

## STATUS

NEWSLETTER OF THE COMMITTEE ON THE STATUS OF WOMEN IN ASTRONOMY

October 1987

*Published by the Committee on the Status of Women of the American Astronomical Society*

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## COMMENT

As I had hoped, STATUS is no longer my sole responsibility. Judy Schultz (Assistant Editor of the AJ) has taken over as editor and can provide both better writing skills and more fidelity to deadlines than I ever could. Pam Hawkins of the AAS Executive Office is helping with printing and distribution; I've sent her the rest of the funds you generously contributed for this purpose.

Lest the newsletter lose its "off the wall" flavor, I will still be writing the advice to the job-weary (the "Dear Andromeda" column) and will gladly act as filter for the more outrageous "SEX-SEX-SEX" contributions. Send them to me with the confidence that by the time I've written them up, everyone will think I made them up myself and will never guess your identity: Susan Simkin, Dept. of Physics and Astronomy, Michigan State University, East Lansing, Michigan 48824.

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## Why the AAS Needs the CSWA

*by Lee Anne Willson, Chairperson Committee on the Status of Women in Astronomy*

I was asked to prepare a few paragraphs outlining the goals and purposes of the Committee on the Status of Women, because "many people are not sure what these goals are." One goal is clear: to ensure equal opportunity for women in astronomy. This does not instantly translate into a program of specific actions and functions, however, so this does not really answer the question of what the CSW needs to or intends to accomplish. The CSWA's official function is to recommend to the council "practical measures that the AAS can take to improve the status of women in astronomy and to encourage their entry into the field." Implicit in this mandate is the assumption that women's status needs to be improved i.e., that it is presently inferior to men's status. The rectification of this inequality is thus an essential part of the purpose of the committee.

In my opinion, the CSW serves several specific functions that together produce progress towards achieving equal status and equal opportunity for women in astronomy:

**1. The CSW provides increased visibility to the community of women astronomers.** The existence of the CSW provides visibility; the official function of the CSW to recommend "positive measures" to the Council provides visibility; and the CSW's maintaining of lists of women astronomers, used to identify women candidates for committees, lectures, positions, or awards, also provides visibility.

**2. The CSW monitors the AAS policies and publications to prevent bias.** For example, an early version of the booklet, "Careers in Astronomy," recommended including marital status in one's resume a risky practice for female applicants. A job advertised in the Job Register a number of years ago called for applicants to submit resumes to include "...date of birth, marital status, number of children, and [professional qualifications]" (in that order). A complaint by two AAS members resulted in a short letter from the person placing the ad, expressing his surprise and puzzlement that

anyone would find anything objectionable in this practice. Such complaints from CSWA carry more weight than complaints from individuals.

**3. The CSW collects and distributes information on careers in astronomy.** This includes surveys and analyses of employment data, and information on career opportunities for women in astronomy.

These are the essential functions of the CSW, but there are other important functions that it serves in response to the needs of women in astronomy.

**4. The CSW provides a channel for complaints concerning discriminatory policies or practices.** While the CSW has no power to act on complaints, it can help in channeling such complaints to where they will have the best effect.

**5. The CSW promotes discussion and sharing of ideas concerning the extra complications associated with the combination of an astronomical career with the other obligations.** For example, a recent panel discussion focused on the problems of two-career couples in finding positions and the added difficulties associated with raising children when both parents are pursuing demanding careers. CSWA has also encouraged AAS meeting organizers to make some provisions for child care during the meetings.

There is no doubt that professional recognition of women in astronomy has improved in recent years: a quick reading of the lists of officers and award-recipients of the AAS from the mid-seventies documents an improvement. Since 1970 there has also been a sweeping change in the procedures by which professional positions are filled: the present practice of widespread advertising for open positions makes it easier for women to ensure that they are at least considered.

Given all this progress, do we still need the CSWA? I think so. Some of the traditional attitudes towards women that cause us difficulties in our careers are still held by a substantial number of our male colleagues, despite the changes in our institutions. Also, as I look around, I see more women in astronomy choosing specialties-theoretical studies, high energy astrophysics, cosmology-that are closely allied with physics, a discipline that has a substantially smaller percentage of women than does astronomy, and where women still experience less acceptance.

I am the only female faculty member in my 44-"man" physics department. Some of my colleagues have noticed that when I am away, there is an increase in the use of gender-biased language at faculty meetings. Similarly, the presence of any woman on a decision-making board helps protect the interests of women, even if she takes no action and makes no specific defense of women's issues. Independent of its specific actions, by its continued existence the CSWA provides a force directed towards achieving equal status and equal opportunity for women in astronomy.

## **WORKING SOLUTIONS. I. A REPORT ON THE CSWA- SPONSORED PANEL DISCUSSION AT THE JUNE 1987 AAS MEETING**

*by Judy Schultz*

About ten to fourteen percent of degree-recipients in astronomy today are women. Most of them marry (usually other astronomers or other scientists), and have children. To seek to understand better the problems confronted by dual-career families, to uncover a variety of ways women and men are finding to solve them, and to offer support to all those engaged in the attempt, the Committee on the Status of Women in Astronomy presented a panel discussion, entitled "Working Solutions," at the 170th Meeting of the American Astronomical Society, held in June in Vancouver, B.C. Comprised of five women and two men, the panel included two husband-and-wife teams. Each member of the panel was an astronomer, six to seventeen years beyond receipt of her/his Ph.D.; all had spouses; each family included from one to two children; and they came from every area of North America. With honesty and courage they shared their personal experiences and described their own methods

of balancing the demands of a career with those of a family. They made it clear that the demands of a career and a family *could* be balanced; that the balancing act required a lot of time, attention, commitment, and effort: and that they felt it was costly but worth doing,

Three broad factors contribute to the difficulty of managing both a career and a family: (1) the individuals' unpreparedness for the problems to be faced, (2) inadequate models of marriage, based on a one-career, male-dominated, family, which contributes to feelings of guilt and stress in persons engaged in these non-traditional families; and (3) the lack of support from the professional community and from society.

