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Cover: Though dazzling to look at, *Bordetella pertussis* causes whooping cough, a sometimes deadly illness for infants. Researchers now believe that some adults may unknowingly pass pertussis infection to infants and children. This close-up shows the bacterium (yellow) destroying airway cells, leading to violent coughing episodes. (Image: K.E. Muse, computer enhanced by William Goldman/Fran Heyl Associates)



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Letters

Seeking common ground

It's quite true that science might fare better among the religious public if that public were convinced that science and religion are compatible ("When Science and Beliefs Collide," SN: 6/8/96, p. 360). Many of us who teach at religious colleges work hard to convince our students that they are.

The job is made a lot tougher, however, when an eminent scientist like Carl Sagan uses his brilliant popularizations of science as a vehicle for antireligious propaganda—apparently with the full approval of the scientific establishment. For many, the "separation of spheres" between science and religion is in effect a one-way barrier: Intrusions of religion into science are bitterly resented and, where possible, punished, but imperialism in the opposite direction is regarded as benign.

The task of finding ways for science and

faith to coexist can only be furthered by honest dialogue based on mutual respect rather than on superiority and condescension from either side.

William Hasker
Professor of Philosophy
Huntington College
Huntington, Ind.

It is wrong to lump all critics of science into one camp, namely, those who see sci-

CORRECTION

The references to "constructionism"—which appeared even in the penultimate draft of the *National Science Standards*—were in fact "almost entirely eliminated" in the final book, according to Gerald Holton ("When Science and Beliefs Collide," SN: 6/8/96, p. 360). Though he and other scientists were concerned about the report's earlier perspective, he endorses the final document.

ence as a kind of myth. One can argue that the research programs of science can be driven by ideological, political, economic, or other nonscientific interests—for example, Nazi *Rassenkunde*—without denying that objective science is possible. Science is not exempt from human weakness, including individual and social evil.

We need to recognize this if we are committed to the scientific ideals of reason, objectivity, and truth.

Michael Losonsky
Associate Professor of Philosophy
Colorado State University
Fort Collins, Colo.

What I find galling—and what might turn others off of science—is the arrogance of some scientists who ignore that fact that electrons, protons, genes, neurons, and so forth were already in existence for them to

Letters continued on p. 44

discover. What the scientific community needs is a good dose of humility, as exemplified by Albert Einstein, Louis Pasteur, and others.

James G. O'Brien
Wauwatosa, Wis.

It's a little embarrassing that Eve, a social psychologist, abdicated bereavement and guilt to theology. Actually, psychology has a lot to offer toward understanding and handling these issues.

David Lipton
Red Bank, N.J.

I was quite dismayed that your recent article perpetuated the erroneous conception that science is a body of established truths. Science is a process of acquiring knowledge about the natural world, and it is this process that distinguishes science from belief systems such as religion. Scientists are wrong to argue that the process is totally objective; indeed, the theory of plate tectonics mentioned in the article is a textbook example of how individual personalities and beliefs were important in impeding the widespread acceptance of a currently accepted theory.

Rather than requiring nonscience students to take a course in a scientific discipline, perhaps we should require all students, especially science students, to take a course in the scientific method.

Ray Hilborn
Professor of Fisheries
University of Washington
Seattle, Wash.

You say that scientists should find ways of showing that faith and science can coexist. Why should they? Why, indeed, are scientists afraid to speak the truth—namely, that science denies the validity of all religious claims?

Sanford Aranoff
Belleville, N.J.

Ironically, it was the orthodox Christian worldview of such people as Isaac Newton, Francis Bacon, Robert Boyle, Blaise Pascal, and John Ray that nurtured the experimental science we know today. The Bible portrays a consistent God who designed an intrinsically orderly, and therefore predictable, reality.

Perhaps the theistic realism model described by Philip Johnson in *Reason in the Balance* is indeed superior to naturalism for scientists and nonscientists alike!

Joseph Neumann
Elizabethton, Tenn.

Your article suggests that those who believe in a creator do so because of a belief in tradition or religious authority. It ignores the fact that there are many, many intelligent, free-thinking individuals who may or may not care what the Bible says but who recognize that it just may be possible that life did not originate spontaneously.

Bob Hess
Tempe, Ariz.

Why the insistence on placing physics, chemistry, and other "hard" sciences in with pseudoscience such as evolution? Bose-Einstein condensate was discovered recently

and replicated in several labs. When was the last time someone observed one species evolving into another? When has man created by any method a system as complex as a single living cell?

