

Association for Women in Mathematics

Volume 10, Number 6

NEWSLETTER

November-December 1980

DUES! DUES! DUES! DUES! Dues are past due. The dues structure on the last page is being corrected this issue (sorry for any inconvenience this may have caused). The reminder postcards were correct. DUES! DUES! DUES! DUES! DUES! DUES! DUES! DUES!

PRESIDENT'S REPORT

San Francisco Meeting. The winter meeting of the AWM will be held at the Joint Mathematics Meetings in San Francisco this January. We are pleased and honored to have Olga Taussky Todd of Caltech as the Emmy Noether Lecturer. Her talk will be on January 9 from 9 to 10 a.m. Also on January 9, at 11 a.m., is a panel to be followed immediately by the annual business meeting (scheduled to end at 12:30). The panel marks the tenth anniversary of AWM with speakers on the past, present, and future of women in mathematics. A tenth birthday party will be held the evening of January 9. There will be a sign at the AWM table with the time and location of the party. As always, people are needed to staff the table. Come on by and visit.

Noether symposium. The AWM is sponsoring a symposium on Emmy Noether to be held at Bryn Mawr College in the spring of 1982, the centennial year of Noether's birth. The pre-planning committee is headed by Rhonda Hughes of Bryn Mawr and includes I.N. Herstein, Bhama Srinivasan, and Alice Schafer.

Careers booklet. The Bay Area Math/Science Network is in the final stages of producing the careers booklet for us. From what I have seen it is terrific. By the time you get this newsletter it should be ready for distribution. It is aimed at junior high and high school students. Tell your local school system about it. Get it as a present for your favorite female teenager. (Yes, it's that well-written and entertaining.) In fact, get a copy for yourself.

A personal note. This is my last president's report. On January 1, Bhama Srinivasan becomes AWM president, and I ride off toward the twilight. It's been eight or nine years since my first involvement with AWM, in the middle of my graduate school years. Everybody's grown up since.

I slipped onto the AWM executive committee back then as the graduate student representative, a position which vanished without a trace when I left graduate school. I don't believe I was elected, and if there was an election it is certain that nearly no-one voted in it. Everything was in flux back then as we tried to find rules which would allow us to operate successfully. Even then we had a fairly large membership, but remarkably few people were available to do things, and democratic procedures were often forgotten in the scramble to get someone to do some job.

The best insurance for the AWM's future is that we now have a workable set of by-laws which provide for new people, with their new energy and new ideas, in leadership positions. Along with that has come a wider distribution of responsibilities, through committees and individual initiative. And along with that has come a wider representation of more segments of the mathematical community in our committee structure.

Eight or nine years ago what we did mostly was yell a lot. We had to. People had to be educated, and that was nearly all we did. Some of our best work came from this, such as the biographies of women mathematicians by women mathematicians which have appeared and continue to appear in our newsletter. More of this work needs to be done. But in the last four or five years we've also been able to get on with what you do after you've gotten attention. Sometimes the success is dramatic, as with the AMS' adoption of a resolution to try to avoid meeting in non-ERA states. More often the work is slow and on-going, as with the committee to increase the number of women journal editors.

During the last few years a second handful of women have joined the first handful to be employed at top-ranked institutions, and a feeling of complacency has come over many segments of the mathematical community. This complacency is misplaced. The employment figures, the salary figures, the promotion figures are still not the same for women as for men. In the honors lists, women are still under-represented. When appointments are made, as with journal editorships, women are still being overlooked. The prominent counterexamples (often overworked in their capacity as token) are still a set of small measure.

In my own field, in the six years since I got my Ph.D. essentially one woman has been added to the list of people-in-demand. I doubt if this is untypical. Our bright female students are not becoming bright young mathematicians in the numbers we should expect. While the majority of the women in my classes do see their future careers as important (a marked change from my generation), they still don't set the outlandish goals for themselves that male students do. They still don't believe in themselves enough to push themselves to their limits.

Whatever success we have each achieved has been made easier by the women who have come before us. We can pay our debt to them by helping the women who come after us.

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

STATEMENTS FOR AWM ELECTION

The candidates are: Treasurer - Donna Beers, Wellesley College
Members-at-Large of Executive Committee - Bettye Anne Case, Tallahassee Community College
Linda Keen, Lehman College
Jill Mesirov, Institute for Defense Analysis
Judith Prewitt, National Institutes of Health

The ballot can be found on the last page of the Newsletter and is due Dec. 1, 1980.

Bettye Anne Case (Professor, Dept. of Math., Tallahassee Community College)

If elected for a second term on the Executive Committee, I wish to facilitate all the current projects of the Association and to continue to be especially involved in:

- organization of regional meetings: Every regional meeting of SIAM, AMS and MAA needs organized AWM visibility--the "grassroots" are where it must start if there are to be women in mathematics. (Last year we made considerable progress on this, and I take this opportunity to thank the session organizers and remind everyone that Margaret Munroe at our Wellesley office will send you help toward organizing sessions.)
- structuring more cooperation with our "natural" friends--certainly the new AWComputing, groups of math educators especially concerned about women, etc....--

while continuing appropriate cooperation with AWIS, MAG, and NAM; our current excellent relations with AMS and MAA must be maintained.

--determining the current status of research vitality studies (AMS Council had a recent project) and what we could/should do concerning the various ramifications of the findings.

--representing on the Committee the special concerns of women mathematicians employed at non-research institutions, academic and otherwise; two-mathematician marriages; members in isolated locations.

Concerning my current term, a great deal of my AWM energy during my first months on the Committee was diverted into ERA-related matters, beginning with implementation of the Uhlenbeck AMS ERA-and-meeting-location resolution motion in Atlanta and ending with the statement made by 500 mathematicians wearing green armbands in Biloxi. I feel that our position was made clear in the mathematical community; no further national meetings are scheduled in unratified states. I hope our members--representing a wide spectrum of opinions concerning type of appropriate action but always united in principle--were satisfied with these actions.

Working with and getting to know AWM women and men has been a great pleasure! For the August Ann Arbor meeting, described elsewhere in this issue, all of our members I called upon including the three AWM past presidents, the Symposium contributors, and several AMS and MAA staff and officers helped most generously. I feel I am just beginning to know enough about the concerns of our membership, the appropriate focus of our organization, and effective channels for getting things done to be useful, and I hope to be elected for a second term.

Judith M. S. Prewitt (Mathematician, Division of Computer Research and Technology, National Institutes of Health)

Opportunities for creative mathematicians in industry and government service are often overlooked in favor of traditional academic appointments. These opportunities range from basic and applied research, to service and administration, and can offer equally valuable personal and professional rewards. Although some women mathematicians have earned international and national reputations pursuing a non-academic path, it has hardly been without the vicissitudes and frustrations that women mathematicians faced and still face in general. Often abuse, dysuse, and misuse is subtle, sometimes blatant, and demands of the individual counteracting tenacity, hyperexcellence, and dignity in the face of trying circumstances. Problematic situations are generally not created by competent and emotionally secure scientists and supportive staff, but by the technologically untalented and unaccomplished and the personally troubled. Inequities will not disappear without diligence, vigilance, and dedication. Prominent and successful women mathematicians can be role models and advisers for others, especially beginners, and can promote apprenticeship relationships in the non-academic environment. As a member of the Executive Committee, I would explore means for encouraging and securing the entry of more women mathematicians in non-academic environments and be available to share experiences.

EMMY NOETHER LECTURE

Olga Taussky Todd will be the Emmy Noether Lecturer at the Joint Math Meetings in San Francisco. She will speak Friday, January 9, 1981 at 9:00 a.m. The title of her lecture will be "The Many Aspects of the Pythagorean Triangles". There will be a fixed price dinner (with limited attendance) with the speaker that evening. Information will be available at the AWM table.

Abstract: Many subjects in number theory and algebra and even other parts of mathematics can be illustrated in terms of examples from Pythagoras's theorem and the Pythagorean triangles. Apart from that, research on the Pythagorean triangles and explicit use of them continues to be active.

REPORT OF THE TREASURER: August 15, 1980

Accounting for the period June 1, 1979 - May 31, 1980

Balance, June 1, 1979	\$3203.06
Total assets, June 1, 1979	3314.94

Note: The figure \$3314.94 represents \$3203.06 in cash-on-hand plus 5 shares of Washington Water Power, valued at \$111.88 as of 5/31/79.

