and dragged her to their church. Their priests butchered her, scraped her flesh from her bones with sharp oyster shells and threw it to the flames. Thus ended the Greek Renaissance for Women. She is absent from Raphael's painting, School of Athens, nor can we find her name in most modern histories of mathematicians.

The Italian Renaissance

With Hypatia's death was begun the Dark Ages of the Christian Era, which lasted for more than a thousand years, ended finally by the Italian Renaissance of the 18th century.

Maria Gaetna Agnesi -published her classic textbook on the calculus in 1748 - one of the first and most complete works on finite and infinitesimal analysis, and differential equations; her discussion of a versed sine curve. This curve came to be called a versiera, a word derived from the Latin vertore, "to turn". It is also an abbreviation for the Italian word avversiera, "wife of the devil". The Italian Renaissance never spilled over into France or the English-speaking countries, for women. In 1801, John Colson, an Englishman, translated her book into English. He translated versiera as "witch"-an accident? Colson was a scholar. Down through the ages this tremendous human has been known to us, not as the great mathematician to whom we owe so much, but by the "Witch of Agnesi".

Sophie Germaine in France in the early 1800's published some of the first important work on the Theory of Elasticity and the Theory of Numbers. She worked in chemistry and physics, too. Her death certificate lists her as rentière - "independent lady" - not as a mathematician and physicist. Nor do we find her name among the list of savants whose work contributed to the possibility of its being built, inscribed on the Eiffel Tower - a shining example of the Theory of Elasticity.

The nineteenth century was another Dark Ages for us.

Marie Sklodowski-Curie, a young Polish student came to France to work with Becquerel at the end of the 19th century. He was having trouble explaining the strange properties of Uranium, and suggested she begin a long experimental and tedious search. She agreed on one condition: that her husband, Pierre, be allowed to assist her. In 1898 they discovered Polonium. For this, she, Becquerel and Pierre were awarded the Nobel Prize. Also, for this discovery, Pierre was awarded a full professorship in physics at the Sorbonne, and invited to become a member of the French Academy of Science. Marie was offered a post in charge of physics lectures at the higher normal school for girls. The tragedy for Marie was not in being denied the honors due her - she had no need of confirmation of her own genius. The tragedy was rather that Pierre accepted the honors due her in the face of the insult to herself. On Pierre's death she was asked to continue his lectures at the Sorbonne - French scientists were amazed that she could take up where he left off, as if she had already written the lectures - interesting? - she was not offered a Professorship. As you all know, Marie went on to discover the element Radium, for which she was awarded the second Nobel Prize - the first person to receive a second prize to date.

In 1977 I reviewed seven freshman college texts under consideration by the Texas Textbook Commission for advanced high school students. Two of the texts mentioned Marie, and that only in passing. One of the most popular college texts in General Chemistry, by P.W. Selwood, 1965, Holt, Rinehart and Winston, does give a full paragraph to her findings. I read from his chapter on electrons:

> "An explanation for these effects was sought by a French scientist, Pierre Curie, and his Polish assistant, Marie Sklodowski (who later became his wife) ... they discovered Polonium ... and then they discovered Radium, the key to modern Atomistics..."

Pierre Curie died in 1906. Marie Sklodowski-Curie discovered Radium in 1910.

The American Renaissance I 1920-1950

Our own country came into being by way of an iron-bound written constitution that created a Christian God, the Father, and his earthly agent, the white male. For three-fourths of its short two-hundred years existence, this condition persisted.

There were American women in science before 1920 when the hard-fought suffrage was won. By 1920 the first three editions of Cattell's American Men of Science listed 504 women who were seriously interested in science. There were doctors, chemists, mathematicians, physicists; most of them teachers and most of them single. They, along with our mothers and grandmothers were the pioneers who made the first American Renaissance possible. It really began when the U.S. Government and the U.S. Scientific Community invited Marie Sklodowski-Curie to the U.S. to receive about every honor this country could bestow on a scientist. It was the beginning of the Atomic Age, and for us in colleges and universities, she was modern chemistry. It was also the year that Rutherford said that of course we could split the atom, but what fool would open Pandora's box? From graduate school we spread out over the country into jobs where we were paid on the basis of the job and not sex. We were welcomed into the mainstream. Never before nor since have American women in science been challenged and accepted as scientists. You must remember that we never expected to be at the top, having so recently come from the bottom. We could vote! As this country rushed into the Mass Murder of world war 2, we were offered all kinds of jobs in the Services, laboratories, and of course, jobs left by men who went into the Services.

By the 1950's our little Renaissance was gone. As was that of women scientists in England.

