

had the healing process "restarted" by exposure to pulsed magnetic fields or low-level electrical currents, both also well below kT . These and other changes in biological knowledge are discussed and referenced in my book *Cross Currents*. Apparently Adair did not bother to read it.

Clearly biological organisms are more than chemical machines, and the paradigm shift referred to by Indira Nair is in biology, not in physics or engineering. The new biological paradigm is far richer than the old and offers great opportunities for medical therapies as well as cautions for our ever expanding use of electromagnetic energy. Both urgently require full exploration. I regret that Adair apparently feels threatened by these changes, but I reject his arrogance in requiring that living organisms conform to his concept of reality. We have not "kidnapped" Thomas Kuhn's concepts. Adair's invocation of dogma is the inevitable counterpoint of all paradigm shifts.

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9/91

Metric's Man in Congress

The news story on the selection of California Democratic Representative George Brown as chair of the House Committee on Science, Space and Technology (February 1991, page 78) omitted one of Brown's major contributions. Representative Brown has been one of the leading proponents in Congress for the adoption of the metric system of measurement in the US. We can hope that as chair of the House science committee he will see to it that government agencies continue to receive Congressional pressure to obey the metric section of the 1988 Omnibus Trade and Competitiveness Act. That act requires all Federal agencies to do business in metric by 1992. There is clear evidence that most agencies are dragging their feet on this and will need the kind of pressure that Representative Brown's committee can exert.

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2/91

One More Sage from the SEER Project

We are writing to comment on "St. Louis Program Pitches Science to

Girls and Minorities" (May 1991, page 54). We commend PHYSICS TODAY for its lively reporting of a project directed to the solution of a national problem.

At the same time, we deeply regret that the contributions of our coworker and equal partner Clara T. McCrary were not mentioned. McCrary, an elementary school reading specialist, has been an integral member of the SEER (Science Education for Equity Reform) team since the beginning of the project.

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Missing References on Request

In his review (August, page 59) of the book *1989 Lectures in Complex Systems*, edited by Erica Jen, Philip Holmes notes that part of the reference list of my own article was missing. In fact, the second page of references was printed blank. When I found this in the copy I was sent, and later discovered it to be an error in the whole print run, I too was mortified. (It was in the proof!) If any of your readers would like to receive a copy of the complete list I would be happy to provide it; please note that my address is no longer that given in the book.

Of course the issue of the relation between complexity and physics is a debate you have already exposed in the recent Reference Frame column by Philip Anderson (July, page 9). No doubt it will be discussed for some time to come.

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9/91

Pave a Faster Track for High-Energy Papers

In high-energy physics the current choices for publishing in APS journals are *Physical Review Letters* (fast, four-page limit), *Rapid Communications in Physical Review D* (relatively fast, five-page limit) and *Physical Review D* itself (very slow, no page

limit). What is missing is the analog of *Physics Letters*—something fast but with a longer page limit, so that an experiment can be described in more than the cryptic way imposed by the *PRL* page limit. In particular more room for figures and tables would be appreciated.

What would be great to have is a fast track in *Phys. Rev. D* with, say, a ten-page limit. The current *Rapid Communications* structure is in fact ideal, except that the five-page limit tends to make it a consolation prize for not appearing in *PRL* rather than a first choice in its own right. One could even imagine making most of *Phys. Rev. D* into this format. Could APS lengthen the page limit of *Rapid Communications* and exploit electronic communication with referees to accelerate publication even further?

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3/91

Scientists Who Defied Dictators

It was fascinating to read the various views expressed in the letters on the appropriateness of the National Academy of Engineering's decision to name its award for "contributing to the advancement of human welfare and freedom" after Charles Stark Draper, who developed inertial guidance systems for military applications (November 1990, page 124). But I think enough has been written about those scientists who participated in defense-related projects in different countries throughout the years, in various situations and conditions. Not enough has been said about a few silent heroes, namely those scientists who refused to obey dictators, such as Peter Kapitza, who defied Stalin, or Max von Laue, who defied Hitler. Such people, in my opinion, also deserve mention, for their courage and moral strength.

Questions such as "Is science a discipline capable of inspiring in those who practice it a sense of communal responsibility?" or "Can scientists be moved, as a body, to accept the moral decisions that their key position in this civilization has thrust upon them?" are discussed very nicely by the late British mathematician of Polish origin Jacob Bronowski in his book *A Sense of the Future* (MIT Press, 1977), in an essay entitled "The Disestablishment of Science."

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1/91