Letters

Groundwater Contamination

We were pleased to see additional attention given to the groundwater contamination problem in Philip H. Abelson's editorial of 18 May (p. 673). Although we agree with his conclusion, we are concerned that one statement may be read or used out of context: "An obvious method of avoiding future additional groundwater problems would be to stop pouring wastes into the ground." As pointed out in the National Research Council's *Groundwater Contamination* report, legislation has severely limited the amount of wastes that can be disposed of in surface waters and the atmosphere. Burial in the ground therefore has become the most often used option for the disposal of the hundreds of millions of tons of wastes produced each year. The report states that to reduce the amount of wastes for disposal a strategy needs to be developed that provides for the segregation, treatment, and disposal of wastes according to their chemical affinities. The report also stresses that the subsurface *can* be safely used for waste disposal *if* sites are selected, designed, and engineered in terms of hydrology, geology, hydrogeochemistry, microbiology, and the nature of the wastes.

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NAS and the Soviet Academy

I would like to comment on some of the statements in the briefing "NAS to explore expansion of programs with Soviets" by John Walsh (News and Comment, 18 May, p. 696).

In February 1980, the council of the National Academy of Sciences (NAS) voted to suspend scientific symposia held under an exchange agreement between NAS and the Soviet Academy of Sciences. Individual exchanges were not affected by this action, which was taken because of the treatment by the Soviet Union of Andrei Sakharov, a Foreign Associate of NAS, a man of unique scientific distinction, and a great contributor to the scientific community.

NAS took no action in February 1980 with regard to Poland or Afghanistan. For some time NAS has had a Committee on Human Rights, now chaired by Lipman Bers. The committee acts on behalf of individuals from the scientific community anywhere in the world who are victims of repression or whose human rights have been violated. The action taken by NAS with respect to Sakharov was in the tradition symbolized by the Committee on Human Rights.

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Sex Differences Among the Mathematically Precocious

Two letters to the editor (23 Mar., p. 1247) referring to the 2 December 1983 report by Camilla P. Benbow and Julian C. Stanley (p. 1029) discuss the correct interpretation of a study by Fox, Brody, and Tobin (*1*) of social processes that inhibit or enhance the development of competence and interest in mathematics among highly able young women in 1982 (reported at the January 1982 AAAS annual meeting in Washington, D.C.). As senior investigator for that study, I would like to react to those letters.

In our study, we did not seek social explanations for sex differences in performance on the Scholastic Aptitude Test in Mathematics (SAT-M). We were concerned with identifying factors that might explain differences in interest in accelerating the study of mathematics among those students who had very high scores on the SAT-M in the 1979 Johns Hopkins Talent Search. Our two primary samples were girls who scored 500 or higher and later participated in an accelerated mathematics program and girls who scored 500 or higher and did not elect to accelerate. For comparison we selected two groups of boys, those who did accelerate and those who did not, matched with the samples of girls on SAT-M scores, geographic location, and school characteristics. Thus, when we compared boys with girls, we were comparing students with approximately the same SAT-M scores.

Although these findings do not relate directly to the issue of sex differences in test performance as it is being debated, I personally believe that sex differences in test performance on the SAT-M result in part from differences in confidence and early learning experiences. But on this point I can only speculate. Perhaps our samples of high-scoring girls are more atypical of girls in general than are our samples of boys atypical of boys in general with regard to the types of nurturing they received from parents and schools.

The fact that Benbow and Stanley find far more boys than girls scoring above 600 on the SAT-M should not be ignored, but what does it mean? The SAT-M is not a pure measure of innate ability, but rather a measure of ability as it has developed in interaction with educational experiences within and outside of schools. The SAT-M has not yet been shown to accurately predict adult creative achievement in mathematics or engineering or success in a career. All boys do not score higher than all girls on this test, so surely gender is not the sole factor related to performance on the test. Do more boys than girls score very high on this test because of an innate male advantage in learning mathematics independent of experience? This has not yet been proved. In time we may know more about the development and functioning of the brain as it relates to hormones and genes and to the manifestation of specific abilities. At present, we should be cautious about touting the "superiority" of one sex over the other. Perhaps girls will be found to be superior to boys in some types of learning tasks. On standardized tests of achievement girls tend to do better than boys on decimal problems, while boys have the advantage on fraction problems. If there is a female advantage in thinking about or learning decimals, surely we will want to modify instructional strategies to accommodate these differences, rather than saying, "boys can't learn decimals and should avoid careers in accounting."

Personally I believe that arguing for the superiority of one group over another in terms of innate potential on the basis of crude measures is not good science or socially productive. I am concerned that prolonged debate of this issue (especially in the popular press) on the basis of research that does not address all the relevant dimensions could be harmful in that many able females may become