In 1951 Rosalind Franklin, British scientist, presented to a seminar at King's College, the helical pattern and outside backbone structure of B DNA, with the phosphate groups on the outside. Another scientist, Maurice Wilkins, was also working on the DNA structure. At Cambridge, Crick and Watson were working on the structure from a theoretical viewpoint. Watson attended the seminar at King's. He also visited the

laboratories at King's frequently. In February, 1953, he paid such a visit to his good friend, Wilkins. Wilkins showed Watson Rosalind Franklin's notes and X-rays. In April, 1953, Watson and Crick published their article "A structure for deoxyribose nucleic acid", in Nature. Rosalind Franklin died in 1958. In 1962 the Nobel Prize of the B DNA structure was presented to Wilkins, Crick and Watson. In 1968 Watson published a little book "The Double Helix" in which he painted a picture of a creature named "Rosy" working at King's: whom he excoriated as rigid, aggressive, overbearing, incompetent and unfeminine. Rosalind Franklin had been invited to King's because of her work in crystallography, and five papers she had published. She was a mature scientist, whom no one in her work or family had ever called "Rosy". Later, Watson did make apologies, and in recent texts we find footnotes admitting that Franklin's notes were used.

Jocelyn Bell, in July, 1967, at Cambridge, discovered pulsars of astronomical sources - the neutron star. Several people were working on this at the time. When the discovery was announced most of the scientific publications as well as the news media had articles about Jocelyn Bell, a student working there, and her discovery. Others began publishing their work on the neutron star, but there was no more mention of Jocelyn Bell. In 1974, two British scientists, Anthony Hewish, Bell's supervisor, and Martin Ryle, were awarded the first Nobel Prize in observational astronomy - for Jocelyn Bell's discovery.

By the sixties we had come full cycle. Those of us in professional work were beginning to feel uncomfortable. At the scientific meetings we were being told "Ladies register over there", "You may have been a mathematician, you're a mother now", "Oh, I thought you were his secretary". From a brilliant high school senior's father, "I don't give a damn about her love of chemistry, all I want for her is some promising young man to take care of her".

And now, for the present, you are experiencing your own Renaissance. Thanks to the efforts of many women you have laws that should protect you from sex-discrimination in your work. More important are gatherings such as this tonight, you are banding together to help each other. There are women presidents of universities, the American Chemical Society, the Society of Industrial and Applied Mathematics. There are women in board rooms of Big Business, women in the services. My desk is being flooded with invitations to seminars designed to teach us how to get to the top. The panels read like a Who's Who of females in middle management. Invariably the panel is headed by a man. Already there are repercussions. Suggestions that unemployment is caused by women flooding the labor market. One General Singlaub stating that women in the services were responsible for our fluke in Korea. From Washington, an announcement of finalists for shuttle scientists, two American and three Europeans, all male. A final paragraph that Dr. Ann Whittaker, a physicist, was among the losers. In 1967 NASA used the excuse that there were no bathroom facilities for women on space ships. A few weeks ago I watched a NASA program on PBS. A man scientist explaining something said: we had one of the girls do the sums. A featured article in Harper's, February, 1978: Engineering and the Female Mind, suggesting that women could not be engineers for at least another generation. This was being written forty years ago.

There are fears that the economy is being destabilized and the family destroyed, the very foundations of society being undermined. This is so true. If we cannot destroy the present foundations of society and family and replace them with a more healthful structure, I see no hope for humankind.

I cannot believe that there is or has been an organized conspiracy to repress the female intellect, except for those institutions that depend on such repression for survival. Rather, I think the men and women who repress us are frightened and insecure. Their own egos have been nourished on our repression. They are our fathers, brothers, lovers, sons, even mothers, sisters, and daughters. If we cannot live with each other in mutual respect, we should stop making little boys - and we could do it.

Put-downs come from unexpected sources. To survive in a career in science you must have a passion for the work itself and a tremendous ego that can sustain the hostile environment that is building for you. If your future includes another mass murder called war, you must go to the massacre with the men. You must teach your daughters that they are as equal as your sons: We can no longer produce little boys whom we send to be

killed without marching along with them.

I think you will not only survive, you will prevail. Be not concerned that you will become too aggressive, egotistic. There is a whole world out there waiting to put you down, inadvertently.

While I was trying to write something to say to you tonight, a very dear friend who has worked with me for thirty years was painting and repairing around the place. He is the only person who barges in wherever I might be working, with no apology: "I'm leaving now. Took that drawer from the cabinet over there to the paint store to have it matched, have to go back in the morning - they wasn't nobody there but a woman."