Each woman panelist confessed that, before marrying, she had not given serious thought to the problems marriage would precipitate. Once married, however, the problems were clear and unavoidable. The first: finding a job. In some cases this meant finding two astronomical jobs in the same geographical region. More often than not it was the woman who felt she needed to make a compromise. One of the panelists, married to a non-astronomer professional who is fairly well established, could not move to pursue a job; she is currently working in a regular, part-time position. Having at last found a job, another astronomer complained that she has a twelve-hour teaching load each semester and no time for research. Another found a full-time teaching/research job, but it is several hours away, and she sees her family only periodically. Another solution is for each partner to take a job at separate but geographically proximate institutions: a two-astronomer couple who teach at institutions within forty miles of each other find their work very satisfying but their schedules extremely demanding.

An increasingly attractive alternative to finding two jobs is that of finding one job and sharing it. The panel included a husband-and-wife team of astronomers whose first academic position was shared. They reported that the advantages of job-sharing were many: (1) increased time for travel, (2) increased time for research and writing grant proposals, (3) fewer teaching responsibilities, (4) the ready availability of someone to take over a class while the other is out of town, and (5) more time for family life. For this couple, job-sharing provided them with a place where both could work and maintain ties with the professional community. The disadvantages, however, were also many: (1) the job becomes in reality not half-time but two-thirds time, (2) tenure is difficult to secure; (3) applying for grants is sometimes difficult, because of the stipulation, for some grants, that principal investigators be employed full-time at their institutions; and, finally, (4) the possibility that one's colleagues may be suspicious if they perceive job-sharing as the couple's attempt to "sneak in by the back door."

A second, predictable but still unexpected problem confronting astronomer-families is the limitations of time. Whereas finding time for family life is difficult for any two-career family, or, indeed, for any family busy with outside obligations, certain time-problems are unique to astronomers. Their profession requires them to be absent from the home a great deal. Scheduling observing runs is a major difficulty for the two-astronomer family and may be a source of resentment in a non-astronomer spouse or a source of hurt and misunderstanding by children. On the other hand, when both spouses are astronomers, each is freed from the need to justify or explain his/her absences. Yet scheduling remains a source of stress and-all too often, some of the panelists confessed-the responsibility for making detailed arrangements is borne by the woman.

The astronomical community thrives on meetings, but married astronomers with families, according to one of the male panelists, must view attending meetings as a luxury. He recognizes that that decision "cuts us off from new contacts," and makes it difficult for him to receive news of current research, information about jobs, ideas for new projects, and opportunities to be influenced by scientific and political forces. But, when time is precious, observing runs remain a first priority and specialist sessions a second. The twice-yearly meetings of the American Astronomical Society of necessity assume a lower priority. Thus the hard-working institution-based and family-based astronomers risk losing touch with their colleague's in the profession.

Constraints of time are felt on the job as well as at home. It is very tempting to want to work longer hours, Most of the couples agreed that it was very difficult but very important not to go back to the office or lab in the evening, not to stay late at night, and not to go in to work on the weekends. The schedule one kept as a graduate student is no longer appropriate. Moreover, it is very important, one member of the panel insisted, to set aside some time for one's relationship with one's spouse. He described how he and his wife make time for each other by "kicking the kids upstairs" and cooking dinner alone, together.

Some of the panel members confessed that there is still a functional inequality of work distribution in the home: in their homes the women said they were still being viewed as the primary care-givers for their children. Bringing the small child to the work-area is usually not a solution-or, if so, a very short-term one. Probably every woman astronomer has a "horror" story to tell about going observing with her small child (who sleeps all night while Mommy works, then wants to play all day while Mommy wants to sleep); teaching a class with her pre-school child present (doing very distracting things quietly at the back of the room. unseen by the students but in full view of the parent); attending a conference and giving an important paper (while her child. held nervously by her spouse, howls at full amplitude from the back of the room). Infants may accompany a mother to work for six months or so, but sooner or later daycare arrangements become a necessity, and they are usually the responsibility of the mother.

When discussions of day care arise, so also does the topic of guilt. Guilt is probably the problem that looms the largest and has the most debilitating effects on dual-career couples, yet it is also one of the most difficult to talk about. Even talking about guilt makes one feel guilty. While feelings are powerful, they may not be true; recent research, in fact, supports working mothers: "The literature on maternal employment, however, presents very little evidence that maternal employment, *per se*, has direct negative consequences on a child's development. Indeed the argument can be justifiably made that in some ways having a professional, working mother and father may benefit the child's psychological development" (Valerie Hess in *The Two-Career Family: Issues and Alternatives*, ed. Peterson, Richardson, Kreuter [Washington, D.C., University Press of America, 1978]). "Other women made me feel guilty," one astronomer confessed about sending her six-month-old child to a neighbor. Some daycare professionals also know how to make mothers feel guilty: they confront a parent with a set of inflexible rules and regulations and ask questions like "How runny *is* the nose?" with absolute seriousness. Guilt can also come from teachers, other mothers, one's own mother, school guidance counselors, nurses, doctors, neighbors, and sometimes from even from one's husband and children. Guilt also, of course, comes from within, from a woman's sense that she is not a "good" mother if she is not a traditional mother.

