SCIENCE

EDITORIAL

Minorities in Science

A special news report in this issue of *Science*, coordinated by Ellis Rubinstein, Ann Gibbons, and Elizabeth Culotta, focuses on minorities in science, their successes and the obstacles they face. Fortunately there are some excellent success stories, and unfortunately there are some disappointing failures. It is widely stated that we need more representation from minorities and women (an underrepresented majority) to beef up a dwindling pipeline of scientists, but past efforts in this regard have appeared to yield only marginal improvement. Because so many have thought so much about this subject, only angels and editors would venture into an area in which wise men fear to tread. This editor, who teaches at a "majority" university, not only is impressed by the reports of successes, but also is challenged by the disappointing statistics; I have therefore looked for possible additional ideas that might be helpful to the dedicated people who are attempting to attack this important problem.

Anyone who interviews graduate science students is struck by the fact that almost all had decided to be scientists by the time they finished high school and that a majority had indicated a preference for science as they finished elementary school. This group also points out that they were very good at math in elementary school, even those who ended up in more descriptive areas of science. Even those scientists who claimed that they were not good at math at the college or graduate school level excelled in, or liked, math in elementary school.

Math in elementary school has little cultural background and has a logical purity and puzzle-solving seductiveness that lures the beginning scientist. Finding minority students who are particularly good at math in elementary school and encouraging them to take the right courses thereafter, offering them scholarships, and mentoring where appropriate might produce more faculty scientists than do programs, valuable as they are, that start later. The current programs, many of which are begun at the college level or beyond, are needed because we cannot afford to lose students—whether majority or minority—once they are embarked on the arduous but highly rewarding path of a scientific career. We also know that some minority students who lack privileged parents can be late bloomers. Programs that encourage those most likely to succeed therefore might be a useful addition to those in existence.

The low percentages of minorities in science probably reflect two aspects of past history: (i) that prejudice did exist and (ii) that the pool sizes at the college and graduate school level of that ethnic group were small. The world fortunately has changed. The pool sizes are increasing, and the number of scientists who want to increase the representation of minorities through affirmative action vastly outnumber those who wish to exclude individuals on the basis of race or gender. Under these circumstances the opportunities for able young minority scientists or women should be good in future years. Also for a newcomer without connections a career in science has the great advantages that one can advance on the basis of ability and be your own boss without investment of personal capital. The majority cannot become complacent; they are needed to help. The news stories in this issue indicate how the actions of majority scientists are helpful, especially in mentoring, which is crucial even in the case of the most successful scientists. National Science Foundation Director Walter Massey, for example, points to his mentors as keys to his success (see page 1177). So those who discuss the glass ceiling and the existence of prejudice should do so in order to abolish these unfair barriers, but they should not overdo it because they can do a disservice by discouraging the young minority students who might elect a career in science.

As our earlier issue on Careers (18 September 1992) showed, the disappointment and feelings of betrayal can be great even for majority scientists who entered a long and arduous training only to discover that the "room at the top" is small. Those who are less privileged and entering a new world need early encourgement and optimism, but there is then the danger of loss of faith and pessimism if expectations are not achieved. The encouragement should not be withheld, but realism in achieving the goal should be part of the mentoring in the hope of minimizing the disappointment factor. Identifying individuals in early years who have the potential of being scientists, providing them with mentors, helping them, and not losing them as a result of poor teaching, poor funding, or racial prejudice are important ways to augment the many fine programs already in existence. Improvement in elementary school science and math will be helpful to all students, but it will be particularly helpful for those who are likely to have the least help from parents and environment.

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