References

The Geometry of Art and Life, Matila Ghyka, Dover, 1977
Women in Mathematics, Lynn M. Osen, MIT Press, 1974
Men of Mathematics, E.T. Bell, Simon & Schuster, 1937
A Source Book of Mathematics, David Eugene Smith, Vols. 1&2, Dover, 1959
History of Mathematics, D.E. Smith, Dover, Vols. 1&2, 1959
The World of Mathematics, James R. Newman, Simon & Schuster, 4 Vols., 1956
Woman in Science, H.J. Mozans, MIT Press, 1913
American Women of Science, Edna Yost, J.B. Lippincott, 1943
Crucibles of Chemistry, Bernard Jaffe, Dover, 1976
Rosalind Franklin & DNA, Anne Sayre, W.W. Norton & Co., 1975
General Chemistry, P.W. Selwood, Holt, Rinehart & Winston, 1975
Essay on Atomism, L.L. Whyte, Wesleyan University Press, 1961
Electrons, Atoms, Metals, and Alloys, W. Hume-Rothery, Dover, 1963
Plutarch, The Modern Library, 1940?
Herodotus, The Heritage Press, 1958
Little Journeys to the Homes of Great Teachers, Elbert Hubbart, The Roycrofters, 1908
Sketch of Maria Agnesi, M. Jacques Boyer, Popular Science Monthly, Vol. 53, 1898
Grand Larousse Encyclopedique, Librairie Larousse, 1962
Women Scientists in America before 1920, Margaret W. Rossiter, American Scientist,
     Vol. 62, June, 1974
Engineering and the Female Mind, Samuel C. Florman, Harper's, February, 1978
Notes on the Dimensional Theory of Wind Tunnel Experiments, Edgar Buckingham,
     Smithsonian Miscellaneous Collections, City of Washington, U.S. Bureau of
     Standards, Smithsonian Institution (1923), 15-21
The Dallas Morning News, June 3, June 2, 1978

THE CENTER FOR WOMEN SCHOLARS: COMPETITION ANNOUNCED

The Women's Educational Equity Act (WEEA) Program, under the auspices of the Office of Education of the U.S. Department of Health, Education, and Welfare, is a federally-funded program designed to promote educational equity for women in the United States. As a part of this national goal, AMERICAS Behavioral Research Corporation was awarded a grant to develop a center for women scholars.

The Center for Women Scholars in San Francisco is intended to address the serious discrimination against women scholars in our institutions of higher learning. Although women have historically been barred from obtaining the advanced training and research experience necessary to become qualified scholars in academe, now, as larger numbers of them obtain the necessary advanced degrees, they are barred from equal employment opportunities, promotion, and tenure. In the face of the unenforced legal restraints of the last decade which prohibit sex discrimination, the status of women scholars in post-secondary institutions has not only failed to improve, but is actually declining.

The purpose of the Center is to address the causes and effects of institutionalized discrimination against women scholars. The Center has three major objectives:

1) to conduct research which will identify women scholars and assess their needs;
2) to establish a resource center which will:
   a) develop supportive networks of women scholars,
   b) work with local universities, colleges, and off-campus research centers to obtain greater access to resources for women scholars,
   c) provide advisory services to women scholars to enhance their knowledge of funding opportunities and acquisition techniques,
   d) conduct two large group conferences,
   e) offer small workshops on subjects defined according to the expressed needs of scholars;
3) to produce a handbook which will disseminate the facts on institutionalized discrimination against women scholars and provide:
   a) information on organizations and places throughout the United States where support and advocacy may be obtained or organized,
   b) innovative approaches for improving the status of women scholars,
   c) a series of commissioned papers on subjects of high priority interest to women scholars,
   d) a classified presentation of more specific technical and personal professional aids and resources.

The Center is offering a prize of $500.00 for the best article of not more than 5,000 words on solutions to the problems of the woman scholar.

"Problem" topics might include those that are personal and domestic as well as those that are job-related and/or social. The term "scholar", as it is used in this competition, refers to a learned person, usually by virtue of advanced study in a specified field, who promotes knowledge in any discipline through research, teaching, and/or other investigative enterprises. Although historically the setting for the work and development of scholars has been the university, this competition is not limited to writers with academic affiliation.

The winning article will be published in the 1980 edition of The Woman Scholar's Handbook: Strategies for Success, a project of the CFWS. Additional articles may also be chosen for publication from those submitted and the writers of these will receive $300.00 each.

The deadline for submission of manuscripts is December 31, 1979. It should be noted that those which are not approved for publication will not be returned unless accompanied by self-addressed, stamped packaging. Even so, return cannot be guaranteed. All manuscripts should be typed in black ink and double-spaced, on white 8½ x 11 bond paper.