A solution may be to work part-time until the children are of an age that the mother feels she can assume full-time professional responsibilities. One astronomer described the part-time working arrangement she has made and in which she enjoys many advantages; yet she also, admitted she felt she was not fully respected by her colleagues *because* she worked only part-time. She, too, feels guilty. On the one hand, she says, the amount of work she can do is less than that of her colleagues, but the quality of her work, she feels, is not diminished. Moreover, freed from the obligations of committee-work and most of the "chaff" of academic life, she feels she may even have more time than her full-time colleagues to do "real astronomy." Nevertheless, she wonders if others in her department feel that "if you don't work full-time, you are not a serious scientist."

No one would argue that a family takes time away from one's career. Are there advantages? Yes, says one young mother. "I would feel poorer without my time with my child. He's interesting." Yet she is aware that her affection for and interest in her child are not negotiable items in the marketplace of academia and research. During her pregnancy and in the first months of her child's life, she felt she should ask for no special favors and hope for no breaks from her colleagues. Unfortunately they now think, she said, that giving birth to and caring for an infant while

progressing in her career was easily accomplished. "Perhaps," she says, "I should have let the difficulties become more evident."

Whether or not a woman is a good parent, whether or not she is a serious scientist, her estimation of herself depends in part on others' estimation and treatment of her. "The woman who decides to manage concurrently the three careers of wife, mother and professional-the super-woman," writes one researcher, "cannot compete with a traditional male colleague who has a wife that manages his home and works to facilitate his career" (Jacquelynne E. Parsons, *et al.* in *Work, Family Roles, and Support Systems*, ed. Golden (Ann Arbor: University of Michigan Center for Continuing Education of Women, 1987, p. 101]. And yet many of these women feel that they must compete with their male colleagues, and that their occasional or long-term inability to do so somehow indicates a short-coming in themselves. Consequently, on the job they experience guilt and stress.

Family life, too, becomes stressful. There are always "numerous, small, practical difficulties that have an inhibiting effect" on one's daily ability to function. As one astronomer put it, solving problems in a two-career family takes time and energy-every day. Decisions cannot be postponed. Problems arising in the family are different from those connected with one's career, but they are no less important, and many of them are urgent. They produce "lots and lots" of stress for both spouses, and "lots and lots" of anger, frustration, and guilt. Stress is especially devastating, because, as one woman astronomer put it. "It can erode the marital relationship, the nurturing ability of parents, and one's productivity on the job."

What are some solutions? One is to change the model, beginning with the partners' expectations of themselves in their marriage: the woman "must strive to overcome the internal and external barriers to achievement in pursuit of her career. She must be able to accept not just emotional but practical support from her husband. He in turn must be willing to offer such support and accept the reality of a nontraditional wife who might not be so readily available to promote his success. Both must avoid destructive competitiveness over status" (Hess, *The Two-Career Family: Issue and Alternatives*).

"I work harder now than I ever did as a graduate student!" exclaimed one young astronomer-mother. While encouraging the predominately graduate-student audience to believe that "You can do both!"-raise a family and succeed in astronomy-the panelists who have been doing it longer showed signs of weariness. "Is there something wrong with our society as a whole," one of the women-astronomers asked, "when so many of us have to face these problems in isolation?" To them there seems no help or support, yet they are seeking to provide the society of the future not only with well-adjusted, well-loved, bright young adults but also with the fruits of their professional endeavors.

Specifically, what can be done? The list is predictable but also lamentable in its predictability, reminding us who care that we have not actively cared enough. We need better day-care providers: this means more economical rates, facilities for the caring of infants and children located close to the institutions where astronomers are working, and perhaps education programs on-site. We need to ameliorate our view of half-time employment, for both men and women, and be willing to consider job-sharing options for couples, half-time positions, that can also be tenure-track, and benefits packages that are realistic and fair.

There is a real need for a communications and support network for couples who are attempting a new kind of marriage and a new attitude toward their careers. Having changed their behavior, they have also succeeded in some part, large or small, in changing society's attitudes toward their behavior, but not quickly or broadly enough. The largely unconscious models of marriage and career paths have changed little. It is no wonder these couples feel isolated, lonely, and alienated. Their style demonstrates a commitment to "egalitarian values [that] often run counter to long-held traditions concerning the institution of marriage. Because of these traditions, a man and a woman are not entirely free to form a relationship based on egalitarian values. They enter it with abilities,

expectations, and attitudes shaped by their earlier socialization, find their choices constrained by marketplace realities, and face continuing pressures from society at large to maintain conventional conceptions of marital and parental roles" (Audrey D. Smith and William J. Reid, *Role-Sharing Marriage* [New York: Columbia University Press, 1986]). What is needed is a more compassionate understanding of the problems these couples are facing; a willingness to relax our "conventional conceptions" and let a new model emerge; and a patience with the nervousness and discomfort of the couples themselves, as they struggle to adjust the model *in* their heads (which is, of course, the traditional model) with the model emerging from their choices. Collegial support and an encouraging environment are rare but need not be; where they are present, stress is reduced, guilt is lessened, and effectiveness and productivity are increased. If the number of graduate students *in* the audience at the panel discussion is any indication-many of them already committed to dual career marriages-we are probably going to see a lot more of this kind of marriage in the future.

