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A Newsletter of the Committee on the Status of Women in Physics of The American Physical Society

MENTORING NEW FACULTY: ADVICE TO DEPARTMENT CHAIRS

Marjorie A. Olmstead, University of Washington, Seattle

Marjorie Olmstead will be promoted to Associate Professor of Physics and Adjunct Associate Professor of Chemistry at the University of Washington, Seattle, in September, 1993. She has been an Assistant Professor at the UW since January 1991, following four and a half years as an Assistant Professor of Physics at the University of California, Berkeley. She has thus gone through the "new faculty" experience at two research universities. She also has watched the process at an undergraduate institution, having received a Bachelor's degree in physics in 1979 from Swarthmore College. Between receiving her Ph.D. in surface physics from UC Berkeley (1985) and joining the faculty there, she spent one and a half years as a Member of the Research Staff at the Xerox Corporation Palo Alto Research Center. In addition to lecturing at the graduate and undergraduate level and performing several service activities, Prof. Olmstead works with her graduate students to perform experimental studies of interface formation between dissimilar materials and of the structural and electronic properties of ultra-thin ionic materials. The following paper was prepared for an invited talk at the 1993 AAPT conference of physics chairs on "Physics Departments in the 1990's," held in Arlington, VA, April 30–May 2, 1993.

Introduction

The myriad new opportunities and responsibilities that are thrust upon a brand new faculty member can be both exhilarating and overwhelming. Almost overnight, a new faculty member is faced with brand new courses to teach, a laboratory empty of both equipment and students, implicit departmental taboos and traditions, insufficient funding, and demands for one's time coming in from all sides. On top of all this, there is considerable personal upheaval: finding a new home, adjusting to a new city and having very few friends who won't also have vote on one's tenure.

The above problems have always faced new faculty. However, the problems have been magnified recently. In many departments, it has been five to ten years since the last tenure-track hire in a given subfield, and the old expectations may not be appropriate for current hires. In the intervening years, funding has become much more difficult to obtain and maintain, and the technical sophistication, capital funds and time required to start a competitive research program from scratch have increased dramatically. In addition, pressure for improved teaching at research universities, and for improved research at four-year colleges, is changing the traditional balances. New faculty hear contradictory messages about expectations regarding teaching, research, service and funding, and have difficulty sorting out the priorities that will achieve tenure.

The problems of personal upheaval have changed in recent years due to the increase in dual-career relationships. While this affects roughly equal numbers of men and women in physics careers, it proportionately affects a much larger fraction of the women. The days are gone when an assistant professor could spend six years putting in 60-70 hours per week while a spouse took care of

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This Issue

The Editor for this issue is LUZ MARTÍNEZ-MIRANDA; Managing Editor TARA McLOUGHLIN; Production LOUISE BOGAN and CAROLYNN LaROCCO

PUBLICATION INFORMATION

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1993 Luise Meyer-Schutzmeister Award To Naomi Makins

Naomi Makins is the 1993 winner of the Luise Meyer-Schutzmeister Memorial Award. This award is sponsored by the Association for Women in Science Foundation and is named for a Senior Physicist at Argonne National Laboratory who was a world-renowned nuclear spectroscopist and a Fellow of the American Physical Society. Dr. Meyer-Schutzmeister died in 1981. The award in her memory grants $1000 to a female graduate student in physics.

Naomi Makins earned her bachelor's degree in physics from the University of Alberta in 1989, and in the fall of the same year she began graduate studies in experimental nuclear physics at M.I.T. In January of 1991, she moved to Palo Alto to begin work on her thesis experiment to determine the internal structure of the nucleus using electron-induced proton knockout scattering measurements. The experiment was conducted at the Stanford Linear Accelerator Center during September and October 1991. She has since returned to M.I.T. to work on data analysis, and she presented some preliminary results of the experiment at the October 1992 APS meeting in Santa Fe, New Mexico. She plans to submit results for publication within the next few months and hopes to graduate at the end of 1993. Ms. Makins is also an accomplished pianist, having earned an Associate Diploma in piano from the Royal Conservatory of Music in Toronto during high school. In addition to her research, Makins has worked part-time as an accompanist for ballet classes, and is delighted to be able to pursue simultaneously the two great loves of her life: physics and music. □

Professor Mary K. Gaillard wins Sakurai Prize

For the first time since its establishment in 1984, the prestigious J.J. Sakurai prize was awarded this year to a female physicist, Professor Mary K. Gaillard. The prize, which recognizes and encourages outstanding achievement in particle theory, consists of $5000, plus an allowance for travel to the APS meeting at which the prize is awarded. Prof. Gaillard delivered her prize address at the April meeting of the APS in Washington D.C.

Prof. Gaillard received her B.A. from Hollins College, her M.A. from Columbia University and her Ph.D. from the University of Paris, Orsay. In 1968, she joined the staff at CRNS as *charge de recherches*, becoming *maitre de recherches* in 1973 and *directeur de recherches* in 1980. She was concurrently a scientific associate in CERN's Theory Division until 1981 when she joined the senior staff of Lawrence Berkeley Laboratory and the faculty of the University of California, Berkeley, where she is presently a professor of physics.

Prof. Gaillard has received numerous honors and awards. She was elected as a fellow of the American Physical Society in 1985 and a fellow of the American Academy of Arts and Sciences in 1989. In 1991, she was elected to the National Academy of Sciences. She is the author of over 130 scientific papers and publications. Prof. Gaillard is an internationally known particle theorist who has worked on gauge theories, grand unified theories, particle astrophysics and cosmology. Her current research interest is in the field of string and superstring theory. □

1994 Maria Goeppert-Mayer Award

Sponsored by the General Electric Foundation

Purpose: To recognize and enhance outstanding achievement by a woman physicist in the early years of her career, and to provide opportunities for her to present these achievements to others through public lectures.

Nature: The award consists of $2000 plus a $3000 travel allowance to provide opportunities for the recipient to give lectures in her field of physics at four institutions of her choice and at the meeting of the Society at which the award is bestowed.

Establishment and Support: This award was established in 1985 by the General Electric Foundation and was first awarded in 1986.

Rules and Eligibility: This award is given to a woman not later than ten years after the granting of the Ph.D. degree or the equivalent career stage, for scientific achievements that demonstrate her potential as an outstanding physicist. The award is open to women of any nationality, and the lectures should be given within two years after the award is made. Nominations of candidates shall remain active for three years.

Please also note that the award winner must be a resident of the United States at the time of selection. The grant funds must be used in the United States or its possessions in accordance with the policy of the General Electric Foundation.

Send name of proposed candidate and supporting information before ***1 September 1993*** to: *Eugen Merzbacher, Department of Physics and Astronomy, CB No. 3255, University of North Carolina, Chapel Hill, NC 27599.*□

WIPHYS at Six Months

Michelle Shinn, Bryn Mawr College

In the January 1993 issue of the CSWP Gazette (Vol. **12** (3)) the article "WIPHYS Goes Online" announced the start of service of the WIPHYS (Women In Physics) mailing list. In the article was a brief discussion of the purpose of WIPHYS, as well as a listing of planned services and instructions on subscribing. In this article I wish to present an update on our progress in establishing these services, as well as give you my sense of how WIPHYS is meeting the needs of the community.

WIPHYS has been "officially" in use since 26 January, when the first messages from subscribers other than the CSWP were distributed. Since then, the number of subscribers has more than trebled, to 250 plus. On the basis of their email addresses, a number of subscribers are from beyond the borders of the USA; in particular, Canada and Great Britain are well represented. Since mid-May, all of the services we had initially envisioned providing are available. In particular, subscribers can easily download a version of the Colloquium/Seminar Speakers List (CSSL). We are posting job opportunities as we receive them, but the volume has not justified the creation of a separate index for them. This has also been true for roommate requests.

While "network traffic" has not been great relative to some lists I subscribe to; the quality of postings has been high. Examples include:

❶. Publicity of CSWP-sponsored events.

❷ Circulation of relevant information, such as NSF press releases, and interesting posts that appeared on other mailing lists.

❸. Requests for data (e.g., names and bios of prominent women physicists)

In the last case, it was satisfying to watch the responses arrive quickly, within hours after the original posting. From experience, I have found the time it takes to obtain information such as this very time consuming. There have also been discussions on topics such as the "backlash" of affirmative action programs.

I believe that as WIPHYS gains a wider base of subscribers, its utility will grow as well. For example, with more subscribers, people might try using the list more often to advertise for a meeting roommate. As more people post questions about how to deal with a given professional situation, whether departmental or personal, the reticence I have seen in going "public" with these questions will decrease. In part, this increase can occur through advertising to a wider constituency. I believe this based on a poll I conducted in mid-February, where the majority (47 out of 70 respondents) were physicists with a Ph.D. degree with only one respondent clearly identifying themselves as an undergraduate. It is particularly important to reach this group and we intend to publicize our list to the undergraduates in several ways, e.g., mailings to APS chapters. Another good way is through word of mouth. If you are a subscriber, and know colleagues or students who might benefit from this list, please let them know about it!