Address submissions to Dr. Monika Kehoe, Editor, Center for Women Scholars, AMERICAS Behavioral Research Corporation, 300 Broadway, Suite 23, San Francisco, CA 94133.

AMS RESEARCH FELLOWSHIPS

The AMS Research Fellowship Fund was established in 1973 because of the scarcity of funds for postdoctoral fellowships. From this fund AMS Research Fellowships are awarded annually to individuals who have received the Ph.D. degree, who show unusual promise in mathematical research, and who are citizens or permanent residents of a country in North America. The Trustees of the Society have raised the stipend to $15,000 for 1980-81. The fellowships are more flexible than many others. AMS Research Fellowships may be held at any institution the Fellow selects, or at more than one in succession, and there is flexibility in the choice of time interval(s) in which the Fellow may draw funds. For further information and application forms, write to Dr. William J. LeVeque, Executive Director, AMS, P.O. Box 6248, Providence, RI 02940.

AAAS SYMPOSIA

The American Association for the Advancement of Science will hold its annual meeting

in San Francisco, Jan. 3-8, 1980. 9 symposia have been organized for the section
on mathematics. Titles: The Frontiers of the Natural Sciences; Some Mathematical
Questions in Biology; Biological Geometry; Applications of Stereology to the Life
Sciences and Material Sciences; Outlook for Large-Scale Energy Models; Machine
Intelligence and Perception: The Past, Present, and Future; Can Software Replace
Technical Know-how?; Secure Communications and Asymmetric Cryptosystems; Effective
Strategies for Promoting Participation of Women and Minorities in Science. Proposals
are invited for symposia for the 1981 annual meeting in Toronto. The deadline for
application is March 15, 1980. Write AAAS Meetings Office, 1776 Mass. Ave., N.W.,
Wash., DC 20036 for an application form.

CHAUTAUQUA-TYPE SHORT COURSES

A series of 54 Chautauqua-type short courses will be held during the 1979-1980
academic year at regional field centers throughout the United States. Topics include:
   * evolution and future of the universe
   * community power studies
   * aging, the family, and bureaucracy
   * risk-benefit analysis.
These refresher courses provide the opportunity for scholars to meet with groups
of 25 college teachers and communicate recent advances in their fields. The primary aim
is to help undergraduate faculty keep their course material current.

Announcement brochures with details about the courses and application forms are
available from the Office of Science Education, American Association for the Advancement
of Science, 1776 Massachussetts Avenue, N.W., Washington, DC 20036.

Lenore Blum, AWM Past-President, Mills College, and Rita Liff Levinson, another
AWM member, TAK Components, Burlingame, California, are teaching "Strategies for
Increasing the Participation of Women in Mathematics-Related Fields". Alice Schafer,
AWM Executive Committee Member-at-Large, taught a course last year.

SCIENCE LABOR FORCE PARTICIPATION OF WOMEN

Women trained in science and engineering are more likely than all women college
graduates to be in the labor force. This is the principal finding of an 18-month study
by the Scientific Manpower Commission of the labor force participation of women trained
in science and engineering and the factors affecting their participation.

The study, supported by the National Science Foundation, was inspired by an NSF
finding in 1976 that only 53% of women scientists and engineers were in the labor force
in 1974, compared to about 62% of all women graduates. The NSF has now revised its
data for 1974, and their present estimate is that 84.5% of women scientists and
engineers were in the labor force that year.

The Scientific Manpower Commission's study explored patterns of labor force
participation among women trained in science and engineering through survey data avail-
able from a number of surveys, and contacted about 600 women graduates of the past
15 years in engineering and chemistry to explore in greater depth the factors
affecting labor force participation. Within these various populations of women science
and engineering graduates, 65% to 90% were currently in the labor force when surveyed.

The complete study, Labor Force Participation of Women Trained in Science and
Engineering and Factors Affecting Their Participation, will be available from the
National Technical Information Service, Springfield, Virginia 22151.

OF POSSIBLE INTEREST

The American Association for the Advancement of Science has two items which may prove of interest to teachers and researchers. Double Bind: The Price of Being a Minority Woman in Science (70 pp., 1976) surveys the educational and employment experiences of a group of Black, Hispanic, and Native American women scientists, and includes a summary of statistical data on minority women scientists. Women in Science and Mathematics Bibliography (compiled by Phyllis Zweig Chinn, 38 pp., 1979), lists citations to several hundred publications in books, journals, and near-print media. Double Bind is available for $3 and the bibliography for $1. Send orders (prepaid only) to Karen Ehrlich, OOS-AAAS, 1776 Massachusetts Ave., NW, Wash., DC 20036.

