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served phenomenon, exactly total eclipses, is a miracle, and hence that God exists. No doubt as soon as this news seeps down to all those people who do not read PHYSICS TODAY, skeptics will become an endangered species. Theologians who claim that God is dead are premature in their judgment.

I see only one slight blemish. Arguments based on conservation of angular momentum and the mechanical energy loss arising from tidal action have established that the Earth-Moon distance is increasing by about five inches per year. This means, by the Mendillo–Hart formula, that the eclipse ratio is decreasing. In fact, the time in years, Y, required to reduce the eclipse ratio E_r to E_r' is given by

$$Y = (D_m/\dot{o})[(E_r/E_r')^{1.2} - 1]$$

where $\dot{o}$ is the increase in distance each year. When E_r' is equal to 1, we will have no more exactly total eclipses. When we put in the present maximum value of E_r, which is 1.09, and the other numerical data, the formula says that after 1.3×10^8 years there will be no exactly total eclipses.

Now to my question. Could skeptics possibly be mean enough to conclude that the existence of God will be terminated in a paltry 130 million years?

There is another consideration that I find bothersome. The lower limit on the eclipse ratio is 0.82. If one puts this number into the above formula, one finds that there were no exactly total eclipses until about two hundred and eighty million years ago. Is there a danger that someone might infer that God did not exist until 280 million BC?

ENOS R. WICHER
Harvey Mudd College
Claremont, Calif.

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It is always interesting to read another "proof" of the existence of God. Unfortunately, the proof offered by Michael Mendillo and Richard Hart contains errors even more severe than the usual logic errors associated with such proofs. In this case the fundamental theorem advanced by the authors, that the phenomenon of an exactly total solar eclipse is unique in our solar system, is incorrect. Because of the peculiar circumstance that the orbit of Pluto passes within the orbit of Neptune, exactly total solar eclipses may be viewed from either planet while the other planet serves as the occluding body. Admittedly, these circumstances are extremely rare, but such eclipses will occur.

If this added piece of data is now incorporated into the logic structure of Mendillo and Hart's original proof, the necessary modifications lead to some rather surprising conclusions. Since it follows that there must be observers to witness an exactly total solar eclipse, extraterrestrial life will be found to exist on both Neptune and Pluto. In addition these beings will have extremely long life spans in order to observe even one such eclipse. Quite remarkable. Maybe someone should tell NASA.

STEPHEN W. BEHNEN
Glendora, Calif.

Pauli's proof

It may be useful to clarify a point in my recent review of P. Dennery's *An Introduction to Statistical Mechanics* (February, page 48). Due to exigencies of space, a paragraph was cut out of the review when printed. This paragraph made clear that the whole master-equation discussion was based on Pauli's original "proof," which simply *asserted* the justifiability of using the random phase approximation. That approximation has good physics behind it, but needs to be considered in detail. It is the lack of any such discussion that I find unsatisfactory in Dennery's text, not the general approach of starting from the master equation.

CLAUDE KACSER
University of Maryland
College Park, Maryland

Problem-solving courses

I could not agree more with Paul Tannenbaum's letter (March, page 13). The fundamental difference between the physicist and the engineer or applied physicist can be described by saying that the physicist studies semiconductors because they interest him, the engineer because they are used to make transistors. Initially, their research may be very similar, but ultimately they will diverge because of their differing motivations.

This Fall, I shall be initiating the physics curriculum at Verrazzano College in Saratoga Springs, New York. We intend to have a strong science program. Guided by considerations like those Tannenbaum discusses, we have decided that the curriculum will be, basically, applied physics (with options to specialize somewhat in optics or lasers and astrophysics).

For the second year, I plan a course tentatively called "Methods of Applied Physics." The course will follow roughly the lines of a similar venture (required of all engineering students) with which I was associated for three years at Rensselaer Polytechnic Institute.