Receipts

Dues - individuals	\$7369.00
families	642.50
institutions	1795.00
Advertising fees	765.00
Contributions	720.70
Interest	320.09
Miscellaneous (1)	651.24
Total	\$12,263.53

Expenses

Wages and FICA (2)	\$3,850.42
Newsletters (3)	4,020.86
Dues and fees (4)	290.00
Speakers' Bureau (5)	133.74
Local & national AWM meetings (6)	245.32
Operating expenses (7)	1,034.18
Miscellaneous	53.77
Total	\$9,628.29

Balance, May 31, 1980	\$5,838.30
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- (1) This covers \$433.24 received as reimbursement for credit towards supplies and secretarial services to organizations other than AWM.
- (2) Part-time secretary, covering \$337.50 in credit towards secretarial services to organizations other than AWM, plus \$187.42 in FICA charges.
- (3) Typing, postage, and printing for 6 issues.
- (4) CBMS, Massachusetts Incorporation Fee
- (5) Postage
- (6) Entertainment and postage for meetings in Boston, Chicago, California, Kansas City, Duluth, and San Antonio.
- (7) Postage, phone, supplies, duplicating, including \$95.74 in credit towards supplies to organizations other than AWM.

Membership Statistics

Our mailing list totals 948, including 77 institutions in the U.S. plus 52 members in Canada and abroad.

Respectfully submitted,

Donna L. Beers, Treasurer

AWM MEETINGS

Ann Arbor (report by Bettye Anne Case)

There was strong participation in AWM activities at the Summer Joint Meetings. The Symposium is described below. The AWM table was a hub of activity as usual, and we welcome the twenty new members who joined us there. The Executive Committee met and reported to the Membership Meeting.

At the Membership Meeting, concern was expressed that the 1982 ICM (Warsaw) include women speakers; it was decided that AWM would write the U.S. National Committee for Mathematics and also take such other executive action as might be productive. Additional issues brought up included: 1) the matter of a suitably accessible additional repository for this Newsletter; and 2) help for after-August-1 job seekers and employers.

Announcements were made of AWM activities including: 1) the newly-formed Human Rights Committee chaired by Lenore Blum; 2) plans for a 1982 Noether Centennial; and 3) our interest in encouraging more participation by high school women in the math Olympiads.

Julia Robinson, the AMS Colloquium Lecturer at the meeting, was with us at our party. When asked, she said she would rather we not toast her, but gave permission for the toast to be printed here. My toast--and I'm sure someone would have followed it with a better one--would have been: "Though she numbers among her honors recognition by the National Academy of Sciences and the AMS invitation for this colloquium series, tonight we express our delight that she is with us as our friend. She has stood with our organization and with individuals among us on principle in times which were discomfoting for many. May we toast Julia Robinson."

Pell Wheeler Symposium (preliminary report by Bettye Anne Case, moderator)

A Symposium on Anna Johnson Pell Wheeler, AMS Colloquium Lecturer, 1927 was held at the meeting at Ann Arbor on August 20, 1980. The proceedings of the Symposium will be published in full in this Newsletter in 1981. Talks by Louise Grinstein (biographical research), Paul Campbell (her mathematics and its relationship to that of others), Nancy Owens (her great-niece, showing pictures and giving a personal family view), and Ruth McKee (graduate student at Bryn Mawr and friend of Professor Wheeler) were followed by the reading of written reminiscences from Vera Ames (Widder), Gustav Hedlund, and D.V. Widder. Contributions from members of the audience who were influenced by Professor Wheeler (Dorothy Browne Shaffer, Christine Ayoub, Josephine Mitchell and Lida K. Barrett) and comments which were received from Dorothy M. Stone, John Oxtoby, and Olga Tausky Todd will be included.

Missouri Section (report by Elizabeth Berman)

The Association for Women in Mathematics had a breakfast meeting April 26, 1980 at the annual meeting of the Missouri Section, MAA, Westminster College, Fulton, Missouri. Elizabeth Berman of University of Missouri-Kansas City organized the meeting, and eight people attended. There was no formal program, but informal discussion. We discussed prejudice and the handling of insults. One guest, a man of Polish descent, offered this tactic: Suppose an acquaintance who is, say, Methodist, tells him an offensive Polish joke. A few days later, our guest tells the offender, "You know, I heard the funniest joke about Methodists." Then he repeats the Polish joke, substituting "Methodist" for "Polish".

Organizing regional meetings

All AWM members are urged to be sure that each regional professional meeting--SIAM, AMS, MAA, etc.--will have an organized AWM activity. We also encourage members outside the United States to advise their colleagues of AWM and would be happy to help in setting up meetings. It is best to be listed in the program of the professional group concerned, and spring programs, rooms and times are often finalized before Christmas. For suggestions and materials, write AWM, Women's Research Center, 828 Washington St., Wellesley College, Wellesley, MA 02181.

NOTES

Alvin I. Thaler, Program Director for Algebra and Number Theory, NSF, points out that this is the second year of the NSF Mathematical Sciences Postdoctoral Fellowship, not the first as stated in a recent Newsletter. In the first year, two of the sixteen awards were made to women (R. Charney and M. Gerber). MSPRF is expected to continue this year. These Fellowships are distinct from and in addition to the AMS postdoctorals.

A need for female staff at summer math workshops for high schools students has been mentioned. A member is willing to participate next summer. Does anyone know the appropriate people to get in touch with about this? Please inform me.

Joyce C. Mansfield, 22929 108th West, Edmonds, Washington 98020 is looking for a woman mathematician who is also a musician. Please send name(s) to her. She is writing a publication concerning women mathematicians who are also accomplished in the arts.

Jaya Srivastava, Professor of Statistics and Mathematics, Dept. of Statistics, Colorado State University, Fort Collins, Co 80523 writes in response to recent articles on journal editorships. She is Chief Editor of the Journal of Statistical Planning and Inference, published by North Holland. Abstracts of papers from the Journal appear often in the Math Reviews. Besides herself, Esther Seiden (Hebrew University, Israel) and Agnes Herzeberg (Imperial College, London) are on the Editorial Board. She would like to have more women on her Editorial Board, but "there are simply not too many women around in the profession".

CONFERENCES AND COURSES

City University of New York through the Instructional Resource Center and in cooperation with Networks and the CUNY Mathematics Discussion Group plans a national conference on mathematics remediation in college which will take place April 9th-11th, 1981 at the Hotel Roosevelt in New York City. Persons interested in presenting papers at this conference should contact Miriam Hecht, CUNY Instructional Resource Center, 535 East 80th Street, New York, NY 10021 by November 30th.

Lenore Blum, Mills College and Ruth Afflack, California State University, Long Beach are giving an NSF Chautauqua Short Course for College Teachers called "Strategies for Increasing the Participation of Women in Mathematics-Related Fields." Write Office of Science Education, AAAS, 1776 Mass. Ave., N.W., Wash., DC 20036 for an announcement.

The Hartford Graduate Center was established in 1955 by Rensselaer Polytechnic Institute of Troy, N.Y. Seminars provide short, intensive programs in various areas (e.g., engineering & DP management, computer science, creative action in engineering & science management) by using professional instructors to meet the training needs of today's business community at reasonable costs (by business-community standards!). HGC, 275 Windsor St., Hartford, CT 06120.

A conference on "Science Careers in Search of Women", sponsored by The Medical College of Pennsylvania, will include a public session Friday evening, November 21st, at the University of Pennsylvania Museum Auditorium. This session is free and no pre-registration is required. The Workshop program on Saturday, November 22nd, is limited to registrants. For application and brochure, write Science Careers, The Medical College of Pennsylvania, 3300 Henry Ave., Philadelphia, PA 19129.

A brochure entitled "Women Interested in Engineering" from the University of Dayton outlines a tuition-free NSF-sponsored FAST-TRACK program for women interested in electrical engineering. (Write or call Carol M. Shaw, Assistant Dean, School of Engineering, University of Dayton, Dayton, OH 45469, (513)229-2736.) To qualify, an applicant must hold a bachelor's degree in mathematics, physics or a related science. Participants earn a Certificate which advances them to an academic level equivalent to that of an electrical engineering graduate. Credits earned can be applied toward a

bachelor's degree in electrical engineering. A FAST-TRACK staff at the University offers counseling and guidance, assists in part-time work placement, arranges for partial living expense stipends, and placement in engineering jobs at program conclusion. The program starts on January 5, 1981 and lasts through December 19, 1981.

