



The author of *The River* responds to a letter from researchers whose work was discussed in his book. *Science* reported comments from several presidential candidates concerning the decision to eliminate evolution from Kansas' science curriculum requirements, but not comments from Bill Bradley: a reader passes those along. Another perspective on the book *From Space to Earth* is offered from a scientist who was at the heart of efforts to develop solar cells for the commercial market: "[John] Perlin's book tells the story of people who took an existing space technology and used it to improve the quality of life on Earth." Some clinical observations are offered by Oliver Sacks of the ability of patients with different mental impairments to conceive of other people's mental states. And aspects to be considered in proposals for worldwide ecosystem assessment are discussed.

Of Chimps and Men

Stanley A. Plotkin and Hilary Koprowski say in their letter (*Science's* Compass, 24 Dec., p. 2450) that in my book, *The River: A Journey to the Source of HIV and AIDS* (Little, Brown, 1999), I suggest that they "covertly used chimpanzee cells to produce the live oral polio vaccine (OPV) that was used in the first mass campaign with OPV in the former Belgian Congo."

Although I do suggest in the book that chimpanzee cells were used to prepare certain batches of the OPV (CHAT) that was fed to more than a million Africans in the present-day Democratic Republic of Congo, Rwanda, and Burundi between 1957 and 1960, at no point do I specify which researcher, or which laboratory, prepared batches of CHAT in such cells.

What I do make clear is that a minor proportion (about one-fourth) of those 1 million OPV doses was produced at the Wistar Institute in Philadelphia, Pennsylvania, and the remaining doses were produced in Belgium, at the Rega Institute in Leuven and at the RIT laboratory in Rixensart. I also point out that, although there is at present no published information about the primate substrate that was used to produce CHAT at those three institutions, there is documentary and anecdotal evidence that kidneys from Congolese chimps, destined for tissue culture purposes, were present in Philadelphia and Belgium during this period.

Furthermore, at least 250,000 doses of CHAT vaccine were redistributed into smaller containers at the medical laboratory of Stanleyville (now Kisangani, Congo), where chimpanzee kidneys were being handled. Contamination could therefore also have occurred there, either by

chance or because chimpanzee kidney tissue cultures were used to boost the titre, or amplify the available stocks, of CHAT vaccine (1).

Plotkin and Koprowski mention in their letter that they are collecting data about the cells they used to make their OPVs, and that these data are to be published in a scientific journal. The release of such information should contribute to resolving the question of whether the AIDS pandemic is a tragic example of an iatrogenic disease—a disease caused by medical intervention.

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References

1. E. Hooper, *The River: A Journey to the Source of HIV and AIDS* (Little, Brown, New York, 1999), pp. 718–722, 788–792.

A Quote from the Other Bill

With regard to the presidential candidates' positions on the Kansas State Board of Education's decision to remove evolution from the topics included in statewide testing ("Breakdown of the year: Creationists win in Kansas," 17 Dec., p. 2242), Constance Holden did not report the reaction of Bill Bradley—who is at least as credible a candidate at this time as Gary Bauer. I called Bradley's campaign headquarters as part of my research for an article I was writing (1). They passed on to me Senator Bradley's response: "While I respect local school board control, I also believe that every American child needs a foundation of solid scientific education, and evolution clearly falls into that category." This is markedly different from the support for creationism expressed by Steve Forbes

and Gary Bauer; the general agreement of Elizabeth Dole, John McCain, and George W. Bush that it is OK for local schools to teach creationism; and the Al Gore "waffle" reported by Holden.

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References

1. *Informal Learn. Rev. No. 38* (Informal Learning Experiences, Washington, DC, September–October 1999). Also available at www.informallearning.com

The Down-to-Earth Story of Photovoltaics

In his review of *From Space to Earth: The Story of Solar Electricity* by John Perlin (Aatec, 1999) (*Science's* Compass, 17 Dec., p. 2280), David Faiman seems to focus much of his attention on what are, at worst, minor faults in the book, and in doing so misses the main message. Perlin's book tells the story of people who took an existing space technology and used it to improve the quality of life on Earth. The book is about people, not science. Faiman may find it "tedious" to hear Perlin's accurate descriptions of how difficult it is to bring a product to the "market," but that is the way of the world outside of the laboratory. *From Space to Earth* tells it as I remember it, and deserves to be read for its demonstration that sometimes we are able to work very hard to help improve the lot of our fellow man.

I agree with Faiman that the subtitle of the book, *The Story of Solar Electricity*, is not well chosen. *From Space to Earth* is clearly only about photovoltaics and specifically about the success in making solar cells useful on Earth. Many of us were taught that the easiest way to use solar energy was to use it as it falls, where it falls, thus taking advantage of the fact that the energy is delivered at no charge to the user. This book demonstrates the value of that principle. There are many other promising solar energy technologies, and I am hopeful that several of them will have future success. We need all the alternative energy sources we can develop.

Perlin enthusiastically focuses on one technology that has succeeded and should be congratulated for the glory he brings to scientists, engineers, and, yes, marketers of photovoltaics. I also appreciate the fact that the book is written at a layperson's level. My mother, my aunt, and my wife, none of whom had any science education beyond junior high, all "loved" the story and found it a "good read."

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