—Michelle Shinn (mshinn@cc.brynmawr.edu)

(TURN TO PAGE 13 FOR SUBSCRIPTION INFORMATION.)

"Patterns of Success"

A Review of the March 1993 CSWP Presentation

by Luz J. Martínez-Miranda

As part of the APS March meeting in Seattle, the Committee on the Status of Women in Physics sponsored a panel entitled "Patterns of Success" on Tuesday, March 23rd. Approximately 200 people attended this session, which was followed by a lively question and answer period. Professor Bunny Clark (Ohio State University), Chair of the CSWP, served as moderator. The panel members were Dr. Charmaine Gilbreath (Naval Center for Space Technology), Professor Ruth Howes (Ball State University) and Professor Shirley Jackson (Rutgers University). After being introduced by Professor Clark, each panelist offered advice on how adaptability, intelligence and drive form the foundation for a successful career in science or engineering.

CSWP Chair Bunny Clark introduces "Patters of Success" panelists. L-R Prof. Shirley Jackson, Prof. Ruth Howes and Dr. Charmaine Gilbreath.

The first speaker was Dr. Charmaine Gilbreath. Dr. Gilbreath was the second woman ever to receive a Ph.D. in Electrical Engineering from Johns Hopkins University in Baltimore. She worked toward her degree while working full time at the Naval Research Laboratory, which she joined after receiving a Bachelor's degree in physics from Georgia Institute of Technology in 1982. She had previously received a B.A. in humanities from Florida State University, but then she "changed her mind" and decided to study physics. She is currently the Section Head of the Electro-Optics Technology Center of the Naval Center for Space Technology. Her research involves the study of wavefront manipulation using photo-refractive materials, and engineering projects in satellite laser ranging.

Dr. Gilbreath discussed what she described as "patterns of survival," strategies for a successful career in laboratory management and research. She touched on five main points during her presentation. First, she stressed that as women we must accept the fact that we will have to fight harder to advance in the sciences, and that it is important not to let bitterness over this situation debilitate us. Second, she emphasized the need to control the money for one's projects. Third, she encouraged the audience to make use of three important "tools" women in the sciences have developed, namely, networking, mentoring and working together. To illustrate this point, she related her own experience as part of a successful team involving a female laboratory manager, a female P.I. (herself) and a female research sponsor, who decided to work together to see good science move forward. Fourth, she stressed congratulating ourselves on our accomplishments in order to keep motivated. Lastly, she encouraged more women to aspire to administrative positions of influence and power. She debunked the myth that the managerial load of these positions would keep women away from their science and closed by saying that "if these positions are so undesirable, why are our male counterparts fighting tooth and nail to get them?!"

The second panelist, Professor Ruth Howes, was recently elected as a Fellow of the American Physical Society. She received her Ph.D. in physics from Columbia in 1971. In 1976, she joined the faculty at Ball State University. From 1987-1992, Prof. Howes was director of the Center for Global Security Studies. A member of the CSWP, she is also the vice-chair of the APS Forum on Education, and has written papers on arms control verification, history of science, science education and nuclear physics.

Prof. Howes talked about non-traditional ways to solve the question of balancing career and family, based on her experience as part of a successful commuter marriage. Her discussion centered on the idea that as women in science, we must look at different patterns of family relationships, much in the same way that "discoveries in physics come from looking at new paradigms in the way we do physics." It took two jobs and two firings for Prof. Howes to realize that she truly wanted a career as a physicist. The ensuing job search resulted in her 840 mile, door-to-door "commuter marriage"—she works at Ball State University in Muncie, Indiana, while her husband works at the University of Oklahoma in Norman. Prof. Howes indicated that non-traditional options are neither perfect nor for everyone, but she has several pieces of advice for those who are considering a commuter marriage. First, "hang the phone bill and talk every day"—good communication, she maintains, is the key to surviving the loneliness this arrangement can entail. Second, if you have children, it is probably best to keep them together and have one partner do most of the commuting. Splitting her two young children during the first year of commuting made the arrangement expensive and unwieldy. Third, she suggests that both partners keep clothes and personal belongings at each residence, so that they

(Continued on next page)

truly feel comfortable and "at home" in both places. Finally, she recommends that on weekends when the family is together, you should "slam the door on everything else" and dedicate yourself absolutely to family. Prof. Howes closed her presentation by urging the audience to consider non-traditional family options as a possible solution to career difficulties.

The final speaker, Professor Shirley Jackson, joined the faculty of Physics and Astronomy at Rutgers University after sixteen years at AT&T Bell Laboratories, where she continues as a consultant in semiconductor theory. She received her Ph.D. in particle physics theory from MIT in 1973. Prof. Jackson is a Fellow of the APS, and has been a member-at-large of the APS Council, as well as a member of numerous APS committees, including CSWP. She is currently a member of the Division of Condensed Matter Physics Executive Committee. She is a life trustee of MIT and a member of the Rutgers University Board of Trustees. In addition, she is on the Board of Directors of four U.S. corporations and was recently named to the Advisory Board of the PBS science program NOVA. Her current research interests are the study of spin fluctuation effects and optical and electronic properties of wide-gap semimagnetic semiconductors.

Professor Jackson spoke of the importance of "competence, change, adaptability and longevity" in physics. She highlighted several important points that have helped her to succeed in high-level professional activities. First, she stressed that each person must decide for herself what success means, and what mix of activities seems to make sense to achieve this success. Also, Prof. Jackson encouraged the audience members to be focused on their goals. However, she urged them to remain open to a change in focus, even if it means working for a time outside their field, particularly if such a change could result in a high-level opportunity. In addition, she stressed the importance of "taking mentors where you find them, even if they do not know they are mentors for you". She also warned the women not to ignore family issues; "if (having a child) is important to you, and part of the model of who you are, then you do it". Lastly, Prof. Jackson mentioned that the "browning" of physics has had as much an impact on her as gender issues—times have certainly changed since her freshman year at MIT when there were only 45 women and 8 African-Americans in her class of 900 (this year's freshman class of 1100 will be approximately 30% female and 33% minority students). Prof. Jackson closed her presentation by reminding the audience that "models are not static...you always have to adapt"—a phrase that appropriately summarized the evening's theme.□

Progress for Girls in Science through Expanding Your Horizons Program

Dr. Cherrill M. Spencer, Stanford Linear Accelerator Center

Cherrill Spencer is a physicist-cum-magnet engineer at the Stanford Linear Accelerator Center. She is a member of the APS Committee on Education; she has been a board member of the Math/Science Network since 1982 and has helped to organize the San Jose State University EYH conference for the past 15 years. Dr. Spencer is the winner of this year's "IEEE Spectrum" Precollege Innovative Math/Science Education Award.

During the past 17 years, over a quarter of a million girls have had their career prospects broadened at the Expanding Your Horizons in Science, Mathematics and Engineering™ (EYH) conferences. At these special day-long conferences, the sixth through twelfth grade young women actively participate in hands-on scientific experiments or engineering activities under the guidance of women scientists and engineers who have brought the equipment and designed the activities.

The goals of an EYH conference are fourfold: to introduce successful "real" women working in science and mathematics-based careers as positive role models for young women; to provide fun, hands-on experiences with mathematics, science and engineering so the participants gain a "can-do" approach to learning; to encourage the young women to continue their math and science education, especially at the high school level; and to increase the participants' awareness of the importance of science and math in many careers, and of the many opportunities for women in these fields.

The first EYH conference was organized in Oakland, California in 1976 by a group of mathematicians, math teachers, scientists and college administrators. These women were concerned about the alarming number of high school girls who were dropping out of math and science courses, thus effectively eliminating themselves from certain college majors. To assist in the nationwide expansion of EYH, these women set up the Math/Science Network, which incorporated as a non-profit educational organization in 1982. The national EYH coordinator, an employee of the Math/Science Network, provides information on starting an EYH conference, gives assistance to the local committees, conducts the national publicity campaign and compiles statistical data on the program. Through the efforts of the staff and members of the Math/Science Network, EYH has grown to 140 annual conferences in 30 different states.

The number of EYH Conferences has mushroomed over the years from one in 1976 to 140 in 1993.

Virtually all EYH conferences take place on a college campus on a Saturday, and have an average attendance of 300 girls. The 15 to 25 member local organizing committee is usually made up of women professors, researchers and students in the science and engineering departments at the host college, as well as women science and engineering professionals from local companies. Each hands-on workshop usually has 20 participants and is repeated for three different groups during the day-long conference, so a typical conference will use at least 25 women scientists or engineers as workshop leaders. Approximately 25 other adults are needed to help out with administrative duties on the day of the conference, for a total of about 50 adult volunteers per conference. Over 7000 people will help 42,000 girls expand their career horizons in 1993.

The success of the EYH conferences has been measured in several ways. First, pre- and post-conference evaluations are always filled with enthusiastic praise from the young participants. Second, the number of conferences has mushroomed over the years from one in 1976 to 140 in 1993. Finally, many of the long-time conferences are growing in popularity, and are attracting increasing numbers of girls each year. For example, the seven conferences in the San Francisco Bay Area turn away several hundred girls (through the pre-conference registration process) annually for lack of space.