WOMEN'S NETWORK IN SCIENCE AND TECHNOLOGY

WNST is a long-range project funded by the NSF to explore careers for women in science and technology, and to build a regional network for women in those fields in Minnesota and parts of Wisconsin, Iowa, North Dakota, and South Dakota. The project includes:

- A conference Nov. 7 and 8, 1980, at the University of Minnesota, Minneapolis, for re-entry and post-baccalaureate women in the region interested in science careers. The conference fee is \$25, with special consideration given to those with limited funds;
- Four one-day workshops to be held throughout the region in 1981, with a greater focus on undergraduate women seeking science careers;
- Individual short-term observation periods with practicing scientists;
- A directory of women in science throughout the region to be published at the conclusion of the project.

The Minnesota Women's Center is coordinating and administering the project as a whole. Other groups cooperating in the project include the Minneapolis/St. Paul chapter of Association of Women in Science, the University and Minnesota section of Society of Women Engineers, and Sigma Delta Epsilon. Other organizations and individuals are encouraged to join the network. The project is concerned with all areas of science, technology, and social sciences except clinical sciences. The primary goal is to attract and retain women in scientific fields.

The November conference will offer workshops in traditional and nontraditional employment options in science and technology, social responsibility of scientists, personal life and career integration, and career planning.

One-day workshops will be held in each quadrant of the region with coordination, speakers and materials supplied by WNST. Some of the same topics will be covered as in the November conference, with a greater emphasis on undergraduates.

Women with interests in a specific field will be given opportunities to interact with practicing scientists, for periods ranging from one day to two weeks. WNST will coordinate, and individuals will make their own arrangements.

Each facet of the project will provide data for the directory, to be published at the end of 1981, listing women in science and support systems throughout the region. The entire project will be extensively evaluated by WNST; results will be available in March, 1982. WNST, 306 Walter Library, University of Minnesota, Minneapolis, MN 55455.

RUSSIAN DISSIDENT SENTENCED

Tatyana Velikanova, a mathematician and computer programmer, was recently sentenced to four years in a labor camp plus five years of internal exile after being convicted of anti-Soviet agitation and propaganda. She became a dissident after her former husband, Konstantin Babitsky, was arrested for demonstrating against the Soviet invasion of Czechoslovakia in 1968 and was sentenced to jail and internal exile. One of the original members of the initiative group on human rights formed in 1969, she was subsequently active with the underground chronicle of current events. (AP)

The AWM Human Rights Committee has sent letters of protest.

CLIMBING THE ACADEMIC LADDER: DOCTORAL WOMEN SCIENTISTS IN ACADEME: part five

a report to the Office of Science and Technology Policy from the Committee on the Education and Employment of Women in Science and Engineering Commission on Human Resources, National Research Council, National Academy of Sciences, Washington, DC 1979

In order to get on to other things, I am omitting Chapter 4 (Academic Employment) and Chapter 5 (Participation in the National Science Advisory Apparatus) and am ending this series of reprints with the conclusion, Chapter 6 (Perspectives & Prospects).

PERSPECTIVES & PROSPECTS (Chapter 6)

This study indicates that the status of women Ph.D.'s in academic science has improved in the past decade, but that further gains are necessary before equal opportunity is realized.

The assessments of equal opportunity in this report have centered on the recent doctorate population, essentially those scientists who completed their education in 1970 and later. The date is merely a convenient marker in a long transition from growing awareness of possible sex discrimination through the passage of equal opportunity laws, the appearance of regulations for their implementation, and finally their fairly general acceptance. It was not a sharp watershed; changes were gradual, as we have seen. But young women scientists completing their education since then have had better prospects in academic careers, by and large, than their predecessors did.

Whether the climate of growing equality of opportunity has had comparable beneficial effects for older women scientists is not clear. There is anecdotal evidence that some women who for many years held research staff positions have recently achieved faculty status, and that others who were long-term instructors or lecturers have been promoted to ladder posts. The total number of such promotions cannot be very large; the entire increase of women in faculty posts between 1973 and 1977 is less than one-quarter of all women who received science doctorates from 1970 to 1977. The gains and the prospects for the older Ph.D. cohorts will need to be assessed separately from those for Ph.D.'s since 1970.

We have traced the comparative progress of women scientists since the early 1970's in some detail. In the past decade women's share of all science doctorates has doubled, from 9 percent to 18 percent, and is still increasing in all fields of science, with especially dramatic gains in the biological and social sciences and in psychology. Their qualifications match those of men: they have superior academic records upon entering graduate school, are trained in the same departments as men, complete research leading to the doctorate as fast or faster than their male counterparts, and aspire to careers in teaching and research in equal proportions.

Although the unemployment rate of new women Ph.D.'s has been decreasing somewhat irregularly since 1970 (NRC, 1978) it still exceeds that of comparable male Ph.D.'s by factors as large as five. In chemistry, where women are 14 percent of new doctorates, they account for 43 percent of the unemployed Ph.D. chemists who are seeking employment, and women doctoral chemists' unemployment rate is almost equal to that for the labor force of adult women at all educational levels. While the situation is less severe in other fields, unemployment of women doctoral scientists remains high, and represents an underutilization of scientific potential as well as the material resources invested in their training. Under present and projected circumstances it is unrealistic to expect academic employment to remedy this situation. Will industry and government, where women scientists are currently severely underrepresented, absorb a larger number?

Equity in Academic Employment

Academic employment opportunities for women scientists still present a very mixed picture. Overall, a slightly larger fraction of women than men is employed in academic institutions, but there continues to be a disproportionately large number of women in

two kinds of positions: part-time instructors or lecturers which are not only outside the tenure stream but also offer little chance for productive research, and postdoctoral or research staff positions which are underpaid. Spending much time in these somewhat marginal or subordinate positions may contribute substantially to cumulative disadvantage. The dependent or ancillary nature of such work probably provides little stimulus for developing the autonomy and drive necessary for a career as a teacher-scholar.

In faculty positions, women have made substantial gains as assistant professors and lesser gains in the upper ranks. The question of the real status of assistant professorships--whether these are indeed revolving doors, and whether they are more likely to be so for women than for men--remains to be resolved by further studies. A study proposed by the Commission on Human Resources to compare the career progress of men and women scientists promises to clarify the question of "revolving door" appointments and should be supported.

That the proportion of women in tenured positions continues to lag well behind that of male faculty is cause for concern. If present trends continue, it is likely that there will be few tenure slots available by the time the recently appointed women are ready to be considered for promotion. The difficulty of making tenure decisions vis-a-vis the growing shortage of tenure slots should not overshadow the equal opportunity mandate. Nothing in our findings provides a rational basis for the fact that men at senior ranks are awarded tenure more frequently than women. If all untenured women now at full professor ranks received tenure overnight, the total effect on the academic economy in the sciences would be negligible, affecting approximately 200 positions out of a total of 123,000, of which about 50,000 are men who are tenured full professors.

Although women hold a higher proportion of ladder positions than they used to, especially at the assistant professor level, they also hold a much larger share of off-ladder positions than in the past. In the leading universities women are almost half of all scientists in the ambiguous "instructor/lecturer" category. We have no way of knowing whether this represents a laudable effort to have women in departments where no faculty openings exist, or a practice of lower offers and lower promotion rates for women.

Effectiveness of Affirmative Action

Delays in the early implementation of equal opportunity laws cost several years during which employment of women scientists on faculties did not change materially--years when there was still some growth. Since 1973 growth has been minimal in leading science departments and only moderate in others. Employment of women faculty has increased during these last few years, but the absolute gain in numbers is so small as to produce only a minimal effect on the total. Yet if it signals a trend, a change in attitudes, it may make an important difference.

Given the long history of underutilization of women in academe, we would not have expected material changes in the absence of affirmative action legislation. That some changes have occurred is probably due in part to this legislation, although actual enforcement has been inconsistent and scattered. The threat of possible litigation through individual and class action suits, and of the cost of such litigation, is probably the most effective enforcement mechanism that exists. Even on-site compliance reviews are apparently not being used as enforcement tools. Undoubtedly the changes in general social climate and growing acceptance of women in various non-traditional professions have also contributed materially to their growing numbers among science faculties.

