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Cover: This partially melted salt sculpture of the crucifixion illustrates an environmental problem threatening the oldest, most valued carvings in a 700-year-old Polish salt mine. A team of U.S. and Polish scientists has come up with a technological fix to arrest the erosion of these treasures. (Photo: Ray Hosker/NOAA)
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Science Service, which publishes SCIENCE NEWS, is a nonprofit corporation founded in 1921. It gratefully accepts tax-deductible contributions and bequests to assist its efforts to increase the public understanding of science, with special emphasis on young people. More recently, it has included in its mission increasing scientific literacy among members of underrepresented groups. Through its Youth Programs it administers the International Science and Engineering Fair, the Science Talent Search for the Westinghouse Science Scholarships, and publishes and distributes the *Directory of Student Science Training Programs for Precollege Students*.

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Letters

Minds on science education

"Minds-On Science" (SN: 2/3/96, p. 72) prompts me to point to a part of science education that is being largely neglected in all the work trying to improve it.

I like all the things described in your article for elementary school students, but there comes a time, starting in middle school or high school, when students must acquire a body of knowledge. How can they do this and still have the hands-on science that everyone is calling for? Hands-on science moves far too slowly for them to acquire a body of knowledge.

Educators should hark back to Linus Pauling's preface to his 1947 *General Chemistry*. "The progress made . . . in the development of theoretical concepts has been so great . . . that the presentation of general chemistry . . . can be made in a more simple, straightforward, and logical way than formerly."

Unfortunately, those who are working to

improve science education seem not to know two facts: The formulation and development of theories is the central and most important activity in the growth of scientific knowledge, and theories give logical structure to established knowledge. If theory-structured courses were introduced at the high school and introductory college levels, science educators could include more hands-on science while greatly increasing minds-on science.

Ralph W. Lewis
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Having students formulate and carry out experiments is an important part of their education. That is why schools sponsor science fairs. However, making this the main curriculum is misguided. In doing research, students learn facts at a snail's pace. If they are ever to become scientists, they need to

stand on the shoulders of those who came before them.

For a more thorough overview of this topic, read *Dumbing Down Our Kids* by Charles J. Sykes. Meanwhile, parents need to insist on proven techniques in the education of their children.

Sally Levinson
Berkeley, Calif.

Highs and lows of undersea research

I would not quibble over a typographical error in my letter (SN: 3/9/96, p. 147) except to defend a lady's honor. She was Columbia University's venerable research vessel VEMA, a ship credited with many important oceanographic discoveries, including that of the largest undersea mountain in the Atlantic. Vema Seamount rises 5,000 meters (not 500 meters) above the seafloor.

Your typo made a molehill out of her mountain.

Robert Gerard
Palisades, N.Y.