The need for EYH conferences continues today, as troubling studies, such as the recent AAUW report *"Shortchanging Girls, Shortchanging Science"* detail. This report states that there are still many gender inequities in the way young people are taught, and that such inequities lead to lowered self-confidence in young women, with the most dramatic and devastating effects in math and science education. More EYH sites are needed, and if you would like to find out more about how to initiate a new site or to discover if there is already one close to you, please call the Math/Science Network at (510) 893-MATH or write to them at: **678 13th Street, Suite 100, Oakland, CA 94612,** and ask for an EYH start-up packet. □

CHANGING YOUR ADDRESS?

Please fill out the address section of the Roster Enrollment Form (page 17) and return it to APS.

Helping Girls to Excel in Physics

Kathy Kittredge, Quincy High School

Kathy Kittredge is a physics teacher at Quincy High School in Massachusetts. She received an undergraduate degree in physics and mathematics from Wellesley College and an M.A. in Critical and Creative Thinking from the University of Massachusetts, Boston. Over the past thirteen years, she has been involved in many programs which help girls to succeed in the sciences. These include a program entitled Gigantic Girls in Science, an after school math and science club for girls in the second through fifth grade; the greater Boston physics olympics and the Quincy High School science olympics. She is also active in the APS sponsored Local Physics Alliance, and conducts workshops for science teachers through the NSF and AAPT sponsored Physics Teaching Resource Agent Program. In this article, Ms. Kittredge describes her methods of teaching physics to high school girls. For further information, please contact her at: **218 Safford Street, Quincy, MA 02170.**

My goal as a physics teacher is to encourage every student in my class to design and carry out experiments, to think, question and form ideas about how the world works, and to utilize his/her new knowledge in applications and projects. Unfortunately, many of my female students do not believe that they have the intelligence or the ability to excel in physics, and therefore avoid it or do poorly within the classroom. I have dealt with this problem for many years, and have designed lessons and strategies which encourage girls to enroll in physics courses and help them gain confidence and skills. As a result of implementing some relatively simple methods, the total student enrollment in my elective physics class has approximately doubled. The percentage of girls in the class has consistently been at sixty percent or higher.

The first task is to help girls develop confidence. Confidence is often not related to ability, but is instead related to the student's perception of what she can do. A capable female student may think she is "not smart enough" to do physics. Therefore, I strive to create a supportive environment which convinces the student to try to "stick with it". To achieve this, I stress that learning by trial and error is an important skill in science and is the route to success in all subjects. The students see my mistakes. I show them how I learn from my mistakes. I let them know that although I am the teacher, I still do not know everything, and that I, like them, continually have to strive to find out more. The students know that I also occasionally become frustrated and confused as I try to learn. In this way, my female students begin to realize that it is okay if they do not "get it" immediately, and that it is okay if they are confused or uncertain. I assure my students that we all occasionally get frustrated; this is often a part of learning and does not indicate a lack of intelligence.

Another way I combat anxiety and help the students develop confidence is to offer re-takes. A student may re-take any test (with the exception of mid-terms and finals) within the term. This option often reduces the student anxiety so much that the students are able to do well the first time around, simply *because* they know that they can take the test again. Students who do not score well go over their tests with me, and they are allowed to re-take a different, slightly harder test during their own free time.

I also help to develop student confidence by ensuring that the classroom is a safe place for each and every learner. I do this by strictly enforcing a rule of no teasing. I explain that even when the teasing is in fun, one never knows when the fear of ridicule prevents a student from stating a theory, posing a question or asking to hear an answer repeated. Instead, I insist that we must encourage each other in learning. We must recognize that misunderstandings, uncertainty, mistakes and confusion are often part of the learning process.

In addition to developing student confidence, another important challenge is to help each student become an active, questioning, involved learner (issues of self-confidence are also related to this task). I have developed hands-on activities in which the students play, discover and form questions about the phenomena they are observing. The students play with the equipment and find out something they did not know before. They write down their observations as well as any questions they encounter. I ask them to see if they can find ways to answer these questions. I assure my students that there is no right or wrong method; rather, that I want them to begin thinking about science, and to start to wonder and question. Through these exercises students become more involved and more interested as they gain confidence by proposing answers to their own questions. After the students play, they share their questions and discoveries with the whole class. Each group of students is acknowledged as a valuable contributor, with its own unique interests and style. Through these exercises, the students realize that they indeed have the ability to learn and discover on their own.

Often the play leads to questions which the students want to answer. The students then develop more structured investigations, and collect and share data. The groups decide if there is a reliable pattern of events, or if they need to do more investigation. The students begin to discover relationships and propose equations which describe the behavior. For these students, the formulas and laws of physics have more meaning. Physics has become an understandable and "do-able" endeavor.

By implementing these simple yet vital methods, I have been able to create a secure and supportive classroom environment which encourages each student to respond to challenge, strive for creativity, try new things, test ideas and learn from mistakes. The girls in my class have become less hesitant to take risks, to chance being wrong

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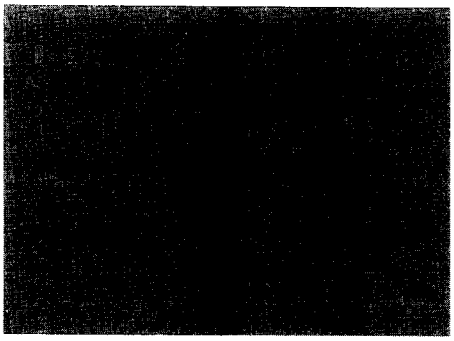
MENTORING NEW FACULTY: *(Continued from page 1)*

personal needs (housing, children, etc.). In their stead, departments and institutions need to address the issue of adjusting time-lines or standards while maintaining standards of quality.

When a department makes a new hire at the assistant professor level, it has invested one of its most valuable resources: a tenure-track faculty position. If the department does not nurture that new professor, it greatly reduces the probability of a good return on that investment. On the other hand, if the department facilitates access to the knowledge and resources required to develop a new faculty member's career, the payoff is likely to be a valued colleague for many years. If a new faculty member is successful, everyone benefits. If a new faculty member is unsuccessful, not only the faculty member suffers. If the physics community perceives that the department was at least partially responsible, then the department may suffer repercussions in future attempts to recruit faculty and students.

Advice to Department Chairs

There are a number of relatively simple things that a department chair can do or facilitate which will greatly increase the chances of success for a new faculty member. What follows is a compilation from my own personal experience, plus more than a dozen replies to my request for help in preparing this presentation via the "WIPHYS" electronic mail network (see "WIPHYS at Six Months" article, page 3) sponsored by the American Physical Society Committee on the Status of Women in Physics[1]. Another useful resource was the *Information Brochure for Incoming Women Faculty* produced at MIT[2]. Department chairs can (and should) augment this list by asking faculty in their own institutions for further suggestions. The comments below are biased towards my personal experience: a young, female, condensed matter experimentalist at a major research university; most of these suggestions, however, are widely applicable.



The suggestions that follow fall into four basic categories:

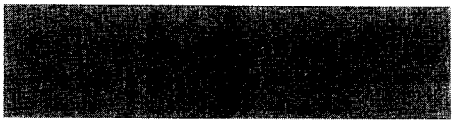
❶ **Make the expectations and criteria for promotion clear**

❷ **Facilitate the acquisition of resources to meet these expectations**

❸ **Give frequent and accurate feedback**

❹ **Reduce the impediments to progress towards promotion**

Many of these suggestions can be implemented by the department chair; others require asking senior faculty in the department for help; others require keeping an eye out for potential problems. Some departments may find a formal mentoring program to be appropriate; others will function more informally. If all communications are informal, however, new faculty often end up isolated and out of the loop.



The criteria for promotion to tenure are varied and broad. Most departments evaluate progress based on some combination of excellence in research, teaching and service. Implicit in these categories are funding, publications, national and international recognition, awards, collaborations, independence, lecturing, curriculum development, involvement of students and post-docs, committee work, and so on. Depending on the character and local culture of a department, these criteria will have different weights in a tenure decision. It is vital that the new faculty member be aware of what the relative weights are.

- **Make sure the new faculty member understands what is required for tenure, both officially and unofficially.** Give all new faculty copies of the promotion and tenure guidelines for the department, college and university upon arrival. Include a copy of the "checklist" for a promotion case. Specify which records should be kept or filed in the department office.
- **Make sure the new faculty member understands the time tables and deadlines.** If there is an intermediate re-appointment decision, inform the new faculty member about which criteria need to be met by then. Is there an implicit date by which the first grant proposal should be submitted or funded? The first paper accepted? The first thesis filed?
- **Be explicit about the way in which a new** faculty member will be evaluated. The new faculty member should be given the answers to these and related questions: What is the relative importance of student teaching evaluations, peer evaluations and letters from inside or outside the institution? Will publications with former or new collaborators be considered, or only work with students in your department? What are the implications of starting a new research direction versus continuing in the same direction as his or her thesis or post-doc research? Are one more NSF grants, Physical Review Letters or invited talks at an international meeting implicitly required? In sub-fields with large collaborations and/or long lead times, such as high-energy physics, how will independent scholarship be assessed?
- **Arrange a lunch centered on a frank discussion of the tenure process.** Invite new faculty in your department and related departments (chemistry geology, etc.) as well as the dean, a member of the college or university committee that considers promotions, the other department chairs and one or two senior faculty. Encourage both probing

[1] Contact person and chair: Professor Bunny Clark, Department of Physics, Ohio State University, Columbus, Ohio 43210 Tel. (614)292-1843, BCC@ohstpy.bitnet. In addition to publishing the *Gazette*, CSWP also maintains a roster of women in physics and a colloquium/seminar speakers list, and sponsors a site visit program.