With enforcement responsibility recently consolidated in the Department of Labor, some improvement in performance may result. It is hoped that more uniform administration will produce fewer capricious decisions and requests and will deal more sensitively with the resolution of difficult conflicts. We would hope to see increasing levels of cooperation on the part of both academic institutions and the federal government.

Remedial Actions

Since the total size of faculties in the research universities (and probably also in others) is unlikely to grow in the foreseeable future, we cannot expect a significant

increase in the proportion of women on science faculties in the absence of special programs. Yet, when half of all undergraduates are women and graduate enrollments of women are increasing steeply, it is educationally sound and desirable to have women well represented on faculties. Otherwise we run the risk not only of losing scientific talent but of short-changing the next generation of students. If full equality of opportunity is to be attained in higher education, both male and female students will need professional women as models and mentors.

Academic Salaries

Salary equity is difficult to assess from aggregate data and is probably best studied intra-institutionally; various acceptable procedures for doing so have been published. The statistics available to us certainly suggest, at the least, that such studies are needed: some salary differences favoring men exist in all fields, at all levels, and in all categories of institutions. Whether they may be justified in individual cases on grounds of length of service or different responsibilities is not the issue. Rather, the issue is that prior conditions which determine fair salaries should not distinguish between men and women.

Advisory Committee Service

The opportunities of women scientists to augment their own horizons, profit from the personal exposure, and contribute their expertise to national science policy by serving on a variety of advisory bodies have expanded considerably in recent years.

An analysis of just where and how women advisors are being utilized--and where they are not--is hampered somewhat by the very uneven reporting practices regarding advisory committees which we have encountered. Much of our information was assembled piecemeal and is not regularly and publicly available; only NIH was able to furnish complete and full information on the composition of its committees. This is accomplished through a central office which also monitors appointments to insure adequate numbers of women.

The Issue of Mobility

The possibility that most of the manifest differences in women scientists' careers--in type of appointment, quality of institution, amount of salary, and eventual recognition--stems from their family responsibility and their consequently reduced job mobility has been raised widely and frequently. Although most of our data do not bear on this issue directly, certain inferences are possible.

First, a clear distinction must be made between recent years, since about 1970, and the preceding period. Before the advent of affirmative action, women rarely received offers, they looked for jobs, and if they were married, usually where their husband's opportunities were best. Even the most distinguished women scientists, prospective Nobel laureates included, were not offered endowed chairs and other amenities to lure them to distant institutions. The question of independent career mobility, therefore, did not arise for them. Some achieved distinction despite the lack of offers, some did not.

More recently, career mobility has ceased to be exclusively a female problem. Young families, especially in academe, increasingly look for institutions which offer desirable opportunities to both spouses, and some leading universities have had difficulty in recruiting faculty partly because of what one characterized as the "working mate" problem (Chronicle of Higher Education, Oct. 23, 1978). Other issues, such as unwillingness to uproot children and inability to pay inflated housing costs are contributing to the problem, and professional moves are no longer regarded as quite so desirable.

To what extent such considerations have actually influenced career decisions by either women or men in the last few years is not known. It is reasonable to assume, however, 1) that single women would be free to follow career opportunities, and 2) that such mobility restrictions as may apply to married women would hold equally for all fields. The fact that single women's careers (rank, salary, etc.) resemble those of married women rather than men suggests that factors other than mobility are at work; similarly, the fact that women psychologists' academic status closely resembles men's regardless of marital status while women chemists' does not, also supports the inference that lack of mobility is a less important career factor than sex.

Nonetheless, future career mobility of both sexes would certainly be enhanced by the provision by universities of better support services in locating promising employment for a spouse. The variety of individual situations likely to be encountered does not lend itself to recommending a general program but in many cases some effort by departments, possibly through careers service offices, would be beneficial.

Recommendations

Our recommendations to the Federal Government and to academic institutions for better utilization of doctoral women scientists are as follows:

Recommendations for Fellowship and Training Programs

1. That federally supported scientist-teacher awards be granted annually to a minimum of 25 women for the next five years, each tenable for at least a five-year period.

These awards, based on merit, would afford a method of adding women to leading science faculties on a semi-permanent basis, increasing their numbers by about 10 percent -- a greater increase than could reasonably be accommodated by the current numbers of job openings. The more important impact would lie in the distinction of the award. The amounts of the awards would be comparable to annual faculty salaries.

It must be emphasized that we regard such awards as additions to, not substitutes for, regular faculty hiring. The cost of such a program is of course considerable, but still a good deal less than the currently ineffective efforts toward affirmative action enforcement, and the cost of litigation. Career development awards of this type have analogies in existing programs, e.g., at NIH, and are thus not a radical policy departure.

2. That fellowship support from federal sources be made available to enable older women scientists to update their training by means of short courses, summer work, or other specialized education.

With obsolete training and out-of-date skills, many older Ph.D.'s will have little chance to obtain highly competitive awards. Because these scientists do not exist in large homogeneous groups, it is difficult to make very detailed recommendations concerning the types of courses which should be offered or their location or sponsorship. Short courses sponsored by professional societies, such as those of the American Chemical Society, might be appropriate. Research departments and governments or industrial laboratories might also be suitable places for such updating.

3. That an experimental program of research support and affiliation with active research departments be instituted for women scientists at teaching colleges to enhance the momentum of their research.

The prospect that this proposal offers of giving added impetus to their research by exposure to a highly active research environment and enhancing the quality of instruction in their permanent positions is considerable. Such a program could be minimal in cost, and might greatly enhance the perceptions and attitudes of research faculties toward women colleagues.

4. That a pilot program of awards and grants to facilitate career moves by couples be instituted on a trial basis for two to three years. Either spouse would qualify if the other partner had received a permanent appointment requiring re-location. The award would provide support for establishing a research program at a new institution.

Some leading universities have had difficulty in recruiting faculty partly because of what one characterized as the "working mate" problem. This program would enhance the career mobility of scientists and afford better utilization of men and women who would otherwise face a hiatus in their research efforts.

5. That the National Science Foundation, as lead agency for federal research support in universities, consult with universities to devise programs that will enable non-tenure track faculty to initiate and develop independently funded research programs.

Internal regulations of most institutions do not allow or encourage off-ladder faculty to apply for independent research grants, making it difficult or impossible for such individuals to establish a research record. Women scientists are markedly over-represented in such positions, as already noted, and their opportunities for advancement are specifically circumscribed by the limitations on grant applications.

Recommendations for Improved Monitoring of Equal Opportunity Policies

6. That pre-award compliance reviews give attention to promotions of women to associate or full professor ranks without tenure.

The proportion of women in senior ranks who are awarded tenure continues to lag behind that of male faculty. Nothing in our findings provides an explanation for this difference. We therefore recommend that affirmative action reporting include tenure comparisons as well as numerical gains.

7. That all public and private institutions be required to include academic salary information in their affirmative action reporting.

Affirmative action regulations as currently implemented in higher education rarely include regular reporting of salary data and, at least in private institutions, such information usually remains confidential. In general, salary differentials between men and women are greater in private universities than in public ones (Chronicle of Higher Education, July 17, 1976, pp. 9-12). Inclusion of salaries in reporting should encourage careful review of individual salary disparities and equalization where justified. Privacy issues need not be an insuperable obstacle; leading public research universities apparently have no problems with publication of salaries.

This recommendation is not intended to require disclosure of "supergrade" salaries for individuals of exceptional distinction, since these derive from merit considerations beyond the scope of any remedial program. The exemption would be similar to the widely accepted exemptions of certain endowed professorships from affirmative action practices.

8. That equal opportunity policies be linked more directly to departmental or project levels rather than to university-wide equal opportunity performance. Awards below \$1 million (which do not subject the institution to a pre-award compliance review) should be contingent on satisfactory equal opportunity efforts within the department concerned, rather than requiring evidence of compliance throughout the institution.

We believe that such closer linking of awards with the units which receive the primary benefits will contribute to simplified administration, and avoid potentially penalizing entire institutions for isolated infractions.

9. That the National Science Foundation follow NIH in monitoring and periodically reporting on advisory committee appointments to insure that committees and panels include appropriate numbers of women scientists.