The average person realizes all this—only scientists in the field of evolution refuse to admit the emperor has no clothes.

Keith McIntyre
Roseville, Calif.

It seems we're faced with two philosophies about the origins of things: chance and not-chance. Neither can be proved scientifically by replicating initial conditions in the laboratory. Both must be taken on faith. It seems SCIENCE NEWS demands that all "true scientists" accept chance, reject not-chance, and never question postulates.

Call that science? I call it controlled thinking, and the sooner it's exposed as such, the better.

Virginia Steen-McIntyre
Idaho Springs, Colo.

Lumping postmodernists and feminists who critique the cultural and social biases of science together with people who tie knots in their electric cords to reduce their monthly bills is not only misleading but dishonest. The problem is not that postmodernists and feminists reject science, but that scientists like Gerald Holton and Noretta Koertge are unwilling to admit that there are any truths other than those arrived at through scientific methods.

For example, Holton fails to explain that postmodernists do not intend to invalidate science by equating it with myth and fiction, but rather to argue that science is just one form of knowledge and that myth and fiction are equally valuable—and much more venerable—forms of knowledge.

Similarly, feminists want to point out that logic is only one way of knowing and that other ways of knowing that have been associated with women—such as holistic understanding—are equally valuable.

Indeed, that scientists have often been led into ridiculous quandaries by their allegiance to narrowly logical approaches is demonstrated most clearly in another article in this same issue of SCIENCE NEWS ("Climate modelers: Go talk to the trees," p. 358). Scientists at the University of Wisconsin-Madison made the discovery that "vegetation actually plays a significant role in climate," astounding researchers whose logic-based approach to computer modeling of global climate led them to ignore significant factors that a holistic approach could not have omitted.

Marilyn M. Cooper
Associate Professor of Humanities
Michigan Technological University
Houghton, Mich.

No conflict should exist between evolution and Christian theology. Evolution posits mechanisms by which life might have developed but says nothing about whether a creator was initiating or guiding those processes. Genesis presents God as creator but says nothing about the mechanisms by which the creation was accomplished.

Virgil H. Soule
Frederick, Md.

It has been only in the past few decades that women have been allowed, somewhat

reluctantly, onto the same, uneven playing field as men. Women scientists are keenly aware that both the game and the rules of the game were invented by men and are still firmly under their control. I recommend a more factual text that recounts the history and philosophy of science, *Pythagoras' Trousers* by Margaret Wertheim.

Betty H. Conow
Ontario, Calif.

Professor Holton does a disservice to thousands of science teachers in his criticism of the so-called postmodernist school of science education.

It is true that many contemporary researchers and practitioners reject traditional logical positivism as a useful epistemological framework for teaching science. It is also true that many thoughtful historians, sociologists, and philosophers of science subscribe to the view that observation is a theory-laden activity and that scientists construct meanings in their interactions with objects and events in the natural world.

If Professor Holton is concerned about "today's antipathy to or misunderstandings about science," his attack on those who work in public schools and universities is misplaced. Those of us who have devoted many years to studies of students' "alternative conceptions" have amassed a mountain of evidence that meaningful learning is a complex process that requires substantially more than a "search for universal truths."

Joel J. Mintzes
Professor of Biology
University of North Carolina
Wilmington, N.C.

It is not enough to do good science, scientists must also be doing good public relations. When members of Congress are giving Golden Fleece awards for research that they perceive to be a waste of money, scientists must stand up and shout out the benefits of that research. If they remain silent, then they are part of the problem and not part of the solution!

Edwin Jaeger
Far Rockaway, N.Y.

As someone who is both a Wiccan and a science teacher, I see two glaring problems with the conclusions drawn in the article.

It is unlikely that the sample was representative of U.S. Pagans. As Margot Adler wrote in her survey of U.S. Pagans, *Drawing Down the Moon*, less than 10 percent of Pagans attend festivals. It is likely that the demographic characteristics of Pagans who attend festivals differ from those who do not. Adler also found that Pagans as a whole were "optimistic about the use of science and technology." She found that an "amazingly high percentage" of Pagans had jobs "in computer, scientific, and technical fields."

The article also failed to give any data on the scientific views of U.S. society as a whole. Without such data, statements such as "roughly one-quarter [of Pagans] thought science causes spiritual decline, and some 40 percent . . . said scientists possess dangerous powers" are fairly meaningless as an indicator of the relative pro- or antisience view of Pagans.

Chris Waller
San Diego, Calif.