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This Week

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Cover: Light traveling through a finite, three-dimensional universe would follow paths that repeatedly return to their starting points. An observer inside such a universe would see multiple images of any objects present—in this case, two stars and a spaceship. **Page 123** (Illustration: © Geometry Center, University of Minnesota in Minneapolis)

Letters

Asteroid shaped by ice?

You say that the high porosity and low density of asteroid 253 Mathilde suggest that it was formed of loosely packed fragments or has been pulverized into a "rubble pile" ("A surprising encounter of the NEAR kind," SN: 1/3/98, p. 7). Alternatively, is it possible that water ice or methane ice, previously contained in the asteroid, sublimed away into space, leaving behind a porous, lower-density body?

David B. Thomas
Seattle, Wash.

At Mathilde's distance from the sun, ices would evaporate only from the surface layers of the asteroid, says Peter C. Thomas of Cornell University. The dry outer layer—"very much less than a kilometer [thick]," Thomas says—would then tend to insulate and protect any deeper ices from further evaporation.

Because some of the craters on Mathilde are relatively fresh and are a few kilometers deep, and because the NEAR spacecraft observed no evidence of ices on the asteroid, it is unlikely that the asteroid's low density is due to evaporation of primordial ices, Thomas explains.

—S. Perkins

Ultrasound safety not certain

Corinna Wu responds to the question about ultrasound safety in pregnant women that "only low-intensity ultrasound waves are used to image fetuses in the womb, so the procedure is safe" (Letters, SN: 12/13/97, p. 371). That statement is misleading at best.

A more appropriate response would be that there is a fair amount of research on adverse effects of ultrasound on developing fetuses, that there is a fair amount of scientific controversy regarding these studies, and that the Food and Drug Administration and many professional medical organizations urge caution in taking routine sonograms.

Hardly an endorsement for a "safe" procedure.

Gene R. Major
Columbia, Md.

No fear, no phobia

The experiment by S. Lloyd Williams reported in "Mysterious Thoughts about Phobias" (SN: 11/15/97, p. 315) does not, as stated, disprove the hypothesis that for phobia sufferers in their feared situations, "thoughts of catastrophe and danger flood their minds."

There is no great "mystery to unravel" about why the participants in the study reported few thoughts of looming danger in the phobic situations: They were not in phobic situations!

The participants were volunteers, thus decreasing the lack of control which is at the heart of many phobias. They knew that their time in the feared situation was finite, which takes away the fear of the unknown. They were asked to report frequently on their thoughts, which prevents irrational fears from escalating.

All this study proves is that it's very hard to get a phobia sufferer to bring on an attack of phobic panic.

James Foley
Wooster, Ohio