Such monitoring should also cover the various ad hoc panels that are frequently assembled for very specific short-term tasks. In reports that have been made available to us, ad hoc panels members have not always been included.

Recommendations to Institutions

10. That science departments and EEO officers assist in assuring that women faculty at senior ranks who are still untenured and may have been overlooked in previous reviews, are now given appropriate tenure reviews.

11. That departments and affirmative action officers carefully review the disproportionately high number of women appointed to off-ladder positions.

In the leading universities, women are almost half of all scientists in the ambiguous "instructor/lecturer" category. We have no way of knowing whether this represents a laudable effort to have women in departments where no faculty openings exist, or a practice of lower offers and lower promotion rates for women.

12. That the National Academy of Sciences/National Research Council follow the NIH in monitoring and periodically reporting on advisory committee appointments to insure that committees and panels include appropriate numbers of women scientists.

Such monitoring should also cover the various ad hoc panels that are frequently assembled for very specific short-term tasks.

13. That institutions give attention to facilitation of young women's scientific careers.

During periods when they are producing and raising small children many young women and men may need to interrupt or restrict their employment to part-time. Options should be available that would utilize their talents on a rigorous but less than full-time basis. Possible mechanisms would include part-time positions within the tenure track.

It is important that institutions also facilitate the development of an independent career identity. Young women today may sense pressure to become overloaded with student advising, serving on committees within the institution, and other types of university service. While these other activities are not unimportant, an over-burden may greatly restrict career development.

Conclusion

Universities as corporate entities must learn to assume a more cooperative attitude toward equal opportunity for women. Much of the cost of affirmative action is due to the adversary position taken by universities initially, and to their continuing efforts to claim a form of autonomy to which the use of public funds does not entitle them. Academic freedom does not transcend the law. It is our hope that the suggestions we have made will contribute to greater cooperation between universities and the Federal government and a lessening of the adversary climate surrounding equal opportunity problems.

References

1. Chronicle of Higher Education, "Faculty Compensation: Salaries and Fringe Benefits for Full-Time Faculty Members at 2,500 Colleges and Universities," Vol. 26, Issue 19, July 17, 1978, pp. 9-12.
2. National Research Council, Commission on Human Resources, Summary Report 1977, Doctorate Recipients from United States Universities, National Academy of Sciences, Washington, D.C., February 1978.

WOMEN'S COLLEGE STUDY

press release

Results of a comprehensive survey released today by the Women's College Coalition in Washington provide a telling indicator of how women's expanding personal and professional aspirations are changing the shape of higher education.

The study, sponsored by the Women's College Coalition, with a grant from the Ford Foundation, provides descriptive data on the nation's 117 women's colleges, and profiles a set of institutions in which:

- * headcount enrollments of women students have grown every year since 1970, particularly for part-time, graduate and first professional students;
- * 55 percent of the college teaching faculty are women -- mirroring closely the sex ratios of the general and college-going public;
- * women students display strong career ambitions and are more than twice as likely as freshman women in general to plan majors in such traditionally male fields as economics and the life sciences;
- * women support their institutions with the highest percentage of giving that exists anywhere in higher education: and
- * women are prevalent in leadership positions, and account for 65 percent of all presidents.

"These responsive patterns are showing up earliest in the women's colleges -- where there is probably the greatest institutional flexibility to respond to women and where there has been the greatest density of women students and faculty," said Coalition Chair Rhoda M. Dorsey about the study.

"But these patterns also show how all segments of higher education should look in the future, if our institutions are to respond to the women who are now, in fact, its newest majority," Dorsey, who is also president of Goucher College in Maryland, added. Women now make up 51.5 percent of all college and university populations.

The study, A Profile of Women's Colleges, analyzed data collected independently by the National Center for Education Statistics, the American Council on Education, the

Cooperative Institutional Research Program, and the Council for Financial Aid to Education.

It is the first of several research reports to be issued by the Women's College Coalition project of the Association of American Colleges. The research activities are supported by the Ford Foundation.

Enrollment Increases

In a decade when declining enrollments have continually commanded the headlines, enrollment increases in women's colleges are among the most significant of the figures reported in the Profile. Overall headcount enrollment, from 1970 to 1978, was up in every type of women's institution -- in the four-year colleges by 18 percent and by 40.2 percent in two-year colleges.

The report attributes this growth to a strong identification of these colleges with women's rising professional interests and the tendency of women to seek out institutions expressly tailored to their needs.

Student Characteristics and Attitudes

Data from the Profile also suggest that freshman women at women's colleges have higher educational aspirations than freshman women in general. While some 20 percent of all 1978 freshman women at four-year colleges said that they planned to earn an advanced or professional degree (Ph.D., M.D., etc.), nearly twice that number (37 percent) of freshman women at four-year women's colleges indicated plans to earn one of these degrees.

The Profile, in its analysis, points out that women's colleges have pioneered in opening non-traditional fields to women and notes that significantly higher percentages of women in women's colleges plan majors in the biological sciences, economics and political science, and nearly twice as many women's college freshmen plan careers as doctors and lawyers.

The higher percentages of women in traditionally male-dominated majors in women's colleges are most probably attributable, the Coalition research reports, to higher percentages of women faculty members in these departments in women's institutions. Data show that 55 percent of the faculties of all four-year women's colleges are women, compared to only 25 percent at other four-year college faculties.

Giving to Women's Colleges

Forty-two percent of the total voluntary support at women's colleges comes from alumnae, a figure that compares to only 24 percent for other colleges and universities. The Profile reports that the average gift of women's college alumnae from private institutions in 1978-79 was larger than that for alumni of all private four-year institutions. Moreover, the percentage of alumnae who gave was higher at women's colleges than in any sector of higher education.

The Women's College Coalition is comprised of 71 women's colleges in 26 states and the District of Columbia. Founded in 1972 as a project of the Association of American Colleges, the Coalition is an advocacy and information resource for women's colleges. It is primarily concerned with examining ways in which women's colleges work within the education community to support the intellectual, professional and personal development of women today.

Copies of the full report may be obtained from the Women's College Coalition, Suite 1003, 1725 K St., N.W., Wash., DC 20006.

Highlights of the Study

Number of institutions: *There are 117 women's colleges in the United States, located in 26 states and the District of Columbia. In 1978-79, their total headcount enrollment was 123,339 and their alumnae body numbered roughly 1,000,000.

Enrollment: *Enrollments grew steadily at women's colleges over the last decade. Overall headcount enrollment for 1970-78 was up 19.8%, reflecting

significant increases in every type of women's institution - in the four-year colleges (+18.1%), and the two-year (+40.2%), in the catholic colleges (+ 24.6%) and the non-catholic colleges (+18.5%), in small (+8.7%), medium (+21.9%), and large (+28.6%) colleges.

*The increase is accounted for by virtually all types of students: full-time and part-time, undergraduate and graduate, and first professional and unclassified.

Leadership: *65% of all women's college presidents are women, compared to 7.5% nationally.

Faculty: *Women faculty at women's colleges are well represented at all ranks, accounting for 55% of the total faculties, 43% of all full professors and 49% of all associate professors (vs. 25%, 11%, and 19% respectively, of the professoriate at other four-year institutions).

Students: *The population at women's colleges is somewhat more ethnically diverse than the female population of colleges and universities in general. There are slightly more black students (11.2% at women's colleges vs. 9.0% at all institutions), double the percentage of orientals (2.2 vs. 1.1), and significantly more hispanics. (1.8 vs. 1.0).

*Freshman women at women's colleges are ambitious and are nearly twice as likely as all freshman women to plan to become physicians, lawyers, or Ph.D.'s.

*Freshman women at women's colleges are entering new fields and are more than twice as likely as all freshman women in general to plan majors in economics, biology, chemistry or other life sciences.

Financial support: *Women's Colleges are heavily supported by a large and loyal alumnae body - whose giving account for 42% of total voluntary support at these colleges.

*Women's colleges received more than \$20 million in 1977-78 from businesses, corporations and private foundations. Women's colleges have not, however, been supported by these donors at the level of other colleges and universities.