## **NSF Funding: Emphasis on Women**

*[The following is a summary of the talk given by Dr. Margrete S. Klein at the June 1987 AAS meeting. Dr. Klein is with the Division of Research Initiation and Improvement at the National Science Foundation and the presentation was aimed at informing women astronomers of sources of funding within NSF that are available to them.]*

The participation of women in professional science fields is increasing: women received 40% more science/engineering Ph.D. degrees in 1985 than they did in 1978, and they earned 30% of all science Ph.D. degrees in 1985. However, women are still under-represented in the scientific labor pool: in 1984 they represented only 13% of the employed scientists/engineers. Furthermore; women have a disproportionate percentage of lower-ranked positions: 37% of faculty women Ph.D. scientists/engineers were tenured in 1985 compared to 63% of men, 31 % of women were in non-tenure track positions compared to 14% men, and in 1986 8% of women compared to 2% men were underemployed. In terms of NSF research support, in 1986 only 7.7% of the total NSF awards went to female investigators. Thus, NSF has become concerned over the under-utilization of women scientists and engineers and has instigated several programs specifically intended to encourage and advance the careers of women through providing financial support for research.

The first program, "Visiting Professorships for Women," is designed both to enhance the research activities of the women receiving the award (as a sabbatical would) and to provide a role model to the faculty and students of the institution she visits. The applicant must have a Ph.D. and research experience, have recently been affiliated with a U.S. institution, and not have a salaried position at the (host) institution she will be visiting. The award, which can be for up to two years, provides for more than 50% of the person's *time* to be spent on research and the remainder to be spent on interactive activities such as teaching, participating in seminars, and counseling students. The awards cover costs such as salary, travel, some moving expenses, salaries for support people, supplies, computer services, and indirect costs to the host university. The proposal is in two parts-a regular research proposal and a plan for interaction and is due October 1. The research portion goes through a regular peer review. On the basis of those scores, proposals (~2/3) are sent on to a multi-disciplinary panel, which considers all aspects of the proposal and makes recommendations. Awards are announced in April. In 1987, the VPW program received 93 proposals and made 24 awards, totaling \$2.3 million. One of the awards went to an astronomer.

Three programs are supported under "Research Opportunities for Women." They are "Research Initiation Awards," "Research Planning Grants," and "Career Advancement Awards." The first, "Research Initiation Awards," are intended for women who have never been Principal Investigators before or whose research careers have been interrupted for two of the last five Years. The proposals are written like regular NSF research proposals and submitted to the specific research program at the Foundation. The program, "Research Planning Grants," is intended for those with little research

experience. It is hoped that through these grants women can gain experience and begin to compete successfully *in* the regular research programs. These awards are for a maximum of \$12,000 for 12 months. The proposals are shorter than those written for the regular research programs, and the deadline is January 15. The objective of the third program, "Career Advancement Awards," is to increase a woman's scientific productivity and thus to further her research career. For example, these awards can be used to switch research sub-fields. The CAA is for a maximum of \$50,000 for 12 months with an additional \$10,000, if needed, for equipment. The program *is* open to women who have previously been Principal Investigators. The proposals are shorter versions of the regular NSF proposals, and the deadline is January 15. So far, for 1987, the Research Initiation Program has received 76 proposals in math and the physical sciences, the Research Planning Grants 15 applications, and the Career Advancement Awards 21. Of these, 35 awards have been made, for a total of \$9.7 million.

Women interested in more information or in obtaining application forms should write or call Dr. Margrete S. Klein, Division of Research Initiation and Improvement, NSF, 1800 G St. NW, Washington, D.C. 20550. Her telephone number is (202) 357-7734.

## **A REPORT ON THE AAAS CONFERENCE "WOMEN IN SCIENCE AND ENGINEERING: CHANGING VISION TO REALITY"**

*by Julie Lutz, Washington State University*

I had the pleasure of attending and being a discussion leader at the first AAAS national conference on science and engineering held at the University of Michigan from July 29 to 31, 1987. Approximately 200 people attended the conference. They included practicing scientists and engineers from academia, government and industry; representatives from government agencies such as NSF and NIB; staff from the National Academy of Sciences and the National Research Council; representatives of private foundations; congressional staff; and people who do research specifically on issues related to the status of women and girls in science and engineering. The goal of the conference was to generate recommendations for policies, research and interventions (e.g. special programs) that will increase the recruitment and retention of girls and women in scientific and technical fields.

We were provided with statistical evidence of an emerging problem. In the past, scientists and engineers have come largely from the pool of white, American males. Since the number of people in this group is diminishing, and since most participants' today in U.S. graduate programs of science and engineering are foreign students (who plan to return to their own countries), we project shortages in many science and engineering fields by the end of the century. This is a gap that could be filled by young women, but they have not been moving into scientific fields, particularly into the physical sciences and engineering, in sufficient numbers to counteract the projected shortages.

Young girls' "disinterest" in science and math starts in elementary schools. Researchers have found that, in general, more instructional time is devoted to young boys than to young girls, particularly in math and science. Boys are generally more likely to be given "responsible" or "leadership" roles during science demonstrations and experiments. Teachers' and parents' expectations are higher for boys than girls in science and math, compared with their higher expectations for girls in reading. There are not, huge differences in the treatment of boys and girls, but through the years of elementary school, many little things can add up. If children, however, are given "hands-on"-style science instruction by a well-informed teacher, the numbers of both girls and boys who see themselves as competent scientists increases dramatically. Girls, however, tend to favor hands-on, cooperative instruction to a greater degree than boys.

At the college level, young women drop out from these math, science, or engineering majors at a

higher rate than undergraduate males. There were many sessions on undergraduate education that discussed model programs for retention of women. Needing to be addressed at the graduate level are inequities in awards of financial aid. Ways of advising and mentoring women students-at secondary, post-secondary, and graduate levels-were hot topics.

At the professional level, there are still great differences in the types of positions and salaries men and women receive. The difference is not apparent at the beginning, but five to ten years afterwards, and continues to retirement.

The topics above are just a handful of the ones addressed at the conference. Part of the time was spent in small-group discussions formulating recommendations. The long list of recommendations will be formally drafted by the organizing committee and then submitted to the AAAS and to a congressional task force studying women and minorities in science and engineering.