The American Forum for International Study, 1001 The Leader Building, Cleveland, OH 44114, is a private non-profit organization which since 1968 has trained teachers in African Studies through summer institutes, seminars, programs in Africa and the USA. They plan to have a major conference in the United States on the Developing Role of Women in Africa sometime in 1980.

The National Science Foundation has awarded a total of $355,250 to 28 colleges and universities to support Science Career Workshop Projects for prospective women scientists and engineers. Approximately 6600 women will be selected to participate in 1- to 2-day multidisciplinary workshops designed to inform women about careers in science and engineering. The 28 workshops are intended for women in various career stages, from high school and college students to those who have obtained a degree in science or engineering. Each of the grantee institutions conducts its own workshop and selects its own participants, and each is expected to initiate related activities which will continue beyond the grant-support period. Information about individual workshops should be requested from the grantee institution; a list of grantee institutions may be obtained from the NSF, 1800 G St., N.W., Wash., DC 20550.

DEADLINES: Nov. 21 for Jan.-Feb., Jan. 24 for Mar.-April, Mar. 24 for May-June

ADDRESSES: Send all copy to Anne Leggett, Dept. of Math., Western Illinois University, Macomb, IL 61455. Send everything else, including ads, to AWM, Women's Research Center, Room 204, Wellesley College, 828 Washington Street, Wellesley, MA 02181. All ads should reach this Wellesley office by the tenth of the month preceding publication.

JOB ADS

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

California State University, Long Beach. Dept. of Mathematics. Following positions for Fall 1980: 6 lectureships (2-yr. appt.); 5 to teach lower-div. courses in Math reqd., and 1 to teach Math to prospective teachers; Ph.D. in Math Educ. & at least M.A. in Math reqd. Salary range $16,368-$19,680/academic yr. Send resume, transcripts, & 3 letters of reference by 2/15/80 to: A. Gittleman, Chair, Math Dept., Calif. State Univ., Long Beach, 1250 Bellflower Blvd., Long Beach, CA 90840.

Nov., 1979

Stanford University. Dept. of Mathematics. Several Asst. Professorships anticipated for
  Fall, 1980 for mathematicians with outstanding research ability. Send resume
  and have 3 letters of reference sent to Hans Samelson, Chairman, Dept. of
  Mathematics, Stanford University, Stanford, CA 94305. An evaluation of your
  teaching is required.

University of California, Santa Barbara. Dept. of Computer Science. Tenure track
  positions open Fall, 1980. Ph.D. required & experience in teaching and research
  expected. Positions will entail teaching at undergraduate & graduate levels.
  Academic rank & salary dependent on qualifications. Send resume & names of 4
  references to Chairman, Search Comm., Dept. of Computer Science, 2111 Engineering
  Bldg., Univ. of California, Santa Barbara, CA 93106 by Jan. 15, 1980.

University of California, Santa Barbara. Dept. of Computer Science. Several temporary
  positions open Fall, 1980. One year appointments will be made in Visiting
  Professor series, Acting Professor series, Lecturer series or Associate series
  at rank & salary dependent upon qualifications. By 1/15/80 send resume and
  names of 3 references to same address indicated in above ad.

Trinity College. Dept. of Mathematics. Asst. or Assoc. Professorship available Sept.,
  1980. Ph.D. in Mathematical Sciences required; demonstrated excellence in
  teaching especially at first & second year level & continuing research interests.
  Seeking applicants with knowledge of numerical analysis & combinatorics, and
  applications of mathematics or statistics. Please submit curriculum vitae,
  academic record & names of 3 references by 2/15/80 to D. A. Robbins, Chmn.,
  Dept. of Mathematics, Trinity College, Hartford, CT 06106.

University of Illinois at Chicago Circle. Dept. of Mathematics. Possible junior or
  senior openings in pure mathematics, applied mathematics, statistics, computer
  science and mathematics education. Ph.D. & strong record in research & teaching
  are required. By Jan. 15, 1980 send vita, publications list, description of
  current research & have 3 letters of recommendation sent to Louise Hay, Acting
  Head, Univ. of Illinois at Chicago Circle, Dept. of Mathematics, Box 4348,
  Chicago, IL 60680.

