The difficulty is in bringing individuals with different worldviews to a common understanding. We must be willing to open and maintain lines of communication that have been closed due to fear and mistrust. Religious leaders should recognize that study of the physical universe need not undermine faith. Scientists should reject the idea that objective scientific observation is incompatible with religious belief and acknowledge that there are things that physical observation will never illuminate. Perhaps future Templeton Prizes will promote this kind of understanding without compromising anyone's integrity.

MATTHEW HOUSLEY
(mhousley@mailaps.org)
Pleasant Grove, Utah

FRIESEL REPLIES: Most of these issues were addressed in my original letter, but it may be beneficial to provide some brief additional comments.

Stuckey replies with plausible statements. It may be true, for example, that Templeton awardees (or, more appropriately, those who aspire to such an award) are probably no more likely to compromise their scholarly standards than are NSF grantees, but the implications of such a saying are somewhat dark and unclear. It may also be a perfectly legitimate intellectual exercise for a philosopher to hold an "interdisciplinary study in science and religion," whatever that may be.

I am disappointed that Sheldon Glashow could have made the statement Stuckey attributes to him. By 1999, the more complex aspects of the universe should have been widely known. One would also suppose it clear that Glashow's inclusive statement about the faith of scientists is false and can easily be demonstrated to be so.

It would be good to nail down the meaning of the word "progressive" in Dyson's reply: Nearly everyone responds sympathetically to activities labeled "progressive," much as they do to those labeled "compassionate," but both can mean significantly different things to different people. For example, some religious individuals may interpret as progress both a new law that biblical teaching takes precedence in the schools over scientific discovery, and a law banning the teaching of evolution theory. I see little grant money going to those who attempt to show that religion and science are immiscible, yet to my mind such an aspiration is truly progress, in both religion and science.

That the difference between religious belief and the conditional acceptance of observation is both simple and profound bears repeating. Absolute laws arising from the void by the will of a supernatural force, miraculous occurrences without cause other than a supernatural will, a book whose contents cannot be contradicted—in science, these things are wholly unnecessary and can easily be detrimental to progress. Science, in a sense, always uses the conditional—that is, "if this is true, what else is true?"—where the "truth" is no more or less than what can be repetitively observed.

MARK FRIESEL
(mfriesel@earthlink.net)
Ewing, New Jersey

Blewett Had Help With GE Synchrotron

Ernest Courant's obituary of John Paul Blewett (PHYSICS TODAY, February 2001, page 76) erroneously credits Blewett with initiating the project at the General Electric Research Laboratory to construct a 70-MeV synchrotron. As I recall after over a half-century, Blewett's work while he was at GE was mainly with radar equipment, although he was an interested observer of the accelerator work and did help with the synchrotron orbit calculations. The project was initiated and directed by Herbert C. Pollock, who, with that accelerator, first actually observed "white" synchrotron radiation and measured its spectrum.[1,2] The choice of 70 MeV was based on the availability of a suitable magnet, one that had been developed by Willem Westendorp for a 50-MeV biased betatron.

As an active witness of those events, I provided the data interpreted by Blewett as evidence that the 100-MeV betatron orbit was contracting due to radiation loss[3] (there was another plausible interpretation) and, on the occasion of Pollock's visual observation, suggested that the light from the synchrotron beam might be polarized. Confirmation of the suggestion proved that Blewett's interpretation of the betatron's orbit contraction was correct (see "The Discovery of Synchrotron Radiation," PHYSICS TODAY, January 1975, page 9). That took place after Blewett had left the company.

It is unfortunate that both Blewett and Pollock (also recently deceased) were never appropriately honored for their discovery of synchrotron radiation, which has made so much basic and applied science possible.

I appreciate the helpful comments Courant offered on my letter.

References

1. H. C. Pollock, *Amer. J. Phys.* **51** (3), 278 (1983).
2. F. R. Elder, R. V. Langmuir, A. M. Gurewitsch, H. C. Pollock, *Phys. Rev.* **71**, 827 (1947).
3. J. P. Blewett, *Phys. Rev*. **69**, 87 (1946).

GEORGE C. BALDWIN
(baldwingeorgec@qwest.com)
Santa Fe, New Mexico

COURANT REPLIES: In the talk Blewett gave in 1993 on receiving the Wilson prize, he stated:

> About this time Ed McMillan himself appeared in Schenectady to ask for advice on how to construct the laminated magnet for his proposed 300-MeV synchrotron. Westendorp and I, with several others, spent a good deal of time with him. . . . Then he went home and we began to think about our skill in building machines. . . . Herb Pollock, Bob Langmuir and I, with several of our associates, said to ourselves, "Suppose we put together a machine for, say 70 MeV? We could be the first in the world to produce an operating synchrotron." And, indeed, that is what we did. Our machine operated in 1947. . . .

He went on to describe the first visual observation of what is now called synchrotron radiation, even though, as he recalled in his talk—and as I mentioned—he had left GE for Brookhaven before the machine was finished, so he did not personally see that first light.

Clearly Blewett did play a role in the 70-MeV synchrotron, although perhaps I could have made it clearer than I did that he was not the only—and possibly not the main—initiator of that project.

ERNEST D. COURANT
(ecourant@msn.com)
Brookhaven National Laboratory
Upton, New York ■