

We appreciate Robert Schumacher's clarification on the design of violins. Despite this oversight in our explanation, the example still serves to demonstrate that when the answer is not obvious or intuitive to students, only a small percentage of them will learn from careful explanations alone.

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Women gain ground in academia; science mentors needed

Many of us in academia may feel discouraged by the persistence of gender discrimination in science and math after reading Toni Feder's reports "Why Women Leave Academic Physics" (PHYSICS TODAY, May 2005, page 32) and "No Leaky Pipeline for Women in Physics, but Discrimination Persists" (PHYSICS TODAY, April 2005, page 28). However, professors and students of science around the globe—both male and female—should be pleased that Susan Hockfield took the helm of MIT, a world-renowned physical-sciences authority. Working in a research group supervised by a female leader, I was excited to learn that two women were promoted to head the University of Toronto's prestigious faculties of law and medicine.

Although men have historically dominated the upper echelons of academia, the fact that more and more women are taking on high-powered positions in top-tier academic institutions not only inspires hope that the traditionally male-dominated field of science is undergoing a radical shift toward gender equality, but also suggests that women are not, as has been suggested by some, less capable than men, either biologically or psychologically.

Former Harvard University president Lawrence Summers was forced to resign after stating that the innate genetic differences between men and women account for the preponderance of men in math- and science-related careers. While it is undeniable that science is a male-dominated field and that there are indeed genetic differences between men and women, the latter does not explain the former. To the contrary, it has been established that women excel at a variety of tasks that relate to language and articulation.¹ In addition, females

tend to outperform males at fine-motor activities, particularly those involving rapid, repetitive temporal sequencing,² making them more efficient at mastering laboratory skills.

What, then, is holding women back?

Although the answer to that question is highly complex and deeply rooted in societal expectations, it is important to consider whether an ideal leader possesses qualities that more closely resemble the attributes intrinsic to men or to women. The answer, I believe, is that the ideal leader possesses both. If one believes that a fully functional family requires equal contributions from a father and a mother, the same should hold true for larger institutions, from a university to an entire country.

References

1. R. Joseph, *Arch. Sex. Behav.* **29**, 35 (2000).
2. E. Hampson, D. Kimura, in *Behavioral Endocrinology*, J. B. Becker et al., eds., MIT Press, Cambridge, MA (1992), p. 357.

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If a pipeline is losing most of its product between the source and the first metering station, that isn't considered a leak? I don't know any industrial scientist who would even try to sell that idea to the plant manager. Similarly, the fact that talented, hard-working women with interests in physics, science, and engineering are leaving the system between high school and a bachelor's degree really is a problem that needs to be addressed. As the parent of a female undergraduate physics student contemplating advanced degrees in this field, I know how important it is for these high-school students to find science or engineering mentors who can take students into the labs and involve them in the excitement of scientific discovery that lies beyond the grind of getting the tough homework done—and maybe give help and encouragement with that homework too. My daughter was lucky enough to find such a mentor, but most students are not.

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Tough questions about wind energy

In suggesting that the US should turn to wind-generated electric power (see PHYSICS TODAY, July 2005, page 34), Cristina Archer and Mark Jacobson fail to discuss the visual impact of wind farms.

Individual wind turbines range in

See www.pt.ims.ca/9467-7

height from 10 meters to 10 building stories and appear to average about 50 meters.¹ The generation of significant amounts of electrical power requires multiple turbines arranged in wind farms. These farms are sited along sea-coasts, atop ridge lines, and in flat, desert areas subject to strong seasonal winds.

Where wind farms exist, their turbines visually dominate the landscape. To wind-power enthusiasts the turbines are apparently a thing of beauty, symbols of "free" energy and progress. Readers should study enlargements of the photographs of wind farms (see, for example, <http://windeis.anl.gov/guide/photos>) and decide for themselves whether the sight is an acceptable substitute for nature's beauty.

The Bureau of Land Management is currently preparing environmental impact statements before permitting wind farms on government land throughout western states. Detailed state wind power classification maps² show where future wind farms are likely to be sited and provide power classification, resource potential, wind power density, and wind speed at 50 meters above ground.