[2] Prepared by the Women Faculty Network, Massachusetts Institute of Technology, June 1992. Contact person: Lorna Gibson, Associate Professor of Civil and Environmental Engineering and Mechanical Engineering, 1-274, MIT, Cambridge, MA 02139 (gibson@mit. edu).

questions and honest answers. The side benefits of these people meeting in an informal setting are also considerable.

[redacted]

Once a new faculty member knows the rules and expectations for promotion to tenure, a major responsibility of the chair is to ensure the physical and information resources to meet these expectations. Resources are broadly defined: they include the obvious ones of equipment start-up packages and traditional mentoring about teaching, handling graduate students and writing grant proposals; they also include nominations of the new faculty member for awards and invited talks and introductions to others who can help.

Mentoring Resources

The chair and other mentors should serve both as sources of information and as advocates for the new faculty member. It is vital that the new faculty member has a "safe" person to whom he or she can bring questions or problems without fear of impact on a promotion decision. In a small department, it might be appropriate to ask someone in a related department to serve as the mentor. Emeritus faculty are also a good resource. Other useful resources are the National Science Foundation program Visiting Professorships for Women[3], as well as the rosters of women and minority physicists and the colloquium/seminar speakers lists maintained by the APS Committee on the Status of Women in Physics (see previous note) and the Committee on Minorities (COM)[4]. These visitors can serve as excellent mentors for new faculty and graduate students.

General Facilitation

- **Give the new faculty a list of the right person to call for different needs.** This could include phone numbers for everything from the grants and contracts office, to whom to call to unlock a classroom, to the local emergency room. Including a list of the current committee and teaching assignments within the department is also quite useful, as is a listing of the responsibilities of the department staff.
- **Organize a reception for new faculty and university staff in coordination with related departments.** Invite staff from the offices supporting grants and contracts, instructional resources, teaching assessment, faculty governance and adjudication, etc. Also invite the person(s) in the administration to whom a new faculty member would report suspected harassment or discrimination. Encourage the new faculty member to get to know these people and to take advantage to these support services.
- **Introduce the new faculty member to the rest of the faculty.** Let him or her know which ones might be particularly helpful as mentors for teaching, dealing with graduate students, writing grants, etc. If there are no other recently hired faculty in your department, arrange for the new faculty member to meet ones from other departments. If the new faculty member is a woman or minority, introduce him or her to other women and minorities on campus.
- **Ask appropriate senior faculty to make a point of offering specific help** such as "Do you know anything about how the grants process works? Let's discuss it over lunch" or "I taught that course last year, would you like a copy of my notes and exams?" or "I'd like to read your grant proposal before you send it in: I found that quite helpful when I was starting out."
- **Make sure the new faculty member gets put on all the appropriate distribution lists.** These include announcements of faculty meetings, seminars, grants, fellowships, internal funding sources, industrial affiliate programs, seminars for developing skills in teaching and grant writing, etc. Make sure the new faculty member gets in the phone book and gets an electronic mail account and phone. If there is an association of women or minority faculty, make sure it is told about a new hire in your department.
- **Nominate new faculty for every possible award:** Sloan, various Young Investigator awards, Packard, Goeppert-Mayer, Luce, etc. Ask the new faculty member if he or she is aware of other appropriate awards. Personalize your cover letter to each award.
- **Nominate new faculty for invited talks at major conferences.** Lean on senior faculty and other contacts in the new faculty member's sub-field to do the same.
- **Invite senior people in the new faculty member's sub-field to give a colloquium at your department.** Make sure the new faculty member meets with these speakers and is invited to a meal with them. These people can help introduce the sub-field to the rest of the department, and can later supply letters of reference for the tenure candidate.

Research Facilitation

Work to secure the best start-up package you possibly can. Remind the dean that a competitive research program is much more expensive to establish than it was even five years ago. The new faculty member may not know everything to ask for: request input from other faculty in that sub-field, and remember that theorists need support, too. Besides capital equipment requests, support is needed for summer and graduate student salaries, phone and computer access, extensive supplies and small equipment (an empty lab doesn't even have a screwdriver!), conference or summer school travel, building renovations and so on. Secure access to shared facilities (e.g. toxic chemical storage, microscopes, etc.). Arrange for the ability to spread start-up funds over the first couple of years: not all equipment needs are apparent right away, and the supply and salary needs will continue until the first grants arrive.

- **Make sure the start-up package arrives as promised.** If renovations be-

[3] This program funds 6-36 month visits of women to academic institutions. The visitors can be junior-level women whom the department is considering hiring, or senior-level women from industry, national labs or other academic institutions. In either case, the proposals include both research and "instructional, counseling or other interactive activities". Contact person: Dr. Margrete Klein, National Science Foundation, (202)357-7456.

[4] American Physical Society Committee on Minorities (COM). Among other things, this committee maintains a roster of minorities in physics, sponsors site visits and publishes a quarterly newsletter *(C. O.M....MUNICATIONS)*. Contact person and chair: Dr. Anthony Johnson, AT&T Bell Laboratories, Craw fords Corner Road, RM 4D-321, Holmdel, NJ 07733-3030 Tel: (908)949-6764, or contact the APS directly.

gin before the new faculty member arrives, ask someone to keep track of it. Stop by on a regular basis to see progress for yourself. Check if the distribution among capital, expense and salary accounts, or between fiscal years, is correct. Make sure the new faculty member knows about deadlines for spending the funds.

- **Steer promising, mature graduate students towards the new faculty member.** Ask faculty teaching graduate courses or working with teaching assistants to help. Warn the new faculty member to check carefully, through reading courses and talking to other faculty, before agreeing to be someone's thesis supervisor. Let him or her know there will be time later on to nurture less mature students; the first few students will be the ones who impact the tenure decision.
- **Suggest a faculty mentor for dealing with graduate (or senior thesis) students.** The motivation and supervision of individual graduate students are among the most difficult things to learn. New faculty feel alone in facing these problems; mentoring really helps.

Teaching Facilitation

- **Give the new faculty member a list of department teaching policies.** Specific policies might address issues of grade distributions for lower and upper division classes, student cheating, syllabi, independent study courses, office hours, regulations on keeping exams or changing grades, student and peer evaluations, etc.
- **Facilitate getting help in learning to teach well.** Ask a master teacher to be a teaching mentor for the new faculty member. If there is a course with two sections, or which is co-taught, assign the master teacher together with the new faculty member. Give the new faculty member a list of the last few people who have taught the course assigned to him or her, and specify who would be most helpful. If there is a physics education group in your department, encourage the new faculty member to interact with them. Steer the new faculty member towards workshops on teaching.
- **Consider the new faculty member's needs when making teaching assignments.** Ask if there is a course he or she would particularly like to teach; an upper division or graduate course is an excellent way to screen possible research students. If reappointment will be based more on research than on teaching, assign a reduced teaching load over the first two years. If the faculty member needs to participate in an experimental run off-site, arrange a co-teaching assignment or a flexible seminar course. If high-statistics student evaluations from a large lecture course are required for advancement, make sure he or she gets to teach such a course. Before then, however, give some advice and background on how

to keep a diverse class of reluctant biology or engineering students interested in Newtonian mechanics.

- **Don't give the new faculty member a new course every term.** Remember that the time commitment in teaching a course for the first time is double or triple that of teaching a course again. Over time, however, make sure he or she teaches courses at a variety of levels, especially if required for promotion.

Service Facilitation

- **Don't overload new faculty with departmental committee assignments.** Unless your department is too small to function without the new faculty member's participation, don't give any committee assignments in the first year to two. Then give assignments that will help to introduce him or her to the senior faculty and to the way in which the department functions. Try to pick ones where there is a visible payoff for the time invested (e.g., student recruiting or comprehensive exams). Don't put brand new faculty on committees that are extremely time consuming, such as budget or admissions.
- **Suggest appropriate college or university committees.** Steer the new faculty, when ready, to committees that don't take up too much time, but which will give him or her a chance to impress those deans, etc., who will later make a tenure decision.

A new faculty member undergoes considerable stress due to a lack of feedback about how he or she is doing with respect to the myriad criteria in the department. Junior faculty often perceive different strengths and weaknesses than does the department, and communication on these issues is essential.