OF POSSIBLE INTEREST

The National Registry of Women in Science and Engineering is now open to all women in science, medicine, and engineering. The Registry is maintained by the Association for Women in Science, a non-profit organization established in 1971 "to promote equal opportunities for women to enter the scientific professions and to achieve their career goals." The Registry is searched on a regular basis to provide qualified candidates for jobs and advisory panels. It also provides speakers and resource persons for journalists and conference planners. An individual need not be actively seeking employment in order to be listed. Those wishing to be listed or to use the Registry for recruitment should write to: Mary Lee Schneiders, National Registry of Women in Science and Engineering, 1346 Conn. Ave., N.W., Suite 1122, Wash., DC 20036.

The Nuclear Regulatory Commission is recruiting qualified candidates for various technical positions for 1981. The NRC will be recruiting experienced professionals as well as recent college graduates with degrees in engineering (nuclear, mechanical, electrical, civil, chemical and materials), health physics, chemistry, and computer science. A number of individuals in the above disciplines are also hired for the NRC Intern Program, the Cooperative Education Program, and the Summer Technical Intern Program. Send for "Engineering and Scientific Employment Opportunities" and "Career Opportunities for Recent College Graduates." NRC, Recruitment Branch, Division of Organization and Personnel, Washington, D.C. 20555.

Woodrow Wilson Women's Studies Research Grants for Doctoral Candidates are given to encourage original and significant research about women on such topics as the evolution of women's role in society and particularly contemporary America, women in history, the psychology of women, and women as seen in literature. Students in doctoral programs who have completed all pre-dissertation requirements in any field of study at graduate schools in the United States are eligible. Winners will receive grants averaging \$1,000 to be used for research expenses connected with the dissertation. These may include travel, books, microfilming, xeroxing, typing, and computer services. The number of awards will be determined by available funds. Support for the program is provided by the Helena Rubinstein Foundation and others. Woodrow Wilson National Fellowship Foundation, Women's Studies Program, Box 642, Princeton, NJ 08540.

Publications Division, New York State School of Industrial and Labor Relations, Cornell University, Box 1000, Ithaca, NY 14853 - Working Women in Japan and The Working Mother.

Manseil, c/o Merrimack Book Service, 99 Main Street, Salem, NH 03079 - Women's Studies: A Checklist of Biographies, Working Women and the Law, Women 1870-1928.

The Program on Women, Northwestern University, 1902 Sheridan Road, Evanston, IL 60201 - various publications including reports on re-entry women and Grantsmanship.

Women's Studies, Indiana University Press, 10th & Morton Streets, Bloomington, IN 47405.

DEADLINES: Nov. 24 for Jan.-Feb., Jan. 23 for Mar.-Apr., Mar. 24 for May-June

ADDRESSES: Send all newsletter material except ads to Anne Leggett, Math. Dept., Western Illinois University, Macomb, IL 61455. Send everything else, including ads, to AWM, Women's Research Center, Room 204, Wellesley College, 828 Washington St., Wellesley, MA 02181.

JOB ADS

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

University of Alabama, Huntsville. Dept. of Mathematics. Tenure earning position at Asst., Assoc. or Professor level, 9/1/81. Rank & salary depend on credentials. Required: Ph.D. in mathematics, specialty area (s) in applied math, strong research credentials & active interest in quality teaching. Industrial and/or mathematical modeling experience preferred. Usual fringe benefits. Send application, graduate transcripts, vita & 3 letters of reference to F. L. Cook, Chmn., Dept. of Math, Univ. of AL, Huntsville, AL 35899. Screening of applicants will begin 2/1/81.

University of Alabama, Huntsville. Dept. of Mathematics. Two assistant professorships (tenure track) 9/1/81. Required: Ph.D. in math, evidence of strong potential in research & active interest in quality teaching. Teaching will involve graduate & undergraduate courses with typical load of 8 hrs. per week. Send application, graduate transcripts, vita & 3 letters of reference to F. L. Cook, Chmn., Dept. of Math, Univ. of AL, Huntsville, AL 35899. Screening will begin 2/1/81.

University of California, Berkeley. Dept. of Mathematics. Professorship in Mathematics, starting date & salary negotiable, in areas of algebra, analysis, applied mathematics, foundations, or geometry. Very substantial achievement & capacity to furnish scientific leadership required. Send by Feb. 15, 1981, curriculum vitae, list of publications, and names of 3 referees, to A. Weinstein, Vice Chmn. for Faculty Appts., Dept. of Math, Univ. of CA, Berkeley, CA 94720.

University of California, Berkeley. Dept. of Mathematics. One tenure track faculty position anticipated, pending budgetary approval, effective Fall 1981 at Asst. Prof. level (or Assoc. Prof. level with tenure for individuals with exceptional qualifications who currently hold non-tenured positions), in areas of algebra, analysis, applied^{math} foundations, or geometry. Required: demonstrated potential in research and teaching. By Jan. 15, 1981 send curriculum vitae, list of publications, a few selected reprints or preprints, & names of 3 referees to A. Weinstein, Vice Chmn. for Faculty Appts., Dept. of Math, Univ. of CA, Berkeley, CA 94720.

University of California, Berkeley. Dept. of Mathematics. Several 2-year lecturer positions beginning Sept. 1981 for new and recent Ph.D.s (1979-81) in areas of algebra, analysis, applied mathematics, foundations, or geometry. By Jan. 31, 1981 send resume, reprints, preprints, and/or thesis abstract, and have 3 letters of recommendation sent to A. Weinstein, Vice Chmn. for Faculty Appts., Dept. of Math, Univ. of CA, Berkeley, CA 94720.

University of California, Davis. Graduate School of Administration. Position in Information Systems (rank open) 7/1/81. Applicant should have extensive coursework or research experience in one of following areas: computers, decision support, modeling & simulation, or systems analysis and design. Duties: graduate instruction, course development & high level of research productivity. Salary dependent on qualifications & experience. Ph.D. or equivalent in computer sciences, operations research, business and public administration or related area is required. By Jan. 15, 1981 send curriculum vitae & names & addresses of 4 references to Dr. Alex F. McCalla, Grad. School of Administration, Univ. of CA, Davis CA 95616. Applicants for Asst. Professor should send graduate transcripts.

University of California, Davis. Dept. of Mathematics. One or two positions, Fall, 1981, in Computer Science. Candidates should be trained in computer science or in math with active interest in computer science. Level of appt. depends on qualifications. Required: Doctorate in comp. sci. or in related field with evidence of potential for research & teaching in comp. sci. Preferred: demonstrated competence in teaching at upper division & graduate levels. By Jan. 15, 1981 send resume & 3 letters of recommendation to Carlos R. Borges, Chair, Dept. of Math, Univ. of CA, Davis, CA 95616.

Stanford University. Dept. of Mathematics. Asst. Professorship, fall, 1981. Must have outstanding research ability. Send resume & have 3 letters of reference sent to Hans Samelson, Chmn., Dept. of Math, Stanford Univ., Stanford, CA 94305.

Wesleyan University. Dept. of Mathematics. Tenure-track Assistant Professorship in combinatorial/discrete mathematics or another area of applicable mathematics. Will sometimes teach computer-related courses and introductory programming. Send vita and 3 letters of recommendation to: Search Committee, Department of Math, Wesleyan University, Middletown, CT 06457.

National Science Foundation, Wash., D.C. 20550. Mathematical Sciences Section of NSF's Division of Mathematical & Computer Sciences. Program Director^s for 1 or 2 years. Salaries negotiable. Required Ph.D. or equivalent experience & training in appropriate field, plus 6 years of successful scientific research experience. General knowledge of field & some administrative experience are also required. For further information, call Mr. E. Paul Broglio, Division of Personnel & Management (202) 357-7841.

University of Illinois, Chicago Circle. Dept. of Mathematics. Possible junior or senior openings in pure or applied mathematics, statistics, computer science & mathematics education. Required: Ph.D. & strong record in teaching & research. By Jan. 15, 1981 send vita, publications list, description of current research and have 3 letters of recommendation sent to Prof. Louise Hay, Head, Univ. of IL, Chicago Circle, Dept. of Math, Box 4348, Chicago, IL 60680.

Purdue University. Dept. of Mathematics. Possibly 3 regular or visiting appts. at Asst. Prof. level & 1 appt. at Assoc. Prof. level as of 8/1981. Exceptional research promise & excellence in teaching required. Send resume & 3 letters of recommendation to M. S. Baouendi, Head, Dept. of Math, Purdue Univ., West Lafayette, IN 47907.