University of Illinois at Urbana-Champaign. Dept. of Mechanical & Industrial Engineering.
  Asst. Professorships starting Fall, 1980. Positions cover broad base of Industrial
  Engineering activities including operations research, production planning & con-
  trol, human factors & manufacturing systems. Appointees will work in newly
  formed Human Factors Engineering Program with Dept. of Psychology. Applicants
  should have Ph.D., a commitment to teach at all levels and interest in research.
  Send biography & 3 names of reference to Prof. R.E. DeVor, Chmn., Industrial
  Engineering Faculty, Search Comm., Dept. of Mechanical & Industrial Engineering,
  Univ. of IL at Urbana-Champaign, Urbana, IL 61801.

University of Illinois at Urbana-Champaign. Opening for Head of the Dept. of Mathe-
  matics. Position available summer, 1980. Candidate should be outstanding
  mathematical scientist with administrative leadership experience or potential.
  Requirements: strong research experience, broad intellectual outlook, leadership
  potential & commitment to importance of math, both pure & applied. By 12/15/79
  send resume, list of publications & names of 4 references to Prof. John Bardeen,
  Chmn., Search Comm., 337 Loomis Laboratory of Physics, Univ. of IL at Urbana-
  Champaign, Urbana, IL 61801.

University of Illinois, Urbana-Champaign. Dept. of Mathematics. Asst. Professorship
in field of actuarial science, beginning 8/21/80. Required: Ph.D. in math or
statistics; completion of associateship examinations of Society of Actuaries.
Promotion to tenure will require completion of fellowship examinations of
Society of Actuaries, in addition to excellence in teaching & research. Salary,
at least $18,000. By 2/2/80, contact Paul T. Bateman, Head, Dept. of Mathematics,
Univ. of IL at Urbana-Champaign, Urbana, IL 61801.

University of Illinois, Urbana-Champaign. Dept. of Mathematics. Several visiting
lectureships beginning 8/21/80. Ph.D. required. These are temporary positions
of at most two years duration. Salary, $16,000. By 3/3/80 contact Paul T.
Bateman, Head, Dept. of Mathematics, Univ. of IL, Urbana-Champaign, Urbana, IL 61801.

Purdue University. Dept. of Mathematics. Possibly 2 or 3 Asst. Professorships and
one Assoc. Professorship open for Aug., 1980. Exceptional research promise &
excellence in teaching required. By 1/15/80, send vitae & names of 3 references
to Leonard D. Berkovitz, Head, Dept. of Mathematics, Purdue Univ., West
Lafayette, IN 47907.

University of Iowa. Opening for Director of Administrative Data Processing, 1/1/80.
Responsibility for data processing relating to accounting, payroll, and student
and personnel records. Required: experience in administrative or industrial
data processing, knowledge of advanced computer systems and information
management technology. Send resume with 3 references to Susan M. Phillips,
101 Jessup Hall, Univ. of Iowa, Iowa City, IA 52242.

Goucher College. Dept. of Mathematics. Asst. Professorhsip starting 9/1/80. Should be
qualified to teach advanced undergraduate courses and supervise senior theses in
fields of analysis and applied mathematics. Ph.D. & 2 years full-time teaching
experience required. Apply to Elaine Koppelman, Chmn., Mathematics Dept.,
Goucher College, Baltimore, MD 21204.

College of the Holy Cross. Dept. of Mathematics. Tenure track opening for Fall, 1980.
No special area of mathematics required, but slight preference for active interest
in an applied area such as numerical analysis, numerical solutions to partial
differential equations, optimization, operations research, etc. Fringe benefits -
TIAA-CREF, medical-life insurance plan, etc. Salary competitive. Send vitae &
3 letters of recommendation to Melvin C. Tews, Chmn., Dept. of Mathematics, Holy
Cross College, Worcester, MA 01610.

Mass. Institute of Technology, Cambridge, MA 02139. Dept. of Statistics. Possibility
of one opening for Instructor or Asst. Professor for Fall, 1980. Ph.D. in
Statistics preferred. Write to H. Chernoff for application forms & information.

Mass. Institute of Technology, Cambridge, MA 02139. Dept. of Mathematics. 1 or 2
asst. professors will be appointed if sufficiently strong candidates can be
found. Criteria are (1) superior ability as a research mathematician (2) demon-
strated effectiveness as a teacher (3) 2 years or more of postdoctoral experience.

Mass. Institute of Technology, Cambridge, MA 02139. Dept. of Mathematics. Limited
number of postdoctoral instructorships in field of applied mathematics. 2 year
appointments will be made on basis of superior research potential. Final deci-
sions will be made by 4/1/80. Write to Comm. on Applied Math, Room 2-345.

