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## Letters

### Suiting up for space

Having been a devoted SCIENCE NEWS reader for many years, I know how difficult it is to catch you folks at misreporting. However, in "Space base heads back to the drawing board" (SN: 7/28/90, p.53), you state, "Currently, NASA uses space suits pressurized to 8 pounds per square inch." Unfortunately, this is as yet wishful thinking.

To avoid the bends, the station-suit pressure difference must be minimized or the astronaut must breathe pure oxygen for a period to "wash" remaining nitrogen from the body. The space shuttle, like the envisioned space station, maintains a sea-level cabin pressure of 14.7 psi. The present Extravehicular Mobility Unit employs a suit pressurized to 4.3 psi, necessitating the lengthy oxygen pre-breathe described, or some variation on this theme, prior to extravehicular activity.

Advanced suits are now under development which would pressurize to about 8.3 psi, affording a minimal risk of bends with no pre-breathe. However, these are constrained by

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Cover: A mix of the familiar and the bizarre gathers around a watering hole in a Wyoming swamp, 50 to 60 million years ago. Studies of plants living in the vast wetlands of the distant past have revealed unexpected ways in which ancient communities weathered environmental changes. (Mural by Robert Hynes. © Smithsonian Institution)

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cost and the limited manual dexterity induced by the higher pressure. While successful development of the "Zero Pre-Breathe" suits is ultimately necessary, current plans for space station construction call for the continued use of the 4.3 psi suit.

*Michael R. Barratt, M.D.  
Aerospace Medicine Resident  
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Dayton, Ohio*

**Surely it occurred** to someone writing or editing "Space base heads back to the drawing board" that the Fisher-Price panel estimating maintenance requirements for the space station has a counterpart in the private sector — namely, the Fisher-Price toy company. Isn't there a saying that goes something like, "The difference between men and boys is the size of their toys"?

*Charline Boyer  
Nashville, Tenn.*

### Exorcising thermodynamic demons

"Demons, Engines and Information" (SN:

6/16/90, p.378) reflects a failure to consult the literature, all too common among modern scientists.

More than 40 years ago, during my work on a paper titled "The Well-Informed Heat Engine" (AMERICAN JOURNAL OF PHYSICS, VI:19:2:190, February 1951), I examined many demons and found them all hopelessly inefficient. I used long-term average readings from simple pressure gauges. My heat engine was able to extract heat from a source at constant temperature and perform mechanical work, provided that an outside observer gave it enough information to account for the reduction in the entropy of the system.

In another paper (AMERICAN SCIENTIST, 38:2:273, spring 1950), I showed that transmission of information by telegraph requires the creation of positive entropy by dissipation of electric energy at least equal to the negative information entropy produced in the telegraph receiver.

The second law of thermodynamics is still safe.

*Richard C. Raymond  
Santa Barbara, Calif.*

SEPTEMBER 22, 1990

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