*Editor's Note:* Because of her involvement in this conference, the Congressional Task Force on Women and Minorities in Science and Engineering asked Julie to testify at a hearing in Albuquerque on September 22. If you want your voice also to be heard, Julie invites you to send your opinions, concerns, or descriptions of your experiences directly to: Task Force on Women, Minorities, and the Handicapped in Science and Technology: 330 C Street NW, Washington, D.C. 20201.

## **WORKING SOLUTIONS. II. PERSONAL NARRATIVES**

*The following articles describe how three astronomers are reconciling the demands of their careers with their responsibilities to a marriage and children. By publishing their articles the CSW A hopes to offer support to these persons, to generate appreciation for the diversity of solutions astronomer-families may find workable, to encourage those engaged in the "balancing act" to continue, and to urge those who are considering it to get started.*

*Subsequent issues of Status will include more articles in this series-including, I hope, articles written by wife-and-husband teams of astronomers and articles written by astronomers who are husbands and fathers. If you are interested in describing your "working solution," or if You would like to suggest the name(s) of someone who might be asked or coerced into contributing, please write to Judy Schultz, call (206) 545-2150, or send a Bitnet message to. ASTROJ@UWAPHAST. All requests for anonymity will be honored and all contributions will be published.*

*I hope you will feel, after reading "Working Solutions" I and II, that these articles raise important issues that affect both men and women in astronomy. Lee Anne Willson reminds us that one of the primary tasks of the CSWA is to make recommendations to the AAS Council. There may be time to do so at the January council meeting if you are willing to submit a suggestion or a draft of a recommendation to the committee. Any communication with Lee Anne or me will begin the process.*

### **"I feel. . . as if I have achieved a balance"**

*by Barbara J. Anthony-Twarog*

I am most impressed by two things. First, I have been incredibly lucky. Maybe I feel lucky because I never expected to find that balancing two similar careers in one family would be anything but difficult. Second, I am convinced that it *is* getting easier for women in this profession. I can't pass on the luck, but we all have to work to keep it possible for young women to choose the career they want without relinquishing some of the other, equally important, things in their lives.

My astronomer-husband and I have handled some of the problems involved in finding jobs by an obvious solution: we both worked for half-pay (I'm happy to say that this situation is no longer true it would be next to impossible to work full time for half pay and afford child care). To begin with, this certainly gave us an advantage in the job pool, but it left us with the less-than-flattering image of being 'a bargain at half the price.' By working in the same department we have enjoyed some

advantages: for example, we can' easily cover each other's teaching loads when one of us is away observing. We work in a Physics-Astronomy department that is mainly physics, and where some (happily few) of our colleagues regard astronomy as a haven for failed physicists. To both of us this can be frustrating and angering. Having a spouse who is also an ally and confidante and who knows what it's like sometimes to feel second-class can make a critical difference.

The advantages of our arrangement have been most obvious since we have tacked parenthood onto our list of hobbies. I was lucky to have had an easy pregnancy but not so lucky in my recuperation afterward, and throughout my husband was able to help me keep my commitments at work. In retrospect, I think we should have spread our workloads around a little more outside our family. We got through the semester and a couple of observing trips, but we were together very little at a time that was important to be spending with our baby and with each other. I got very bored with people telling me that "babies change so fast in these first few weeks," but my memories of those first couple of months are mostly of just being tired all the time.

I was ready and eager to go back to work, and when J did, I watched for signs of slacking off, which I had also heard from a great many people was the sure end of an astronomer who felt compelled to become a mommy. I've learned to pack a lot more work' into an eight-hour day than as a graduate student I used to cram into fourteen. We have a healthy and happy kid, and I feel more engaged in my work than I ever did.

All in all, I've really enjoyed being a parent, but I recognize that a lot of that has depended on having a reasonable amount of job security, an equally reasonable amount of cooperation from my colleagues, and maybe on being just a little older than many other first-time parents. My son is fascinating slightly more often than maddening, and so gorgeous (to me) and charming that it amazes me at least once a day that I had anything to do with it. Certainly there are many times that he makes doing my job more difficult or even impossible. But I feel good, as if I have achieved a balance between my work and my life, which means, I think, that my life now includes more than my work.

In summary, children are a pain in the neck, but they are neat companions, too, and they have a dandy way of forcing you to keep evaluating your priorities. By way of practical advice, I offer the following:

1. The time of conception is not too soon to begin looking for child care.
2. Kids love to be around other kids, so if you can handle viruses coming to your child a little sooner and maybe more often, group care is terrific. Some of the advantages include a reasonable degree of certitude that your kid is not watching TV all day or eating cocoa puffs for lunch.
3. Force your schedule to accommodate - absolutely accommodate - time off after your baby is born. You'll probably get back to speed quicker because of the time you spend resting.
4. If you can manage to nurse for at least a while, you'll probably remember it with some of the happiest feelings of your life. You don't have to be religious about it, but it gets pretty easy. I nursed my baby at a faculty meeting once, and I'll bet my colleagues still don't know.

### **". . . persistence ultimately pays off"**

*by Susan Lea*

I married a man whose career was already established when the ink on my Ph.D. diploma was not even dry. We lived on the west coast, and finding a job was my first problem. I was lucky to get a two-year post-doc within an hour's commute of home. The drive, however, was miserable, and I would come home at night exhausted and non-communicative. My husband soon discovered that if he would cook me a big breakfast in the morning, I would come home cheerful. Fortunately he is a morning person as well as a good cook, and he actually enjoyed his new task. Thanks to him, and to my wonderful colleagues, those two years rank among most successful and happy of my career.