To promote this communication, **formally evaluate junior faculty at least once each year, preferably twice.** For each of these evaluations:

- **Appoint an ad-hoc committee to meet with the new faculty member.** Rotate the membership on these committees to introduce the senior faculty to the new faculty member: by the end of six years most of the department will have served at least once. In small departments, it may be appropriate to have related departments participate. The ad-hoc committee should address all the issues that will be important for promotion to tenure. The committee should also ask the reviewed faculty member for questions or suggestions about the whole process.
- **Ask about short-term and long-term goals as well as accomplishments.** A major goal of these semi-annual meetings is to make sure the new faculty member isn't following unproductive tangents. Should the new faculty member spend the next quarter writing a paper, a grant proposal or a new course syllabus? Should a research direction be chosen to optimize independent student input, secure funding, or a high-visibility (and high risk) result? Check to make sure the new faculty member's goals coincide with those of the department.
- **Discuss the committee report at a meeting of the tenured faculty.** Make note of opposition, doubts and support within the department. Ask

the doubters for specific suggestions you can pass on to the new faculty member.

- **Discuss the evaluations with the new faculty member.** Arrange a formal meeting to go over the progress, to discuss the report, and to hear the new faculty member's point of view. Discuss specifically how the candidate is doing on a standard time scale for promotion and accomplishments, and note any strengths and weaknesses.
- **Send the new faculty member a written summary of your discussion.** Ask for feedback if the faculty member doesn't agree with or understand what was written.

[redacted]

Demands on a new faculty member's time from a multitude of sources can seriously detract from his or her ability to pursue the activities that are most relevant for promotion. In addition, new faculty are particularly vulnerable to the manipulation and demands of senior people in the department or the research field at large. A department chair or mentor can do a great deal to protect a new faculty member from these extraneous demands.

- **Protect women and minority faculty from the demands of "tokenism"** and the assumption that they are the only appropriate person around to deal with the problems of women and minority students. Warn new assistant professors from these under-represented groups that they are likely to be offered all sorts of interesting committee assignments on a local or national level in the interest of expanding representation on these committees; they will also be requested to participate in role-model activities. Be blunt about how your department will view time invested in these activities that takes away from their other activities, and note that there will be plenty of time to become more involved once a career is established. Tell them that if they feel awkward about turning down such requests, they can "blame it on the chair."
- **Keep an eye on the faculty who opposed the initial appointment.** Very few faculty appointment decisions are unanimous. Don't assume that the opposition will evaporate overnight, or that the new faculty member is unaware of this opposition. Talk with the opposing faculty members; if you can't get their support or suggestions for improvement, at least work to neutralize their opposition. Don't put more than one on any ad hoc committee and don't put any on a promotion committee.
- **Protect new faculty from "Catch-22" situations** designed to exploit their combination of enthusiasm, under-utilized equipment and vulnerability. Senior faculty often ask junior faculty to do something for them: from refereeing a paper, to performing an experiment, to organizing a conference. The new faculty member must then choose between alienating the senior faculty member by saying "no" or reducing time for their own efforts by saying "yes". The senior faculty making the requests may not always be at your institution (but may be obvious choices for tenure letters). As with the affirmative action issues above, tell them to feel free to ask the chair to intercede.
- **Make sure junior faculty are not exploited in group grants or facilities.** Plugging into joint facilities of block grants (materials research groups, shared equipment facilities, etc.) can be a very good way for a new faculty member to get started. However, it can also be a vulnerable position, with the new faculty member having little control over the distribution of funds of equipment access, and a fear of losing what little he or she has by asking for a fair share.
- **Don't let a grant monitor make a tenure decision for your department.** If a new faculty member's grant proposal is turned down, have someone else in your department read it critically. Chances are, it is as good or better than one which that senior faculty member had funded ten years ago. Help the junior faculty repackage the proposal for that agency and suggest others; encourage persistence.
- **Facilitate access to non-academic resources** such as medical care, child care, housing, etc. Introduce the new faculty member to a realtor; recommend a good housekeeper. Check with other departments about child-care issues: if there is enough demand, free up a room in which the faculty member(s) can pay someone to baby-sit.
- **Inform new hires about maternity and parental leave policies.** If your college doesn't have such policies, lean on it to create them. Can the tenure clock be adjusted for health, maternity or paternity reasons? What are the criteria?
- **Be aware of dual-career issues.** If a new faculty member's spouse or significant other has a non-permanent job, offer assistance in researching opportunities for permanent employment. Watch out for antagonism or feelings of insecurity due to perceptions that either hire was based more on "affirmative action" than on ability.

Summary

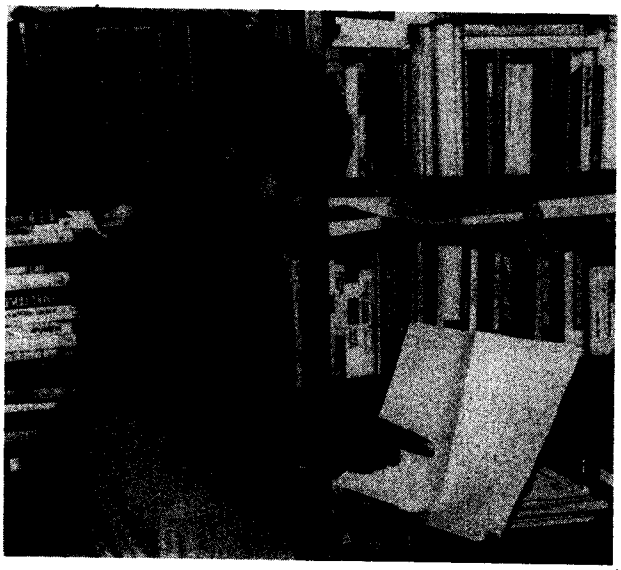
The suggestions above all reduce to a simple, common thread. From the point of view of an assistant professor: tell us what we are supposed to do, give us enough information and resources to get the job done, tell us how we are doing in time to fix any problems, and do a reasonable job as a "blocker" so we can make it across the finish line without getting too badly hurt along the way. The rewards will include both a valued colleague and an improved reputation for your department.

Finally, I would like to acknowledge and thank all those who have mentored me through the past seven years, especially my three department chairs, at two institutions, who pioneered rather than followed the above suggestions.

SCIENTISTS "TAKE THEIR DAUGHTERS TO WORK"

by Tara McLoughlin, APS

Three physical scientists, Professor Ronald Mickens, Mr. Daniel Golombek and Dr. Greg Boebinger were among the approximately one million people who participated in the first annual **Take Our Daughters to Work** day on April 28, 1993. This program, which is sponsored by the Ms. Foundation for Women, is intended to make girls aware of career opportunities, to give them a chance to experience these careers first-hand and to increase their self-confidence by having adults in their chosen fields treat them with respect. All of the participants we contacted were very enthusiastic about the program and gave the day rave reviews.



Ten year old Leah Mickens assists her father in his "theoretical physics laboratory" on Take Our Daughters To Work Day.

Ronald Mickens, a professor of physics at Clark Atlanta University and a member of the American Physical Society's Committee on Education, brought his 10-year-old daughter Leah to work with him at the university. The Mickens' day started bright and early at 7:30 when father and daughter sat in on a general chemistry course of a colleague. They then proceeded to the molecular biology laboratory, where they observed Professor Julius Jackson conducting experiments in gene pattern models. Next, it was on to the computer center, where Leah learned about the importance of computer models to all fields of science. For lunch, Professor Mickens and his daughter met up with two colleagues, chemistry professor Dr. Henry McBay and professor of psychology, Dr. Bridget Floyd. During lunch, Leah participated in intellectually stimulating discussions, ranging from the problems facing women in science to the applications of chaos theory to the social sciences. After lunch, Leah got a lesson in "networking" as she followed her dad to his office hours and listened in on calls to his colleagues in research and education. Leah said that her favorite part of the day was the time she spent in the biology lab, where she observed the DNA models and saw how the biologists grew germs. When she grows up, Leah plans to become an archeologist.

Prof. Mickens says that he and his wife Maria have always fostered their daughter's interest in the sciences. "My wife is really the person responsible for all of this," says Mickens. "She has her Ph.D. in political science, and spends lots of time with Leah guiding her studies". Professor Mickens does his part by taking Leah with him when he travels on academic business to other universities and science conferences. **Take Our Daughters to Work** day, however, was her first exposure to a full day at her father's workplace. Prof. Mickens says that this day was "a great opportunity for Leah to see people from age 18 to...well...my age, actually 'doing' science, and doing it enthusiastically".

Leah and her father say they will most certainly participate in the **Take Our Daughters to Work** program next year. Prof. Mickens recommends that physicists interested in participating in the program take the time to pre-plan the day and tailor it to their daughters' interests. Since Leah enjoyed the time in the lab the best, next year Prof. Mickens hopes to arrange more time for Leah in the laboratories of colleagues, focusing on hands-on participation in experiments.

Another girl who spent the day learning more about a career in science was 10 year-old Cecilia Golombek. Cecilia accompanied her father, Daniel Golombek, to work at the Space Telescope Science Institute in Baltimore, Maryland. Mr. Golombek works as the Research Support Manager at STScI, and since his job is quite hectic and difficult to plan, the activities Cecilia participated in were largely impromptu as well.