College of the Holy Cross. Dept. of Mathematics. Two tenure track positions for Fall, 1981; one for applied mathematician in numerical analysis, optimization, operations research, etc; no specific area required for other. One of 2 positions will require knowledge of use of computer in research & teaching. Teaching load is 3 courses per semester. Salary competitive. Excellent fringe benefits. Send resume & 3 letters of recommendation to Melvin C. Tews, Chmn., Dept. of Math, Holy Cross College, Worcester, MA 01610.

Smith College. Dept. of Mathematics. Two-year position at asst. professor level, starting Sept. 1981, subject to budgetary approval. (Current minimum salary: \$17,500.) We are looking for a statistician who is interested in teaching probability, statistics, and mathematics in a liberal arts college. Evidence of dedication to teaching and significant scholarship is required. Send resume & 3 letters of recommendation by Feb. 1, 1981 to Marjorie Senechal, Chair, Dept. of Math, Smith College Northampton, MA 01063.

Worcester Polytechnic Institute. Mathematical Sciences Dept. Tenure-track Asst. Professorship in applied mathematics. Required: strong commitment to scholarship, excellent teaching, ability to interact with students & faculty of other disciplines. Prefer applicants whose interest parallel current work in dept., such as discrete modeling, mathematics of communication, applied analysis, differential equations, mathematical physics, statistics, & applied probability. Contact Paul W. Davis, Math. Sci. Dept., WPI, Worcester, MA 01609.

Michigan State University. Dept. of Mathematics. Two postdoctoral fellowships in mathematics. Appt. for 1 year with possibility of additional year subject to availability of funds. Duties: teach one course each term & spend rest of time on research. These fellowships are normally offered to persons who have had their doctorate less than 2 years. By 1/15/81 send applications to Dept. of Math, Michigan State Univ., East Lansing, MI 48824.

Michigan State University. Dept. of Mathematics. Several Asst. Professorships (full-time tenure track) as of 9/1/81. Ph.D. in math with interest in research & teaching. By 1/15/81 send resume & have 3 letters of recommendation sent to Prof. J. E. Adney, Chmn., Dept. of Math, Michigan St. Univ., East Lansing, MI 48824.

Oakland University. Dept. of Mathematical Sciences. One or two tenure track Asst. Professorships as of 8/15/81. Ph.D. required with strong potential for research. Well qualified persons in any of mathematical sciences are needed, especially those in statistics or operations research. Two course teaching load. Salary \$17,000 for 8 mo. academic year. Send resume, graduate transcript & 2 letters of reference to George F. Feeman, Chair, Dept. of Math, Sciences, Oakland Univ., Rochester, MI 48063.

Rutgers University. Dept. of Statistics. At least 3 positions at Asst. Prof. level available Fall, 1981. Required Ph.D., at least by 12/31/81. Three year appts. on tenure track lines. Duties include teaching undergraduate & graduate statistics courses, doing research in applied and/or mathematical statistics. Contact Dr. William E. Strawderman, Chmn., Dept. of Statistics, Hill Center, Rutgers University, New Brunswick, N.J. 08903.

Vassar College. Dept. of Mathematics. Three year Asst. Professorship, 1981-82. Ph.D. in math required. Interest in computer science and/or applications desirable. Send resume to David Merriell, Chmn., Dept. of Math, Vassar College, Poughkeepsie, N. Y. 12601.

New Mexico State University. Dept. of Mathematical Sciences. Visiting & tenure track positions in mathematics, numerical analysis & statistics. Salary (1981-82) \$16,000 or higher, dependent on rank, qualifications & experience. Ph.D. (or equivalent) & strong commitment to teaching & research essential. By 12/31/80 send vita & arrange for 4 letters of reference to be sent to Carol L. Walker, Head, Dept. of Math. Sciences, New Mexico St. Univ., Las Cruces, N. M. 88003.

Syracuse University. Dept. of Mathematics. Several tenure track positions are available in the Asst. and Assoc. Prof. level. One position is in Numerical Analysis; the others are open to any field. Research potential is of primary importance; compatibility with research activity in our dept. is also important. There also may be one or more temporary one year positions open to applicants in any field. Ph.D. is required for all positions. Teaching load is 2 courses per semester. Applications must include a detailed vita, 3 letters of reference, and for new Ph.D.s a transcript. Tenure track applications are due Jan. 30, 1981; all others are due March 30, 1981. Contact Jack E. Graver, Chairman of Math, Syracuse University, Syracuse, N. Y. 13210.

Miami University. Dept. of Mathematics & Statistics. Asst. Professorship (probably tenure track). Ph.D. in Statistics. Teach max. 9 hrs. per semester. Research ability. Genuine interest & promise in teaching statistics. Starting time: Jan. or Aug., 1981. Send resume, transcript of graduate credits, & 3 letters of recommendation to S. E. Bohn, Chmn., Dept. of Math & Statist., Miami University, Oxford, Ohio 45056.

Miami University. Dept. of Mathematics & Statistics. Several positions have been requested. Teach max. of 9 hrs. per semester. Earned doctorate in math or statistics. Research ability. Genuine interest in teaching mathematics or statistics. Send resume, transcript of graduate credits & 3 letters of recommendation to S. E. Bohn, Chmn., Dept. of Math. & Statist., Miami Univ., Oxford, OH 45056.

Ohio State University. Dept. of Mathematics. Several positions at all ranks from Instructor to Full Professor, as of Fall, 1981. Candidates in areas of applied & pure mathematics are invited to apply. For tenure-track positions applicants must have significant research accomplishments & promise, and evidence of good teaching ability. Send application, resume & have 3 letters of recommendation sent to Prof. Dijen K. Ray-Chaudhuri, Dept. of Math, Ohio State Univ., 231 W. 18th Ave., Columbus, OH 43210.

Vanderbilt University. Dept. of Mathematics. Tenure track Asst. Professorship in Statistics. Initial 3 year appt. Strong commitment to research & undergraduate teaching required. Consulting opportunity a possibility. Have vita & 3 letters of recommendation sent to Prof. R. R. Goldberg, Chmn., Dept. of Math, Vanderbilt Univ., Nashville, TN 37235.

University of Texas at Austin. Dept. of Mathematics. One or two tenure track Asst. Professorships & two or three terminal instructorships (each instructorship lasting 2 or 3 years), starting Fall, 1981. For information contact Peter John, Chmn., Recruiting Committee, Dept. of Math, Univ. of Texas, Austin, TX 78712.

University of Utah. Dept. of Mathematics. (1) Three or four Instructorships (for 3 years). Persons of any age receiving Ph.D. in 1980 or 1981 are eligible. Ability & potential in teaching & research required. Salary: \$18,000. Teaching duties: 2 courses thru academic year. (2) One visiting position for 1 year or less. Selective criteria will be teaching ability & potential research contribution. (3) One or two Asst. Professorships with particular interest in Probability, Statistical, and Applied Mathematics, but other areas will be considered. By 3/1/81 send vita, bibliography & references to Ms. Sylvia Morris, Committee on Staffing, Dept. of Math, Univ. of Utah, Salt Lake City, UT 84112.

Dept. of Navy. Office of Naval Research. Mathematician, starting salary \$32,048-49,229, depending on qualifications. Manager of contract research programs in applied mathematics and numerical analysis. Ph.D. or equivalent is preferred. Send Federal Job Application (SF-171) to Office of Naval Research, PSD, Rm. 823, BCT #1, Anct. #80-83 WIM, 800 N. Quincy St., Arlington, VA 22217, info call 202-6964705/6. Closes 11/30/80.

NSF ANNOUNCES POSTDOCTORAL PROGRAM FOR MATHEMATICIANS

The National Science Foundation has announced it will award about 30 fellowships for postdoctoral research in the mathematical sciences. The fellowships, for periods of one or two years, will carry a yearly stipend of \$20,000 for full-time research. Awards will be announced by March, 1981.

The competition will be open to U.S. citizens or nationals who have earned their doctorate degrees after January, 1975. Selection will be based mainly on ability of applicants, likely impact on his or her future scientific development, and the scientific quality of the research likely to emerge.

These fellowships are distinct from and in addition to other NSF postdoctoral fellowships previously announced.

Details and application procedures can be found in the Mathematical Sciences Postdoctoral Research Fellowships 1981 Announcement which will be distributed to U.S. colleges and universities and is available from the NSF Publications Office, Washington, D.C. 20550.

