

Dear Editor,

Just a note to express continued pleasure with *Analog*. While not all the stories in the January/February issue were to my personal taste, each was well crafted and some were too clever by half. The stories hanging their hats on specialized knowledge seemed... well, especially knowledgeable, ya know?

His Former Editorness says that props are few and far between in your business. Looking over the flat, nearly featureless landscape that is innovation in our favorite genre I remain convinced that *Analog* is the Last Best Hope.

Please keep up the good work.

P.S. Personal praise for you and your crew, not the Users. My validation is you continuing to feed my need to read.

P.P.S. Greg Egan Rocks!

Gary Yeast

Hi Trevor,

I enjoyed reading Robert Scherrer's editorial in the March/April issue of *Analog*, especially the "conversation" between himself and Lord Kelvin. It reminded me of some of Bob Newhart's wonderful "telephone" conversations. I wish that Scherrer had continued the conversation a bit longer. It was just getting interesting when he said, "... actually matter and energy are really two forms of the same thing..." What is it that matter and energy are two forms of?

I was wondering if he misspoke, equating matter and mass. This seems to be quite common—I have read many times about the equivalence of matter and energy while others speak of mass and energy. Discussion of this equivalence is often accompanied by Einstein's formula,  $e = mc^2$ . In this equation,  $m$  represents mass, not matter.

Along with Einstein's equation, there is usually some discussion of how mass can be converted into energy. This puzzles me, because the equation does not say that mass can be converted to energy, or vice versa. The equation is an example of a direct proportion,

which actually says that if mass decreases (disappears), energy also decreases: mass isn't being converted to energy.

An example of an equation analogous to Einstein's and which may be easier for readers to visualize is the equation which relates the circumference of a circle with the diameter:  $c = \pi d$ . In this equation,  $c$  corresponds to  $e$  in Einstein's equation,  $d$  corresponds to  $m$ , and the constant,  $\pi$ , corresponds to the constant,  $c^2$ . Has anyone said that diameter can be converted into circumference, which would be equivalent to saying that mass can be converted into energy?

If some of the diameter of a circle disappears, the result is a circle with a smaller circumference, not a larger one. If you took some of the diameter of one circle to create a new circle, you'd end up with two circles with the same total diameter and the same total circumference. Something similar could be said of mass and energy. To paraphrase Scherrer, diameter and circumference are really two aspects of the same thing, a circle. But what are mass and energy really two aspects of? Matter, I presume. Saying that matter can be converted to energy would be analogous to saying that circle can be converted into circumference.

Am I missing something here?

Thanks for an interesting magazine.

Jack Ryan

## The author responds:

Apologies for my carelessness; I should have said, "mass and energy," not "matter and energy." That sort of confusion always overtakes me when I travel back in time.

—Robert Scherrer

Dear Editor,

A few days before I received my first issue of a new *Analog* subscription, I found references to the magazine in two books—an "astounding" synchronicity since I've never read a mention of it before! The first was in a Star Trek novel, *Crisis On Centaurus*, where Kirk