What next? I sent out over fifty letters to every educational institution within a hundred miles

that had the remotest chance of needing an instructor for at least one physics or astronomy course. I got an equal number of rejections. Finally we decided to apply across the country. We both got several offers for temporary or post-doc positions, so we rented the house, packed a small number of possessions into the car, and headed East.

I have mixed feelings about that year. We both missed our friends and we both hated the climate, but work went reasonably well for both of us. Toward the end of the year I got a good job offer from an east coast institution, and I thought very hard about accepting it. I tried to get my husband to look for something in the area, too, but he made only a few half-hearted efforts, and it was pretty obvious that he wasn't really interested. So we headed back West, where a colleague had submitted a proposal that included funds for me. I had also written a proposal to NASA. Luckily, both were funded, and I remained employed.

Next came the big question: kids or no kids? We decided it was time, and my husband promised to do his share of child care, etc. He also decided to apply for a payload specialist position to fly on the first SPACELAB shuttle flight. He was accepted into the program the same month I got pregnant. Consequently, he was away from home for most of my pregnancy, and the next few years, too. So much for promises! My institution came up with two weeks (1) of pregnancy leave, so I went on half-time for six months after my daughter was born. That also stretched the grant money out a little and put off the problems of child-care for a while.

I was becoming increasingly frustrated with a research position at an institution which allowed only tenure-track faculty to be PI's, so when a job opening occurred at a nearby state college, I applied for, and got, the job. My commute time increased from ten to forty-five minutes (on a good day), and child-care hassles increased correspondingly. On more than one occasion I have had to resort to calling a colleague's wife from the station, and pleading with her to pick up my daughter from the babysitter because the transit system has gone haywire. My teaching load is so high that I get stares of incomprehension from colleagues at major universities and research labs. Sometimes I get home so exhausted I don't know whether to weep or scream. But I *do* have a tenured position, and that's worth a lot.

What solutions can we glean from my experiences? First, I think that persistence ultimately pays off: persistence in applying for all kinds of positions, in continuing to do astronomy at some level while personal and professional situations fluctuate, and in continuing to believe you can succeed. Having a certain amount of mobility is important, too. Being able to leave our "home" area for a year enabled me to stay employed continuously, and I am sure that was an important factor in finally getting a permanent position. Couples who can make a permanent move together would probably fare better. Spouses need to support each other's goals. My husband has made a point of attending meetings with me, as the spouse, emphasizing to me, if to no one else, that I am a scientist in my own right. And of course we take turns caring for our child when the other goes to a meeting. It helps to cultivate family or friends who can help out with child care when you both want to go to a meeting, or when the train breaks down.

Looking back, apart from the initial problem in finding jobs, most of our problems have been child-related. Children make life more complicated and difficult, as well as more rewarding. Some problems, however, get easier as the child gets older: my daughter claimed to enjoy the lecture on Newton she heard when I took her to class with me last year. A toddler won't sit still while Mommy lectures.

## **"The problems are not easy to solve. . ."**

*by Katy Garmany*

Probably those of us who finished graduate school *in* the late '60's and early '70's contemplated having both a career and family with naive expectations: nobody was available to tell us how hard it is to work 80 hours a week and sometimes be in two places at once! Astronomy is competitive, and

rightly so, but this means that a parent/astronomer (henceforth p/a) is competing with colleagues who can choose to work 60-hour weeks, travel whenever they need to, and relocate wherever the opportunities are best. These same colleagues may find that their best ideas come to them in the shower, at the dinner table, or while driving home. Our harried p/a is unlikely to have that experience, because the urgent details of managing a home and family leave little room for astronomical inspirations. What can be done to lighten the load?

The difficulties that a p/a encounter are much the same whether the spouse is an astronomer or not. Although it is often assumed that a spouse in a field outside astronomy is free to locate anywhere, in fact very few professions are truly flexible in terms of job locations. Hence my position has developed from that of a post-doc to one in which I support myself completely on "soft money" (NASA and NSF), through grants of my own and those written with other colleagues. This type of position is becoming increasingly common, and has both advantages and disadvantages. The advantages are that I do not have to teach or become involved in numerous committee assignments unless I choose to, and I can concentrate on research. When I do teach, I always feel fresh and enthusiastic. The disadvantages are the lack of job security and, at my particular university, the lack of benefits such as health insurance and retirement plans. Can one spend one's entire professional career relying only on grants which must be renewed yearly? There are a lot of astronomers playing guinea pig.

The choices become even harder with children around. Working at home is not a simple solution: babies don't sleep nearly as much as advertised, and older children have an unending series of needs. Moreover, a child will always come down with chickenpox just before an observing run. My approach has been to hire good sitters and make use of the best available daycare so that I can work with peace of mind. This means paying much better wages than babysitters usually expect, but this insures that I can hire college women majoring in fields such as childhood education, and count on them. Implicit here is the assumption that professional women should not contribute to an exploitation of other women in traditionally underpaid fields.

Now suppose that our p/a has solved (somehow) both the two-job problem and the daily childcare problem, and she is ready to go observing or attend a conference. With a home life already close to the breaking point in terms of responsibilities, the absence of one or both parents may be the last straw. Our p/a will find it impossible to attend all of the meetings that other colleagues regularly show up at. And this is a problem for which I have found no partial solutions.

The problems are not easy to solve, even with the best possible good will on all sides. However, *it* seems to me that a small field like astronomy, in which we know most of our colleagues, is an ideal testing ground for job-sharing, for opening up tenure-track opportunities for part-time positions, for providing childcare at meetings, and a general sharing of experiences of and ideas about career-family issues.