During the day, Cecilia sat in on planning meetings, learned about electronic communications by sending e-mail messages to her father's friends and colleagues, answered telephone calls and had lunch with other astronomers in the STScI cafeteria. The part of the day she found most exciting, however, was helping her father to extract images from the digitized scans of the plates used to construct the Guide Star Catalog. Cecilia learned how to check if the telescope was pointed at the desired target, saw how data on the whole sky was stored in optical discs and then dictated coordinates of objects as if she were an astronomer who needed an image extracted.

Mr. Golombek learned about **Take Our Daughters to Work** day through an article in the *New York Times*. He said that although Cecilia is a "regular" at STScI (she often spends time there during school holidays), this was the first time that she got to spend an entire day working alongside her father, seeing exactly what he did and actually getting a chance to do it herself. For next year, Mr. Golombek hopes to again remain faithful to his "normal" workday schedule on **Take Our Daughters to Work** day, but he plans to arrange more exciting hands-on activities for Cecilia.

Perhaps one of the youngest participants

(Continued on next page)

was 3 1/2 year old Dana Boebinger, who went to work at AT&T Bell Labs with her father, Dr. Greg Boebinger. Dr. Boebinger is on the technical staff at AT&T where he conducts research in physics. Dana spent a few hours on **Take Our Daughters to Work Day** at AT&T meeting her father's colleagues and observing special physics experiments. The experiment she liked the best was watching a helium inflated balloon shrink when submerged in liquid nitrogen and re-expand when removed.

Even at her young age, Dana is well acquainted with her father's work which she describes as "making magnets". She has visited the lab many times before to talk with the department secretary and play in the long corridors. But this was the first time she got to observe physics experiments. When asked whether he thinks Dana has an aptitude for science, Dr. Boebinger answered, "She's very curious, that's for sure. At her age she's fascinated with everything. She likes bugs. I guess *that's* science!"

Dr. Boebinger heard about the day through the media, and remarked that although no other physicists in his department brought girls to work, everyone seemed to know about the program. He said that he did not plan the activities for Dana; he was lucky to have a friend who had a bag of balloons in his office. He thinks that **Take Our Daughters to Work** day is a great idea, and, although Dana is not quite old enough to fully appreciate the day, he intends to participate next year, planning some more age-appropriate experiments and activities for his daughter.

The **Take Our Daughters to Work** program was organized for girls aged 9-15 by the Ms. Foundation in response to several troubling studies which found that as girls reach puberty, their confidence in their abilities drops considerably. Several thousand participants officially registered for the program with the Ms. Foundation, but it is estimated that about a million daughters went to work nationwide. For information on how to participate in next year's program, write to the **Ms. Foundation, 141 Fifth Avenue, Suite 6S, New York, NY 10010.** □

(Continued from page 3)

WIPHYS
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To subscribe to WIPHYS, send a message to: LISTSERV@NYSERNET.ORG subscribe wiphys<your name>
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Sending mail for distribution uses the same procedure as sending mail to anyone on a remote network node.
The network address for WIPHYS is: WIPHYS@NYSERNET.ORG

Any mail sent to this address by a member of the list will be distributed to everyone on the list who has their mail option turned on. Using a "reply" in your mail system to reply to a message that has come from the list will send your reply to everyone on the list. If you wish to reply to an individual, their address will be found in the header of the distributed message.

RETRIEVING WIPHYS FILES

Commands for retrieving files should be sent to the listserver's address rather than the WIPHYS address.
This address is: LISTSERV@NYSERNET.ORG

WIPHYS Members can also use the system to store files for other members to retrieve. All the mail sent for distribution is stored in archive files. By typing INDEX WIPHYS at the Message prompt, you will receive a list of all available files. □

Helping Girls to Excel in Physics *(Continued from page 7)*

or to experiment and discover. All of the students learn to value each other's opinions and contributions, to have confidence in their ability to excel in science and to help each other when uncertain or confused.

For further reading:

Gardner, April L., Cheryl L. Mason and Marsha Lakes Matayas, "Equity, Excellence and 'Just Plain Good Teaching'". *The American Biology Teacher*, Vol. 51, no. 2 February 1989.

Greenberg-Lake, The Analysis Group. *Shortchanging Girls, Shortchanging America.* Washington D.C.: American Associaion of University Women, January 1991.

Kahle, Jane Butler and Marsha K. Lakes, "The Myth of Equality in Science Classrooms" *The Journal of Research in Science Teaching*, Vol. 20, issue 2, October 1993.

Kahle, Jane Butler. *Women in Science.* Philadelphia: The Falmer Press, 1985.

Skolnick, Joan, Carol Langbort and Lucille Day. *How to Encourage Girls in Math and Science: Strategies for Parents and Educators.* Palo Alto, CA: Dale Seymour Publications, 1982. □

The Baltimore Charter:
An Initiative to Improve the Status of Women in Astronomy

In an unprecedented effort to better the conditions and opportunities for women in astronomy, the Space Telescope Science Institute (STScI) has issued a manifesto, entitled the Baltimore Charter. The charter was presented by Drs. Meg Urry, Laura Danly and Ethan Schreier (all of STScI) at the June 1993 meeting of the American Astronomical Society in Berkeley, California.

The Baltimore Charter takes as its premise that "women and men are equally capable of doing excellent science" and concludes that "women want and deserve the same opportunity as their male colleagues to achieve excellence in astronomy". The Charter aims to eliminate inequities and barriers that discourage, distress and alienate women in the field. It states that improving the situation for women in astronomy will better the environment for all astronomers and strengthen the profession. Specific recommendations are made in the areas of affirmative action, sexual harassment, family issues, gender-neutral language and physical safety.

Recommendations on affirmative action include defining and publicizing advancement criteria based on scientific excellence, eliminating cultural biases, setting explicit goals for achieving diversity in all aspects of the profession and continuing to evaluate the success of meeting those goals. In an effort to eliminate sexual harassment, the Baltimore Charter calls for standard education and awareness programs in the astronomical community, the appointment of women at each institution to receive sexual harassment complaints and to conduct a formal review of allegations, and "swift and substantial" actions against those who perpetrate sexual harassment. Other recommendations address non-standard pacing of careers, demands of dual-career households, provision of day care facilities and family leave, time off and re-entry policies.

The charter stresses the need to develop a scientific culture that promotes excellence, within which both women and men can work effectively and have satisfying and rewarding careers. Although women have long made significant and highly creative contributions in astronomy, recent statistics as presented at the Women in Astronomy meeting still suggest higher attrition rates for women than for men at the graduate school to post-doctorate transition and a dramatic decrease in the percentage of women astronomers at the senior faculty levels. Detailed blind studies in larger disciplines like mathematics also point to discrimination against women scientists.

The charter aims to eliminate inequities and barriers that discourage, distress and alienate women in the field.

The charter grew out of discussions at the Women in Astronomy meeting, held at STScI in Baltimore, Maryland, in September 1992. Those in attendance ranged from undergraduates to observatory directors to funding agency representatives. In the final session of the meeting, a panel of prominent astronomers responded to the findings of the meeting participants. Drs. Urry, Danly and Schreier, with the help of writer and educator Sheila Tobias, took the lead in condensing the issues and recommendations into the final "Baltimore Charter." The Charter has already been signed by the more than 160 astronomers who attended the meeting and has been endorsed by the Board of Directors of the Association of Universities for Research in Astronomy, Inc. (AURA) at its annual meeting in April. The charter will be widely distributed in the astronomical community with the hope of fostering further discussion and having the recommendations adopted.

Although the focus of the Baltimore Charter was to improve the status of women in the field of astronomy, the leaders of the conference have acknowledged that women, as well as minorities, have historically been excluded from *all* fields of science. "We have not presumed to speak for other scientific disciplines," writes Dr. Urry in the preface to *Women in Astronomy*, "but there is nothing in the Charter recommendations that is exclusive to astronomy. For the many other fields in which women and minorities remain underrepresented, we hope the Charter stimulates similar efforts and we look forward to collective progress toward equal participation of all in science." **For further information on the Baltimore Charter, please contact Shireen Gonzaga, STScI, 3700 San Martin Drive, Baltimore, MD 21218 (GONZAGA@STSCI.EDU).** □

Applications for 1994 Travel Grants for Women Speakers are now available.

See page 16 for details.

"Women and Science from a Historical Viewpoint"

A review of Professor Margaret Rossiter's Presentation for the CSWP, April 1993

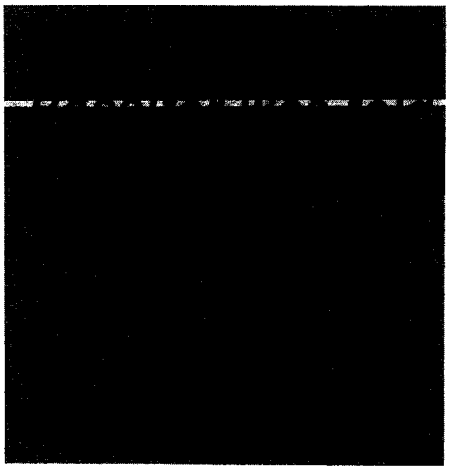
by Tara McLoughlin, APS

As part of the joint April meeting of The American Physical Society and The American Association of Physics Teachers in Washington, DC, the Committee on the Status of Women in Physics sponsored a presentation by history of science professor Margaret Rossiter of Cornell University. The presentation, entitled "Women and Science from a Historical Viewpoint", focused upon American women in science from 1940–1972.

