ments on bending glass rods at high speed with no success whatever. The bend in the stem follows a very smooth curve, both on the inside and outside of the bend and there is no folding on the inside, which one often obtains when making a sharp bend in a heated glass rod. There are some strain marks visible at the bend and below it, when observed in a polarizing viewer.

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THE AUTHOR COMMENTS: This certainly looks like a hoax. But, as Shakespeare said, "If 'tis a hoax, 'tis a pretty hoax."

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Radioactive waste disposal

I should like to comment on Robert Pohl's article in December (page 37) on radioactive waste disposal. Pohl calls human intervention "the most serious threat to the long-term isolation of high-level waste."

Pohl suggests that 100 or 1000 years after the waste has been buried, unsuspecting mining companies would start solution mining of rock salt, used by 15 million people for culinary purposes in or near a nuclear-waste repository some 2000 feet underground.

This scenario presupposes that:

- Information on the location of the (very large) repository is permanently lost everywhere on Earth—that neither written records nor scientists aware of the repository's location survive anywhere on Earth
- A new civilization with a population density of 15 million people in the area surrounding the repository has arisen within the 100 or 1000 years after burial of the waste
- The new civilization has a need for, and the ability to carry out, solution mining at 2000 feet underground, but has neither reinvented the Geiger tube nor been able to interpret the original purpose of the (remnants of) today's nuclear reactors.

While a catastrophe of sufficient magnitude to destroy all human records everywhere on Earth is imaginable—an all-out nuclear war fought to the bitter end, or another collision of Earth with an asteroid—it seems highly unlikely that the second and third presuppositions above could reasonably be made. Books do not need to eat and drink as people do; if the catastrophe is of such magnitude that even books do not survive, a population density of 15 million in the (desert-type) area surrounding the depository cannot reasonably be expected within 3 to 30 generations. Without such a population density, nobody will have a need to do solution mining 2000 feet underground. And finally, one could place a large granite pyramid, with the universally understood symbols of a skull and crossed bones on its sides, on top of the repository. Or are we worried about poisoning the E.T.s?

Meanwhile, the very urgent problem of providing a source of sufficient energy for the next or next-but-one generation of Americans remains unsolved because people do not want to proceed with the development of nuclear reactors until the waste-disposal problem is solved.

If future human intervention is indeed "the most serious threat to the long-term isolation of high-level waste," then it seems to me that the problem does not exist in the first place.

PAUL F. SCHMIDT
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THE AUTHOR REPLIES: The calculation referred to by Paul Schmidt was performed by a team of scientists at the Battelle Northwest Laboratories. I quoted their results to demonstrate that the integrity of a repository must be guaranteed for periods longer than 1000 years (see page 44, end of final paragraph).

If we were to provide sufficient energy for future generations by means of nuclear fission, as Schmidt suggests, we would require not one, but tens or even hundreds of waste repositories. In that case, it would be foolish to rely on information passed along for thousands of years to preserve the integrity of waste repositories. Instead, they would have to be designed to minimize any breach of their integrity. Rock salt, as an important natural resource and one which is furthermore water-soluble, seems to be a particularly bad choice for this purpose.

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Information security

In "What price security?" (February, page 42), Dale Corson has presented the case for "scientific freedom versus national security" and used, as examples, the last minute "withdrawal" of papers from the 1982 Tucson OSA meeting and San Diego SPIE seminar.

Being a citizen of Israel, a country with sensitivity to security that has no parallel in the free world, I feel that freedom of science is an essential ingredient of the security of a nation, be it as small and fragile as Israel or as mighty as the US. The strength of the US does not come from the size of its population (compare China or India). It comes from the ability of the American people to innovate—an inevitable spin-off