## ***"DEAR ANDROMEDA"***

Dear Andromeda:

I am frustrated and angry. I did very well in graduate school (at one of the "top ten" schools mentioned in the first newsletter), and landed a very prestigious post-doc. I recently [+/- five years] was hired in a tenure-stream position (at one of the 50 or so non- "top-ten universities. Although many of my male fellow-students from graduate school would never have accepted my present position, I knew it had real possibilities for someone like me who is less conventional and can make her own opportunities. (That's why I was able to outshine all of the male students in my graduate classes.) The possibilities are there, and I believe I am doing very well-getting grants and all of the resources I need to do good work, and publishing. There is one factor I did NOT count on, however, and it may well relegate me to the bottom of the ladder, just where my male colleagues told me I

would be by going to a second-rate university (my alternative was to accept a perpetual post-doc at a prestigious university) under a very Important Male - the type of position which leaves no room for professional growth). In my present position, I have very little face-to-face contact with other (scientists) in my immediate field. I have tried spending summers at places where there are a number of people who are active in my field, and I have tried going to conferences (or workshops) in my areas of interest, but I am clearly an outsider at these gatherings and I am losing out on the intellectual interplay which I need in order to continue to grow as a scientist. In particular, I find it impossible to wangle invitations to the IMPORTANT conference in my field, and I find myself sitting in the back row at the non-prestigious conference with a crowd of graduate students, all of whom are vying to make clever comments so they will be noticed. When everyone else goes out for dinner or drinks at these meetings, I'm stuck with the grad students. To make matters worse, many of the speakers at these conferences are men with whom I was in graduate school, men my own age who have a poorer track-record than I have, men who are sometimes lecturing on MY work, MY ideas, and MY papers. AND OFTEN THEY DON'T FULLY UNDERSTAND WHAT THEY ARE LECTURING ON!

*Sincerely,*

*UN-Connected at Podunk U*

Dear Un-connected:

Your lament sounds so familiar that my immediate reaction is to say I'm stymied (this is why I did not answer your letter in the last newsletter). Broken down into smaller components, the problems seem to be these: 1) you are professionally isolated at your present university; 2) you are not invited to the "important" conferences in your field; 3) when you invite yourself to the non-prestigious conferences, you are accepted only as an "audience-filler" with others who have several years less experience than you; 4) you miss out on the "intellectual interchange" that goes on at the conferences you do attend; and 5) you are never invited to speak at conferences, even though other speakers are chosen who discuss your work and your ideas.

In spite of all of these rejections, you still feel you are "as good as the guys" (or better?) because: (a) you could think circles around them in grad school (and still can); (b) you are publishing and getting grants (no small feat for a "newcomer"); and (c) you recognize that they are, after all, discussing your ideas and your work at these conferences.

Before addressing the practical solutions, let me explain some background. First, three truisms:

1) People who "invite themselves" to conferences *never* get to speak and *never* get invited to the important ones. If you receive a "preliminary announcement" - not from a general computerized mailing list and not something you read in the AAS Newsletter-you stand a better chance of an "invite" but *no chance* to speak except in a "poster" session or a ten-minute "contributed" talk sandwiched in with a hundred others (which no one listens to anyhow).

2) If you had accepted the "research position at a prestigious university" you would stand a better chance of getting to speak, but only as a stand-in for the male who was running your group. Since you seem to be aiming for an independent reputation, based on your own merits, I'll assume you do not regret these "lost" opportunities.

3) At a conference you miss out on the "intellectual discussions" which it is meant to encourage. I suggest (and it's only a suggestion) that this is primarily due to your age. I find I can engage in serious discussions with many men who are twenty years younger than I, but with only one or two men my own age or older). Most men my own age just can't seem to distinguish me from their wives or sisters; most men older than I get me confused with their daughters (or their wives when they were younger). Since 98% of the time these wives, sisters, daughters, etc., know nothing about astronomy, the men assume I know nothing either. (In fact, the afore-mentioned women may be rabid feminists-lawyers, doctors, writers, psychologists-and the afore-mentioned males completely

sympathetic with these women's goals, but these men still know that women don't know astronomy.) This is called stereotyping and, because astronomers (male and female) are non-introspective creatures, the chances that they will become *aware* of this behavior, and thus seek to avoid it, are just about zilch. Since you are still fairly young, the supply of non-stereotyping men available for you to talk to is limited to the graduate students. It may well be that you can find a few truly interesting people among those grad students you get "stuck" with. A very talented student who is just finishing up is often much more interesting than a well-established pundit (assuming the grad student is not on an ego trip).

How are younger speakers at workshops chosen? My observations suggest that at least two elements come into play. The first may be called the Promote-Your-Boy Syndrome. Many Very Important Males (VIM's) identify with their young (male) grad students and post-docs. (It's really asking too much to expect VIMs to vigorously espouse a female identity.) This identification may take one of two forms. On one hand, the VIM may recognize real talent in his protege, may find he is brighter than the VIM himself, and may see his protege's advance as an extension of his own career (this passes for "mentoring"). On the other hand, the VIM may "owe one" to his student for exploiting his time (and sometimes ideas) while he was getting a degree. The former pattern seems to be less common than the latter: at anyone time there are really very few extremely talented people. The latter behavior is often played upon by careerists "on the way up," who contrive to put senior men in a position where they "owe" them one and then milk the pay-back for all it's worth. I believe that more than half the speakers at conferences (mostly the boring ones) are Boys who are being Promoted or VIMs chosen by Boys who have been Promoted.