Prof. Rossiter began with an overview of her research, and remarked that when she set out to write about the history of women in science in America, she was told that she would be finished with the project in no time, as there were "no women of any consequence" to be studied! But the more she researched, the more she discovered, and her work, still in progress, is now in its second volume.[1] This volume, as of yet untitled, focuses upon women in science in post-war America.

Professor Rossiter then described the situations faced by women in sciences. She noted that many women were recruited to careers in science during World War II and again during the Korean War in order to bolster America's defense industries. However, after the wars, these women were viewed as being no longer needed. Efforts made to "upgrade academia" resulted in pushing women out of the education sector. Women found it increasingly difficult to get financial support, as college deans refused to "waste" grants on women who they perceived would drop out to get married and start families.

Women with talent in science were forced to look outside of academia to further their careers. Often, this meant pursuing careers at non-profit institutions like museums, zoos or botanical gardens, or in self-employment. Working for government institutions was also an option for some women. Unlike universities which had nepotism rules, most government agencies would hire couples. Professor Rossiter took particular delight in sharing her "radical", woman-centered listing of notable scientist-couples, which ordered the couples by the woman's name (e.g., Mildred Dresselhaus and Gene, Phyllis Freier and George, etc.).



However, for the majority of women scientists, prime jobs and promotions were few and far between. The decision to marry and start a family often resulted in marginality for the women's career as it had before World War II. Rossiter cited the physicist Harriet Brooks, whose latest biography has just been published, as a prime example of this situation. Brooks, a promising young physics instructor at Barnard College, was forced to resign upon announcing her plans to get married, as the trustees of the college expected a married woman to "dignify here home-making into a profession, and not assume that she can carry on two full professions at a time."[2]

Rossiter noted that a handful of women did indeed beat the odds to make it to the top of their field in science. However, despite their success, they were often not taken seriously. As an example, Prof. Rossiter presented a clipping from the San Diego Evening Tribune announcing that Dr. Maria-Goeppert Mayer had won the 1963 Nobel Prize for physics. The headline announced, "S.D. Mother Wins Nobel Prize" and continued, "The red-haired college professor, mother of two, is the first woman residing in America to win a Nobel physics prize." Rossiter pointed out that Goeppert-Mayer's appearance and motherhood were emphasized over her achievements—physics was treated as if it were something she did as a hobby, "on the side". The article mentioned neither the hair color nor the parental status of the male Nobel Prize winners from that year.

Prof. Rossiter concluded by sharing statistics on women in the science, past and present. She noted that although the situation for women in physics has improved since the days when women made up less than one percent of NSF postdoctoral fellows in the discipline, much still needs to be accomplished for women to achieve parity. For example, women currently receive only 10% of the Ph.D.'s in physics each year, and they compose only 7% of the total number of people employed in physics and astronomy. Rossiter challenged the group of physicists in the audience to become motivated by the original reasons which inspired them to study science, and to devise creative methods to improve the situation for all women in the sciences. The presentation ended with a group discussion/question and answer session. Several members of the audience confirmed Prof. Rositer's studies and gave examples of their own struggles as women scientists. A joint reception with the Committee on Minorities followed the presentation. □

[1] Professor Rossiter's first volume is entitled *Women Scientists in America: Struggles and Strategies to 1940* (Johns Hopkins University Press, 1982).

[2] For further information, please see *Women Scientists in America: Struggles and Strategies to 1940*, pages 14-17.

The American Physical Society

TRAVEL GRANTS FOR WOMEN SPEAKERS PROGRAM--1993-1994

The APS Committee on the Status of Women in Physics (CSWP) is pleased to announce that the "Travel Grants for Women Speakers" Program is entering its third year. This program is designed to increase the recognition of women physicists.

Purpose: The program is intended to expand the opportunity for physics departments to invite women colloquium speakers who should provide role models for women undergraduates, graduate students and faculty. The program also recognizes the scientific accomplishments and contributions of these women physicists.

Grant: The program will reimburse U.S. colleges and universities for up to $500 for travel expenses for **either of two** women colloquium speakers invited during the 1993-1994 academic year.

Qualifications: All physics and/or science departments in the United States are encouraged to apply. Canadian colleges & universities are also eligible, provided that the speakers they invite are currently employed by U.S. institutions. Invited women speakers should be physicists or in a closely related field, such as astronomy. Speakers should be currently in the U.S. The APS maintains the **CSWP Colloquium/Seminar Speakers List of Women in Physics** which can be obtained by writing to the address below. However, selection of the speaker need not be limited to this list. Neither of the two speakers may be a faculty member of the host institution.

Guidelines: Reimbursement is for travel and lodging expenses only. Honoraria, local meals or extraneous expenses at the colloquium itself, such as refreshments will not be reimbursed.

Application: The **Travel Grants for Women Speakers Application Form** (available from physics departments or from the address below) should be submitted to APS identifying the institution, the names of the two speakers to be invited (even if tentative) and the possible dates of their talks. Please note that funds for the program are limited. The **Travel Grants for Women Speakers Application Form** should be submitted as early as possible, even if speakers and dates are tentative. The application form will be reviewed by APS, and the institutions will be notified of approval or rejection of their application within two weeks. Institutions whose applications have been approved will receive a **Travel and Expense Report Form** to submit for reimbursement.

For Further Information:

Travel Grants for Women Speakers Program
American Physical Society
335 East 45th Street*
New York, NY 10017
(212) 682-7341

***Please note: The APS will be relocating to Maryland in the fall of 1993. After 1 November 1993 the address for APS will be: APS, American Center for Physics, 1 Physics Ellipse, College Park, MD 20740**

QUESTIONNAIRE FOR THE ROSTER OF WOMEN IN PHYSICS

The Roster of Women in Physics is a database compiled by the American Physical Society Committee on the Status of Women in Physics (CSWP). It is used to form a mailing list for the CSWP *Gazette*, to select women to receive announcements of probable interest to them, and to compile demographic data on women physicists. The Roster will not be made available to commercial or political organizations as a mailing list, and all information provided will be kept strictly confidential. Being listed in the Roster only identifies you as a physicist, and does not imply agreement with or support for the activities of the CSWP. Please give a copy of this form to other women who work as physicists and/or have a degree in physics if you think they may not be listed on the Roster.

PLEASE COMPLETE ALL ENTRIES ON BOTH SIDES OF THE FORM AND INDICATE CHANGES IF THIS IS AN UPDATE OF A PREVIOUS ENTRY. WHERE BOXES ARE PROVIDED, PRINT ONE CHARACTER WITHIN EACH BOX, ABBREIATNG AS NECESSARY. AFTER COMPLETING THIS FORM, PLEASE RETURN IT TO:

The Committee on the Status of Women in Physics
The American Physical Society
335 East 45th Street
New York, New York 10017

Please indicate whether you are interested in receiving:

☐ The *Gazette*
☐ The *Gazette* and Employment Announcements

Is this a modification of a existing entry?

☐ Yes ☐ No ☐ Not Sure

NAME: _____ _____ _____
(last) (first) (middle)

Previous last name (if applicable): _____ Date of Birth ___/___/___

GENDER:
☐ Female
☐ Male

Mailing Label Information

(Foreign addresses: Use only the first three lines, abbreviating as necessary)

In this section, please print information exactly as it is to appear on your mailing label.

NAME AND TITLE
ADDRESS Line 1:
ADDRESS Line 2:
ADDRESS Line 3:
CITY/STATE/ZIP
Daytime Phone ___ – ___ – ____
FAX or E-mail Number: _____

Educational Background

Degrees	Year Received (or expected)	Name Of Institution
BA or BS		
MA or MS		
PhD		
Other_____		

Thesis Title (Highest Degree) (Abbreviate to 56 characters total)

_____

_____

Current Employment Information (28 Characters per line)

Employer: _____

Department/Division: _____

Position: _____

Professional Activity Information

FIELD OF PHYSICS

		Highest Degree (Check four)	Current Interest (Check four)
1	Astronomy & Astrophysics	1___	1___
2	Acoustics	2___	2___
3	Atomic & Molecular Physics	3___	3___
4	Biophysics	4___	4___
5	Chemical Physics	5___	5___
6	Education	6___	6___
7	Electromagnetism	7___	7___
8	Electronics	8___	8___
9	Elementary Particles & Fields	9___	9___
10	Geophysics	10___	10___
11	High Polymer Physics	11___	11___
12	Low Temperature Physics	12___	12___
13	Mathematical Physics	13___	13___
14	Mechanics	14___	14___
15	Medical Physics	15___	15___
16	Nuclear Physics	16___	16___
17	Optics	17___	17___
18	Plasma Physics	18___	18___
19	Physics of Fluids	19___	19___
20	Thermal Physics	20___	20___
21	Solid State Physics	21___	21___
22	General Physics	22___	22___
23	Condensed Matter Physics	23___	23___
24	Space Physics	24___	24___
25	Computational Physics	25___	25___
26	Accelerator Physics	26___	26___
27	Superconductivity	27___	27___
28	Surface Science	28___	28___
29	Non-Physics	29___	29___
30	Quantum Electronics	30___	30___
99	Other (Please Specify)	99___	99___

_____

CURRENT WORK STATUS

(Check one)

1___ Full-time Studies
2___ Part-time Studies
3___ Part-time Studies/ Employment
4___ Post Doc./Res. Assoc.
5___ Teaching/ Precollege
6___ Faculty, non-tenured
7___ Faculty, tenured
8___ Long-term/ Permanent Employee
9___ Inactive/Unemployed
10___ Retired
11___ Self-employed
12___ Other (Please explain)

_____
_____

TYPE OF WORKPLACE FOR CURRENT OR LAST WORK

1___ University
2___ College - 4 year
3___ College - 2 year
4___ Secondary School
5___ Government
6___ National Lab
7___ Industry
8___ Non-Profit Institution
9___ Consultant
10___ Other (Please explain)

_____
_____

TYPE OF WORK ACTVITY

Choose four numbers from the list below of the activities in which you engage most frequently.

