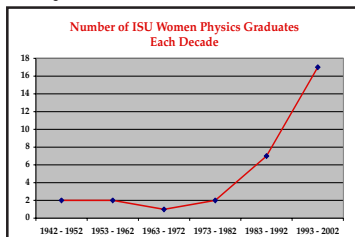


Department News

Educating Women Physicists by Richard F. Martin

Despite decades of effort in the physics community, women still represent a small percentage of physicists and engineers in the United States. The ISU physics department regularly receives fewer than 15% of its admission applications from women and, while our graduation rate for women physics majors has increased in recent years (see chart), it still shows women to be under-represented.

Why has less progress been made in physics and engineering than in professions such as medicine, business, and law? This is one of the questions taken up by a study from the American Institute of Physics' Committee on the Status of Women in 2000 and was the topic of an international conference organized by the International Union of Pure and Applied Physicists in March 2002 in Paris, France. Over 300 delegates representing sixty-seven countries participated in this conference, three of whom gave presentations in the ISU physics colloquium in the 2002-2003 academic year. Organized by colloquium coordinator Prof. Shang-Fen Ren, presentations were given by Dr. Dongqi Li (Materials Science Division, Argonne National Laboratory), Dr. Laurie McNeil (Physics Department, North Carolina University), and Dr. Beverly Hartline (Deputy Director of Argonne National Laboratory)--the latter two focusing specifically on women's issues in physics.



A few answers emerged from the studies mentioned above. First, some "myths" were exploded, such as a common one which says women don't do as well in math as men. Data showing much stronger growth of women in mathematics than in physics puts this one to rest. Similarly, the myth that family obligations prevent success in demanding fields is invalidated by the success of women in other challenging professions. If such common preconceptions aren't valid, then what are the reasons? Dr. McNeil noted several that have surfaced in research, such as:

- **Implicit discrimination:** usually unintentional, examples include lower expectations of girls in K-12 science classes, higher evaluation standards for women in the workplace, a narrow view of excellence which favors aggressiveness, and inadvertent exclusion of women in informal networking.
- **Bias:** That bias remains, is shown by a well publicized study at MIT and a recent *Nature* article showing clear bias in peer review based on the gender of author names.
- **"Chilly Climate":** the "hypercompetitive" atmosphere in which physics is taught and practiced can be unappealing to women, who are often socialized to value cooperation and social networks.

Although each of these influences may be minor, the accumulated effect can be significant and can present the profession of physics in a negative light to women. Given that science thrives on the availability of a wide range of new ideas, the inadvertent exclusion of any individuals or groups is to its detriment. Thus, it behooves those involved in physics education to assure that women are welcomed on their own terms and given the same opportunities. In the physics department, our personalized advising process and collaborative undergraduate research mentoring programs begin to address the situation. In addition, the department recently initiated a scholarship targeted at recruiting promising women students. A quick perusal of the *Student News* section in this issue also provides evidence of our efforts to mentor women.

ISU Physics Helps Launch Local Challenger Learning Center by Carl J. Wenning

In October 1999, then ISU Planetarium Director Carl Wenning was asked by the leadership of the Prairie Aviation Museum of Bloomington, Illinois, to participate in the development of a Challenger Learning Center (CLC) for central Illinois. Now, after four hard years of work, the CLC is about to become a reality. The facility is currently under construction and is slated to have its grand opening on December 17, 2003 – the 100th anniversary of the first flight of the Wright Brothers. During these past four years task force member Wenning, now coordinator of the ISU Physics Teacher Education program, served (and continues to serve) as co-Leader of the CLC Education Committee, President of the Executive Advisory Council, and member of the capital campaign team. Wenning wrote the application for the Challenger Learning Center in 2001 that landed the Prairie Aviation Museum, sponsor of the CLC of Central Illinois, its national charter.

Challenger Learning Centers are state-of-the-art educational simulators that offer a variety of exciting activities and experiences. A CLC could be called a miniature "space camp," but it's more than that because it offers in-depth mission experiences where the total "EdVenture" could extend over two months. The CLC experience includes mission preparation, space flight simulation, and follow-up activities. The futuristic setting and realistic scenarios allow teams to work together to solve problems associated with an overall mission goal. High tech computer systems drive the space simulation, with each mission representing one of a host of possibilities. Whether sharing the thrill of flying to Mars, or rendezvousing with a comet streaking through outer space, the Challenger Learning Center participants share the experience of a simulated space mission.

The contributions of the ISU Physics Department to the establishment of the CLC of Central Illinois has been ongoing and significant. In addition to the contributions of Wenning, Tom Willmitch (the current ISU Planetarium Director), joined the Education Committee during 2002. Willmitch obtained a \$20,000 Eisenhower grant in 2002 to hold "Cosmic EdVentures" and "EdVentures in Simulations" workshops for teachers in preparation for the opening of the CLC of Central Illinois. The planetarium will be working closely with the CLC to present an educational "package" for visitors to the CLC. ISU's contribution will be the planetarium program "On the Tail of a Comet" which debuted at the ISU Planetarium during the summer of 2003.

In June of 2003, the Prairie Aviation Museum hired former Planetarium Intern (from Fall 1998 to May 2002) Janet Draper Moore, to serve as Lead Flight Director for the CLC. Janet graduated with a degree in mathematics education from ISU in 2002 and had taught at the high school level prior to her appointment.



Janet Draper Moore
CLC Lead Flight Director