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Women in Science

The threat of a serious shortage of scientific personnel looms in the years ahead. Many predictions are, of course, notoriously unreliable. If a shortage is a realistic scenario, however, it is important to find ways to employ underrepresented groups more equitably—for reasons of national interest as well as of equality.

Women are one conspicuously underrepresented group in the higher echelons of academia and industry. Records of their transit through the system may help provide clues to appropriate remedial actions. Some trends in the data are promising. For example, in the 1930s women received 7% of the Ph.D. degrees in mathematics and the physical sciences, 15% of those in the life sciences, and 16% in the social sciences. But by the early 1980s those percentages had all doubled. Recently, however, the figures appear to have leveled off.

Tracing the progress of women through the system shows that the percentages roughly parallel those of men for total percentages in science through high school, college, and entrance into graduate school. The serious differential in participation occurs at the postdoctoral level. For example, 93,000 men and 94,000 women undergraduates were majoring in the biological sciences in 1984; the respective graduate enrollments were 22,000 and 17,000. At the next level, however, women are poorly represented on faculties and on average receive lower salaries than do men in comparable positions. One survey showed that although women had 10% of the doctoral degrees in chemistry, they had only 4% of the faculty jobs. At no stage in the educational process is there an indication that the attrition is caused by lack of academic performance.

Attempts to understand the attrition have so far been unsuccessful, but some theories seem better than others. In the past, certainly, prejudice from the "old boys" was widespread, and it has only been partly eradicated. Moreover, the perception of this historical prejudice can be a subtle deterrent in today's more enlightened, but imperfect, world. The lack of role models can be a source of insecurity, a point made eloquently by Sheila Widnall in her AAAS presidential address. That situation may change as more women take important roles in our society, and particularly in science. But the insecurity may be a decisive factor during the period between graduate school and tenure, an interval of intense competitive pressure. Those who have pedagogical or administrative roles need to be sensitive to the stress of the pressured student or the untenured assistant professor. The support of a steady friend with encouragement to stay the course and an occasional congratulations for work well done can be crucial in developing the self-confidence that is essential for a research investigator.

Words are important, but actions are more so. Important contributions would be programs to make it easier for women during childbearing years to continue their professional involvements. Several universities have introduced "stop the clock" programs that allow women who are raising children to have tenure decisions postponed. Other programs, such as half-time appointments, "extend the clock" on grants, or on-site and subsidized day care are particularly appropriate (see also Carl Djerassi, Letters, 1 Jan., p. 10). Women not only bear the children, they are the prime organizers of their upbringing, and in these years they need a special form of encouragement. Since equality of responsibility is not yet here, not only are the demands on women faculty members greater, but they are more subject to criticism. A man who does less teaching because he serves on editorial boards is excused as normal, whereas a woman who asks to do less teaching to help raise a child is viewed as a burden. Today there is less prejudice at the time of promotion, but obstacles confronted before tenure decisions are sufficient to discourage a significant portion of talented women scientists.

Although the problems for ethnic groups are not the same as those that women face, they have some of the same characteristics. There are relatively few role models, and the need for encouragement of pioneers in potentially hostile territory is real.

As the country expands into an ever-increasing technological base, the need for women and minorities in both academia and industry increases proportionally. It may cost some money, some effort, and some understanding, but the voyage to full equality can be even more exciting and worthwhile than the voyage into space.—DANIEL E. KOSHLAND, JR.