2) The other way to get invited to speak is to have a Genuine Expert (GE) who recognizes your abilities and suggests your name when he himself is asked to speak. (GE's are sometimes VIM's and sometimes not-but most VIM's are not GE's). Your best hope... for recognition seems to be this latter route. But here's the catch. The GE must see you working to be able to make a valid judgment about your abilities (there is far too much self-promotion in the field for any reliable judgment to be made in any another way). If you didn't go to a graduate school where such an "expert" got to know you, you certainly will not be noticed by him at conferences where you are kept out of the intellectual give-and-take by stereotyping males. Moreover-sad to say-except in their own narrow fields, GE's often think in stereotypes and may be incapable of recognizing that a "girl" is good.

Don't let this discourage you. It may seem pretty hopeless, but it's not *completely* hopeless. You can seek out bright, well-balanced grad students (who, by the way, will be *delighted* to talk to you.) And you can keep on doing top-quality work. Some women have survived and eventually even flourished in astronomy by following this course (and by having good luck).

If you do not let your standards slip and your creativity suffer, adopting "one of the careerist tactics for upward-climbing may help. (Such tactics are, essentially, shortcuts, and too many shortcuts inevitably lead to a lousy product). Trading favors is one tactic. The difficulty with a women using it, however, is that most males think that (a) whatever favor a woman does for them, they deserve it and thus they are not obligated to return it; (b) it is merely in the nature of woman to want to do favors for men; and (c) whatever a woman does is probably insignificant in the long run. Therefore men quickly forget about it. This tactic, then, gets you nowhere. Pretending to be in a position to do a man a favor is another tactic, but it is also dangerous. Most men know that a VIM who has come up this way is 90% hot air (but they ignore the fact because the VIM now has power). They will, however, certainly spot a phony in a woman, and you can be sure they will rush with great glee to puncture the female hot-air balloon.

There is, however, another approach which may help. I remembered your letter late one night while drinking "with the boys" (all younger than I) at the June AAS meeting. They were discussing a forthcoming conference which sounded very interesting. I asked who was going and was told the names of mostly younger, very bright and enjoyable theoreticians. I know of several women in that

particular field, and I asked why none of them had been invited. I was told to ask the "organizers" (old men, my age). I worked up (with advice from Margaret Burbidge, Pam Hawkins, and Judy Schultz) a list of six to eight very competent young women candidates who were working in the same fields as the younger, male invitees. I approached the "organizer." At once he became contrite; he had not considered the situation in terms of the issue of woman's equality. Nevertheless, he just could not think of any women to invite (except for one, very senior woman whose field was totally removed from that of the other participants). I gave him my list. He called me back a week later, still contrite. It was just too late (six weeks before the conference!) to invite anyone else. On his own he had thought of two suitable women (both of whom were, again, in fields totally removed from his own and from those of the male invitees), but it was just too late.

This illustrates the problems. This man has a feminist-non-scientist-wife (thus he should know better); he was sincerely contrite (thus he is not deliberately misogynistic), he is a very sensitive person (thus he would, listen to me), but he simply was not able to see that the "girls" I had recommended were really on par with the "boys" in his own field. The women he had considered were women he knew from work on national committees, not from their work in astronomy. Although these women are good scientists, this man cannot evaluate their scientific statures because he has no expertise in their particular fields. Furthermore, their contributions to the conference would have been less than zero, because these women scientists simply do not ask the same theoretical questions that the male invitees think are important.

*HOWEVER*, this incident *may* contain the seeds of a partial solution to the problem you have described. My campaign to have a particular conference include women as principal speakers was hastily organized on the last day of the AAS meeting. But such a campaign could be waged in a more organized fashion and thus given some clout. I believe that putting pressure on the organizers (both before and after the fact) will result in getting more Women invited to speak at conferences.

The next problem is seeing that they invite appropriate women. As noted above, an inappropriate invitee simply enhances the stereotype that "the ladies" don't understand their field. This is more difficult, but there are two things we can do immediately. First, find out about scheduled conferences early. This will mean relying on the goodwill of the GE's involved - since they are much more likely than the VIM's to be organizing or speaking at the more interesting meetings, and also more-likely to appreciate real talent (M or F) without being threatened by it. Secondly, keep lists of both older and younger women by fields and ask the GE's to choose from these lists. This need not be a strict requirement; if an organizing group wants to invite a female expert on Jupiter's interior to a conference on GUTs cosmology, they are welcome to, so long as they also invite a male expert on Jupiter, so that she will have someone to talk to. And, finally, get the younger men involved. As I noted earlier, many younger men are able to deal with older woman in less sex-stereotyped ways, and they should be able to identify an older, female expert in their field even if the older conference organizers cannot.

The key to all of this is making it practical. How do we do that?

One possibility is to manufacture sticky labels, like the kinds used for parking permits (that *never* come off), that say "THE ORGANIZERS OF THIS CONFERENCE REFUSED TO INVITE THE FOLLOWING FEMALE EXPERTS TO THIS MEETING:" and paste this, with a list appended, in the front of all the library copies of the conference proceedings. I'm sure most of the (female) librarians would help. If not, there are always graduate students who are willing to deface books.

### **Any better suggestions?**

The *CSWP* Gazette has published its 1987-88 Colloquium Speakers List in the July 1987 issue. Twelve women are listed under the heading Astrophysics, with seventeen colloquium topics specified. Entries are arranged by subject, followed by a list of talks for general audiences. A list of

the speakers by geographic area is given at the end. The list is compiled annually by the American Physical Society Committee on the Status of Women in Physics. Comments or questions or requests for reprints should be addressed to Dr. Barbara A. Wilson, AT&T Ben Laboratories, 6F-207, 600 Mountain Avenue, Murray Hill, New Jersey 07974.

**Plans Concerning the AAS Meeting in Austin**

CSWA will sponsor a panel discussion (jointly with the Committee on Manpower and Employment) at the January AAS meeting in Austin, on Monday evening. More information about this meeting will be made available through the AAS Newsletter.