The closing date for applications is January 3, 1981.

BALLOT FOR AWM ELECTION

Treasurer

Donna Beers

Members-at-Large of
Executive Committee
(vote for 2)

Bettye Anne Case

Linda Keen

Jill Mesirov

Judith Prewitt

Please vote and return this ballot by 12/1/80 to AWM, Women's Research Center,
828 Washington Street, Wellesley College, Wellesley, MA 02181.

Association for Women in Mathematics

Office Address: *Women's Research Center, Wellesley College,
828 Washington Street, Wellesley, Massachusetts 02181*

October 2, 1980

Dear Colleagues,

Enclosed is some information about the recent harsh sentencing in the Soviet Union of mathematician and computer scientist Tatyana Velikanova. Also enclosed is a copy of a letter from the Association for Women in Mathematics to Professor A.P. Alexandrov, President of the Soviet Academy of Sciences, requesting his and the Academy's assistance in this matter.

In order to protect her life and the lives of other such scientists in the Soviet Union who speak out for human rights, it is most important for the Soviet authorities to know that scientists in the West are deeply concerned by, and are closely following, these situations. We are requesting you to circulate these materials, including the supporting statement for signatures, amongst your colleagues. Please feel free to make extra copies. It would be helpful for signatures to include the individual's position, institutional affiliation and professional societies (e.g. AMS, AWM, ACM, National Academy of Science, etc.).

Some of you may wish to write your own letters.

Please return the supporting statement with signatures (or copies of letters sent) to:

The Association for Women in Mathematics
Wellesley College
Wellesley, Massachusetts 02181

Thank you for your assistance.

Sincerely,

Lenore Blum

Professor Lenore Blum
Chair, Human Rights Committee
Association for Women in Mathematics

TATYANA M. VELIKANOVA

Born in 1932. In 1954 graduated from the Mathematics Department of Moscow State University. Taught mathematics in high school in a rural area near Sverdlovsk (Ural). From 1956 to 1963 worked at the Computer Center of the Academy of Science of the USSR. Believed to be among the first women entering the field of computer science in the USSR.

From 1963 to 1968 with the Central Economical-Mathematical Institute of the Academy of Science. From 1968 to 1977 with the Moscow Institute of Transportation (Computer Center). She was then forced to leave the Institute and worked as a nurse in a children's hospital. Has three children and three grandchildren.

In 1969 she became the founding member of the first human rights association in the USSR, "Initiative Group for the Defense of Human Rights in the USSR". She is one of the most respected and earliest members of the human rights movement in the USSR. Numerous times Ms. Velikanova has been subject to searches and interrogations. Her arrest in October 1977 has been called by Academician Sakharov "the calculated blow on the human rights movement". Until the trial in September of this year she was detained in the KGB investigative prison Lefortovo. She is sentenced to 4 years in a strict regime labor camp and 5 years in internal exile.

She was accused of editing and disseminating the "Chronicle of Current Events", the information bulletin on human rights violations in the USSR. These are exactly the same charges that 5 years ago faced the cofounder of the "Initiative Group for the Defense of Human Rights in the USSR", biologist Sergei Kovalev, who is now still in labor camp. She refused to take part in her trial procedure and refused to appeal her sentence. Probably this is due to the fact that human rights activists consider such trials illegal; they believe such trials are aimed against the freedom to exchange information and ideas. She is now on her way to the labor camp. Most probably it will be the Mordovian strict regime labor camp for women who are "especially dangerous state criminals".



Association for Women in Mathematics

Office Address: *Women's Research Center, Wellesley College,
828 Washington Street, Wellesley, Massachusetts 02181*

October 2, 1980

Academician A.P. Alexandrov, President
Academy of Science of the USSR
14 Leninsky Prospekt, Moscow, U.S.S.R.

Dear Professor Alexandrov,

The Association for Women in Mathematics is deeply distressed to hear of the sentencing of our scientific colleague, and human-rights advocate, Tatyana Velikanova. We are gravely concerned by the harshness of her sentence - 4 years in a labor camp, plus 5 years of internal exile. As fellow scientists and humanitarians, we implore you and your colleagues to apply your great positions and influence to assist Velikanova during these times and see that this unjust sentence is overturned. We implore you to do everything in your power to assure her well being.

We believe you share our feelings regarding her present situation since she worked for the Academy of Science for about 12 years as a computer scientist.

Please let Tatyana Velikanova know that the Association for Women in Mathematics is closely following her situation and that we will continue to publicize her case far and wide, and in every way we can, including in our Newsletter. Copies of this letter are being circulated widely in the public and scientific communities.

Tatyana Velikanova is an honorary member of our Association, and we will continue to actively work for her freedom. Our hearts and thoughts are with her.

Sincerely,

SIGNED BY:

Professor Lenore Blum, Chair, Human Rights Committee and Past-president, AWM;
Head, Department of Mathematics & Computer Science, Mills College, Oakland, California;
Research Associate, UC Berkeley and Visiting Scholar, MIT
Professor Judith Roitman, President, Association for Women in Mathematics;
Department of Mathematics, University of Kansas, Lawrence, Kansas
Professor Bhama Srinivasan, President-elect, Association for Women in Mathematics;
Department of Mathematics, University of Illinois, Chicago, Illinois
Professor Alice Schafer, Past-president, Association for Women in Mathematics;
Department of Mathematics, Wellesley College, Wellesley, Massachusetts
Professor Mary Gray, Founding-president, Association for Women in Mathematics;
Head, Department of Mathematics, American University, Washington, D.C.
Professor Anne Leggett, Editor, AWM Newsletter;
Department of Mathematics, Western Illinois University, Macomb, Illinois
Professor Donna Beers, Treasurer, AWM;
Department of Mathematics, Wellesley College, Wellesley, Massachusetts

-OVER-

Professor Bettye Anne Case, Executive Committee, AWM;
Department of Mathematics, Tallahassee Community College, Tallahassee, Florida
Professor Louise Hay, Executive Committee, AWM;
Head, Department of Mathematics, University of Illinois, Chicago Circle, Illinois
Professor Martha Jaffe, Executive Committee, AWM;
Department of Mathematics, Boston State College, Boston, Massachusetts
Dr. Jill Mesirov, Executive Committee, AWM; Institute for Defense Analysis, Princeton, N.J.
Professor Rhonda Hughes, Executive Committee, AWM;
Department of Mathematics, Bryn Mawr College, Bryn Mawr, Pennsylvania
Professor Joan Hutchinson, Executive Committee, AWM;
Department of Mathematics, Smith College, Northhampton, Massachusetts

COPIES TO:

Tatyana Velikanova c/o Fyodor Babitsky, Apt. 86, No. 19 Krasikova St., Moscow, U.S.S.R. or possibly: 431200 Mordovskaya ASSR, Tengushevsky District, Barashevo Village, Post Office Box ZhH-385/3-4, U.S.S.R.
Academician Gury Marchuk, Chairman, Committee on Science & Technology of the Council of Ministers of the U.S.S.R.
Academician Andrei Sakharov, Gargarina 214, Apt. 3, Scherbinka 2, Gorky, U.S.S.R.
Members of the Academy of Science of the U.S.S.R.
President Jimmy Carter, The White House, Washington, D.C.
Senator Edward Kennedy
Patricia Harris, U.S. Secretary for Health and Human Services
The Associated Press
The New York Times
The Boston Globe
Science Magazine, Washington, D.C.
The Association for Women in Mathematics Newsletter
Professor Lipman Bers, Chairman, Committee on Human Rights, National Academy of Sciences
Professor John A. Nohel, Chairman, Committee on Human Rights of Mathematicians, AMS
Dr. Philip Handler, President, National Academy of Sciences (NAS)
Dr. J.K. Goldhaber, Executive Secretary, Office of the Mathematical Sciences, NRC/NAS
Professor Peter Lax, President, American Mathematical Society
Professor Dorothy Bernstein, President, Mathematical Association of America
Dr. Margaret E. Martin, President, American Statistical Association
Dr. Daniel D. McCracken, President, Association for Computing Machinery
Prof. Solomon Feferman, President, Association for Symbolic Logic
Professor Samuel H. Douglas, President, National Association of Mathematicians
Dr. John D.C. Little, President, Operations Research Society of America
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