Mass. Institute of Technology, Cambridge, MA 02139. Dept. of Mathematics. C.L.E. Moore Instructorships in Math are open to postdoctoral mathematicians who show definite promise in research. Salary$17,000. Teaching loads are 6 hrs. per week one semester, 3 hrs. per week the other. Appts. are for 1 year, renewable for 1 additional year. Applications should be filed by 12/31/79. Referees should return reference forms directly to M.I.T. by 1/15/80. For further information write to Pure Math Committee, Room 2-263.

Wellesley College. Dept. of Mathematics. Possible opening for September, 1980. Assistant Professorship with salary at least $17,000. Evidence that Ph.D. will be completed by September, 1980 required. Teaching load approximately 8 hours per week. Contact Chairman, Department of Mathematics, Wellesley College, Wellesley, MA 02181.

Oakland University. Dept. of Mathematical Sciences. 4 openings available, beginning 8/15/80. Ph.D. & strong research required. Level depends upon qualifications & experience. Preferred fields are statistics, numerical analysis, combinatorics, & operations research. Secondary strength in computer science is desirable. 2 course teaching load. 79/80 academic year salary for beginning Asst. Prof. is $15,800. Please contact George F. Feeman, Chair, Dept. of Mathematical Sciences, Oakland University, Rochester, MI 48063.

Michigan State University. Dept. of Mathematics. Several openings at Asst. Prof. level (full-time, tenure-track) beginning 9/1/80. Ph.D. in Math with interest in research & teaching. Send resumes and have 3 letters of recommendation sent to Prof. J. E. Adney, Chmn., Dept. of Mathematics, East Lansing, MI 48824.

Colgate University. Dept. of Mathematics. Opening for Asst. Professor tenure track position starting 9/1/80. Responsibilities include teaching numerical analysis and applications to physical sciences. Ph.D. or future Ph.D. required. By 11/30/79 send vitae & 3 letters of recommendation to William E. Mastrocola, Chmn., Dept. of Mathematics, Colgate University, Hamilton, N. Y. 13346.

New Mexico State University. Dept. of Mathematical Sciences. Visiting position(possibly tenure-track) in (but not restricted to) numerical analysis or statistics. Salary for 80/81 year: $14,500 or higher dependent upon rank, qualifications & experience. Ph.D. (or equivalent) & strong commitment to teaching & research essential. By 12/31/79 send vita & have 4 reference letters sent to Carol L. Walker, Dept. Head, Mathematical Sciences, New Mexico State University, Las Cruces, N. M. 88003.

New Mexico State University. Dept. of Mathematical Sciences. Visiting position in mathematics or statistics for spring semester only, beg. 1/14/80. Salary $7250 or higher, dependent on rank, qualifications & experience. Ph.D. (or equivalent) essential. By 12/14/79 send vita & have 4 reference letters sent to Carol L. Walker, Head, Dept. of Mathematical Sciences, New Mexico State University, Las Cruces, N. M. 88003.

Rensselaer Polytechnic Institute. Dept. of Mathematical Sciences. Outstanding mathematical scientist is sought for appointment as Chairperson of this strong, research-oriented applied mathematics & computer science department which also has an Operations Research and Statistics Division. There are active research programs in all 3 areas within department. Letter & resume should be directed to Chairman, Search Comm., Dept. of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, New York 12181.

Syracuse University. Dept. of Mathematics. Visiting position possibly available.
Ph.D. required & research potential necessary. Appointee is expected to teach
one standard undergraduate course & one graduate course or seminar in his or her
specialty. By 1/15/80 send vitae & 3 letters of reference to Jack E. Graver,
Chmn., Dept. of Math, Syracuse University, Syracuse, N. Y. 13210.

State University of New York at Buffalo. Dept. of Mathematics. George William Hill
and Emmy Noether Research Instructorships for 1980/81. Applicants should complete
Ph.D. by 9/1/80. Each appt. is for 2 years. 12-mo. stipend is $16,200 plus
generous staff benefits. Teaching load: 2 one-semester courses during 12 mo.
period. Application forms are available on request. Applications plus 4 supporting
letters from mathematicians should be sent by 1/20/80 to Dr. William Zame, Chmn,
Hill-Noether Comm., Dept. of Math, SUNY/Buffalo, 106 Diefendorf Hall, Buffalo, NY 14214.

Ohio State University. Dept. of Mathematics. A few positions at Asst. Prof. level
may be available Fall of 1980. As these will be tenure-track, significant
research accomplishments & promise & evidence of good teaching ability are
important. Send vitae & have reference letters sent to Prof. Dijeu Ray-Chaudhuri,
Dept. of Mathematics, Ohio State University, 231 W. 18th Ave., Columbus, OH 43210.