1___ Basic Research
2___ Applied Research
3___ Development and/or Design
4___ Engineering
5___ Manufacturing
6___ Technical Sales
7___ Administration/ Management
8___ Writing/Editing
9___ Teaching- Undergraduate
10___ Teaching- Graduate
11___ Teaching- Secondary School
12___ Committees/ Professional Org
13___ Proposal Preparation
14___ Other (Please Specify)

_____
_____

DEGREE TYPE (Highest)

1___ Theoretical
2___ Experimental
3___ Both
4___ Other (Please explain)

_____
_____

Ethnic Identification

☐ Black ☐ Native American ☐ Caucasian (Non-Hispanic) ☐ Other (Please specify) _____

☐ Hispanic ☐ Asian or Pacific Islander ☐ Do not wish to specify

APS Membership Information

Are you an APS member? If not, check here if you wish to receive an application: ☐

If yes, please provide your APS membership number, if available, from the top left of an APS mailing label: ___ ___ ___ ---___ ___ ___ ___ ___ ___ ___

APS Membership: (Please Specify)

Divisional Affiliation(s) _____

Topical Group Affiliation(s) _____

Forum Affiliation(s) _____

Thank you for your participation. The information you have provided will be kept strictly confidential and will be made available only to CSWP & COM members and APS liaison personnel. Please return this form to the address on the reverse side.

Women's Colloquium/Seminar Speakers List (CSSL) Enrollment/Modification Form • 1993-1994

The *Colloquium Speakers List of Women in Physics* is being compiled by The American Physical Society Committee on the Status of Women in Physics. The list will be maintained by the APS office in a listing by state and a listing by field. Comments, questions and entries should be addressed to:

Colloquium Speakers List of Women in Physics • APS • 335 East 45th Street• New York, NY 10017

To enroll or to update your current entry, please fill out this form and return it to the address above. Please print clearly or type.

Name _____ Telephone _____

Institution _____ FAX _____

Address _____ EMail _____

_____

City _____ State _____ Zip Code _____

☐ New Entry ☐ Modification of Existing Entry

To register a new title, give the title as you want it to appear (first word and proper nouns capitalized) in the left column below. Then check the section(s) where it is to be inserted, and the audience(s) for which it is suited. Also check the box above if this is a MODIFICATION of an existing entry. If more than four talks are registered, please use an additional copy of this form, stapling them together. A limit of seven total entries (check in right hand column) will be imposed.

TALK TITLE	PHYSICS SUBFIELD		AUDIENCE
1.	☐ Accelerators ☐ Astrophysics ☐ Bio/Medical ☐ Chem/Statistical ☐ Cond Matter ☐ Education ☐ Env/Energy	☐ FluidPlasma ☐ Geophysics ☐ Interface/Device ☐ Molec/Polymer ☐ Nuclear/Particle ☐ Optics/Optical	☐ Colloquium ☐ Talks for General Audiences ☐ High School ☐ Middle School
2.	☐ Accelerators ☐ Astrophysics ☐ Bio/Medical ☐ Chem/Statistical ☐ Cond Matter ☐ Education ☐ Env/Energy	☐ FluidPlasma ☐ Geophysics ☐ Interface/Device ☐ Molec/Polymer ☐ Nuclear/Particle ☐ Optics/Optical	☐ Colloquium ☐ Talks for General Audiences ☐ High School ☐ Middle School
3.	☐ Accelerators ☐ Astrophysics ☐ Bio/Medical ☐ Chem/Statistical ☐ Cond Matter ☐ Education ☐ Env/Energy	☐ FluidPlasma ☐ Geophysics ☐ Interface/Device ☐ Molec/Polymer ☐ Nuclear/Particle ☐ Optics/Optical	☐ Colloquium ☐ Talks for General Audiences ☐ High School ☐ Middle School
4.	☐ Accelerators ☐ Astrophysics ☐ Bio/Medical ☐ Chem/Statistical ☐ Cond Matter ☐ Education ☐ Env/Energy	☐ FluidPlasma ☐ Geophysics ☐ Interface/Device ☐ Molec/Polymer ☐ Nuclear/Particle ☐ Optics/Optical	☐ Colloquium ☐ Talks for General Audiences ☐ High School ☐ Middle School

ANNOUNCEMENTS

CALENDAR

The **APS Committee on the Status of Women in Physics (CSWP)** is pleased to announce the following reception, hosted by CSWP Chair Bunny Clark (Ohio State University). All are cordially invited to attend!

Asilomar, California (APS Division of Nuclear Physics meeting): On Friday, October 22nd, 1993 at 4:30pm, Sharon Bertsch McGrayne will speak about her latest book, *Nobel Prize Women in Science*. An open reception will follow (5:00-6:30pm). This reception will be co-sponsored by the APS Committee on Education (COE).

ANNOUNCEMENTS

The Women in Plasma Physics will host a complimentary wine and cheese reception at the Adam's Mark Hotel on Monday, 1 November from 4:30 p.m. to 6:00 p.m. in St. Louis, Missouri. This reception will be held in conjunction with the 35th Annual American Physical Society Division of Plasma Physics meeting, 1–5 November 1993. Linda Vahala of Old Dominion University will initiate a discussion period. All meeting participants are invited to this reception and discussion. For more information, please contact Linda at (804) 440-4621 (e-mail: u1026@c.nersc.gov) or Saralyn Stewart at (512) 471-4378 (email: stewart@hagar.ph.utexas.edu)

A Hemispheric Physics Meeting is planned for Cancún, Mexico during the week of September 26–30, 1994. The meeting, sponsored jointly by the Canadian Association of Physicists (CAP), the American Physical Society (APS) and Sociedad Mexicana de Física (SMF), will consist of plenary and parallel sessions in the following areas:

* Atomic and Molecular Physics
* Condensed Matter Physics
* Mathematical Physics and Relativity
* Material Science
* Nuclear Physics
* Optics
* Particles and Fields
* Physics and Society (e.g., global change research, environmental problems, energy conservation)
* Statistical Physics and Thermodynamics
* Education

The parallel sessions will feature invited presentations, contributed papers, and opportunities for poster presentations. Special tutorial sessions for students are planned for the weekend preceding the meeting. The official language of the meeting will be English. Poster contributions in English, Portuguese, Spanish and French will be accepted.

A detailed announcement of the Cancún meeting is available from the SMF. Those interested in participating are asked to send the following information to the Local Organizing Committee via e-mail (CAM94@CINVESMX):

-NAME:
-AREA OF RESEARCH:
-INSTITUTION:
-DEPARTMENT:
-CITY:
-E-MAIL:
-TELEPHONE:
-FAX:

Feminist author and educator Sheila Tobias, who has written numerous books and articles on women in science and mathematics, and who has contributed on several occasions to the CSWP *Gazette*, is currently seeking respondents for a questionnaire. The material from the questionnaires will become part of a book by Tobias, the third in a series published by Research Corporation of Tucson, Arizona.

If you are willing to answer a career questionnaire, please contact Sheila Tobias at the address below. The questionnaire should take 40 minutes and be completed at one sitting. Be assured that no information you provide will ever be identified with you personally (note: there is no name, address or institutional affiliation requested). All findings will be reported in aggregated form (with some direct quotations attributed only in this vein: "a mid-career male working in the area of synthetic chemistry...") to preserve your anonymity. You will receive a draft of the report that will be forthcoming from this survey and an update on how the material is intended to be distributed.

Please send your reply to:

Sheila Tobias
P.O. Box 43758
Tucson, AZ 85733-43758

The 1993 edition of *Professional Women and Minorities: a Total Human Resource Data Compendium* will be available from the Commission on Professionals in Science and Technology in late September. The new edition will be $125, but there are a limited number of the 1992 edition available for the reduced price of $75. This book is an excellent resource for statistics on women and minorities in all fields of science. For more information, please contact: Ms. Betty Vetter, Commission on Professionals in Science and Technology, 1500 Massachusetts Avenue, Washington, DC 20005. Tel: (202) 223-6995.

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