Swarthmore College. Dept. of Mathematics. Asst. Professorship (tenure track) starting
9/1980. Ph.D. required by 9/1980. Field of specialty is secondary. Appointee
must be able to teach a variety of undergraduate courses & work well with a small
department. By 1/1/80 send vitae, statement of interest & 3 letters of reference
to Search Committee, Dept. of Mathematics, Swarthmore College, Swarthmore, PA 19081.

Vanderbilt University. Dept. of Mathematics. Asst. Professorship. Initial 3 year appoint-
ment (renewable tenure-track). Outstanding research potential & evidence of effec-
tive teaching required. Should have specialization in some area of abstract
algebra. Preferred areas are universal algebra, lattice theory, semigroups, and
abelian groups. Have vita & 3 letters of recommendation sent to Prof. R. R.
Goldberg, Chmn., Dept. of Mathematics, Vanderbilt University, Nashville, TN 37235.

Vanderbilt University. Dept. of Mathematics. Asst. Professorship. Initial 3 year
appointment (renewable tenure-track). Outstanding research potential & evidence
of effective teaching required. Should have specialization in some area of applied
or applicable mathematics. Have vita & 3 letters of recommendation sent to Prof.
R. R. Goldberg, Chmn., Dept. of Mathematics, Vanderbilt University, Nashville,
TN 37235.

Vanderbilt University. Dept. of Mathematics. Tenure-track Asst. Prof. in Statistics.
Initial 3 year appointment. Strong commitment to research & undergraduate teaching
required. Have vita and 3 letters of recommendation sent to Prof. R. R. Goldberg,
Chmn., Dept. of Mathematics, Vanderbilt University, Nashville, TN 37235.

University of Texas, Austin. Dept. of Mathematics. Two tenure track asst. professorships
and four terminal instructorships (each lasting 2 or 3 years), starting Fall, 1980.
For information contact H. E. Lacey, Chmn., Recruiting Comm., Dept. of Mathematics,
University of Texas, Austin, TX 78712.

University of Utah. Dept. of Mathematics. (1) Two 3 year instructorships. Persons of any age receiving Ph.D. in 1979 or 80 are eligible. Teaching & research ability important. Salary $15,000. (2) One tentative visiting position of 1 year or less. (3) One position in professorial rank may be awarded on basis of excellence in teaching & outstanding research achievement in Applied Mathematics being developed at University of Utah. (4) In addition, a position in Pure Mathematics may develop in the professorial ranks. For all of above, send by 3/1/80 curriculum vita, bibliography & references to Ms. Sylvia Morris, Comm. on Staffing, Dept. of Mathematics, University of Utah, Salt Lake City, Utah, 84112.

Lawrence University. Dept. of Mathematics. Assistant Professor to begin Fall, 1980. Tenure track with initial 3 year contract. Two course per quarter load. Required: Ph.D., enthusiasm for undergraduate teaching & commitment to research. Preferred but not required: expertise in probability/statistics, numerical analysis/computer science or modern applied mathematics. By 2/15/80 send vitae, research summary, graduate & undergraduate transcripts, & 3 or 4 supporting letters, with at least 2 on teaching ability to B. H. Pourciau, Search Committee, Dept. of Mathematics, Lawrence University, Appleton, WI 54912.

University of Maryland. Dept. of Mathematics (College Park). Positions for August 1980. Positions in mathematics and statistics at assistant professor level (tenure track). Strong research potential required. Senior level tenured position in statistics. Possibility of senior level tenured position in mathematics. Send vita and three letters of recommendation to Prof. W. E. Kirwan, Chairman, Dept. of Mathematics, University of Maryland, College Park, MD 20742.

ASSOCIATION FOR WOMEN IN MATHEMATICS
MEMBERSHIP APPLICATION

The AWM membership year is October 1
to October 1.

Name and
Address_____

_____   New_____ Renewal _____

_____   Individual $10.00 _____

_____   Family $15.00 _____

_____   Retired, Student, Unemployed $5.00 _____

Institutional affiliation, if any _____   Institutional $25.00 (Two free advertise-
                                              ments in the Newsletter)
_____   Contributions are tax deductible, welcome
                                        and needed.
Make checks
 payable to: ASSOCIATION FOR WOMEN IN MATHEMATICS

and mail to: Association for Women in Mathematics
              Women's Research Center, Wellesley College
              828 Washington Street
              Wellesley, Massachusetts 02181

Associaiton for Women in Mathematics
Women's Research Center, Wellesley College
828 Washington Street
Wellesley, Massachusetts 02181

November-December, 1979