ments such as "it is obvious why ..." and "few could argue ..." thereby saving himself the trouble of teasing out the issue, and leaving the reader unpersuaded. With regard to the ethics of gene therapy, he argues that it is difficult to make a case that alleles causing catastrophic diseases such as Huntington's Disease (HD) should not be purged from all future generations, using germ-line gene therapy. However, he does not tackle the risk of potential unforeseen irreversible germ-line effects.

Clark appears unfamiliar with the reality of current medical genetics. He states as fact things that are simply not true, such as that in HD families, the mere fact that a parent has developed the disease is usually sufficient information to lead most at risk persons to decide not to have children. True for some, but by no means true for most. Had I not read the last chapter of this book, I would have been left relatively satisfied with "Healers" as a means of getting to grips with the (fairly) current state of the science of gene therapy. However, having read the last chapter, I was left rather disconcerted. It seemed to me that Clark would rather deal with the ethical issues that the Human Genome Project raises for a "Gattaca"-style future (most of which, incidentally, have nothing to do with gene therapy) than to tackle the problems of *today's* molecular medicine. He seems more comfortable with the ethics of science fiction than with the everyday dilemmas faced *now* in the genetics clinic by families and their clinicians. There is undoubtedly a place for tackling now the problems of future technologies, but how can we hope to resolve the issues of the 21st century, when we have not yet resolved those of the 20th?

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The River: A Journey Back to the Source of HIV and AIDS

EDWARD HOOPER

Harmondsworth: Penguin; Boston: Little, Brown, 1999. xxxiii + 1070 pp.
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How did AIDS begin? There are lots of theories, from a monkey bite to biological warfare experiments gone wrong.

Who wants to know? Some AIDS researchers would, especially if the answer gives insights useful in the struggle against AIDS or for preventing a similar disaster.

Edward Hooper, more than nearly anyone else, wanted to figure out how AIDS began. He initiated a personal investigation that ended up being a nine-year saga. *The River* is the story of his incredible journey, which took him around the world searching for documents, undertaking interviews and exploring trails of evidence.

Hooper tracks the way AIDS spread in the early years, especially via wars in central Africa and through a few individuals in America and Europe. He is especially interested in the earliest cases of AIDS, scrutinizing each suspected case. With this evidence, he is able to eliminate most origin theories.

The most commonly accepted theory is that simian immunodeficiency viruses (SIVs) entered humans to become HIVs via "natural transfer," for example a hunter butchering a monkey and getting monkey blood in a cut. But monkeys have been butchered for millennia. Why is AIDS so new, with the earliest HIV-positive blood sample dating from 1959?

In 1992, there was widespread publicity about the theory that AIDS arose from contaminated polio vaccines. The world's first mass polio vaccination campaigns were conducted by Hilary Koprowski in central Africa from 1957 to 1960, with hundreds of thousands of

people given live-virus vaccine orally. The timing and location fit beautifully with the epidemiology of AIDS. Polio vaccines are cultured on monkey kidneys; at the time, SIVs were unknown and there was no screening for them. It is known that another monkey virus, SV40, was given to millions of people via polio vaccines, so monkey virus transfer via vaccines is certainly possible. Albert Sabin found an unidentified, non-polio virus in the particular batch of vaccine used in Koprowski's African campaigns.

The oral-polio-vaccine theory of AIDS was developed by several people, including Louis Pascal, Jennifer Alexander, Mike Lecatsas, Blaine Elswood and Tom Curtis. Building on their insights, Hooper has done the investigations to show its plausibility. He describes his fascinating interviews with AIDS researchers and polio pioneers, gradually getting closer to specifics that can pin down the origin.

The River is an epic scientific detective story that is eminently readable. It combines archival investigations, insightful interviewing and close reasoning in a productive combination seldom found in this era of scientific specialization.

Along the way, Hooper came up with the answer to another question: "Who *doesn't* want to know?" Many scientists are antagonistic to the oral-polio-vaccine theory. Seed samples of Koprowski's vaccine apparently remain untested for SIV years after testing was proposed. Koprowski has sued publishers for defamation over stories about the theory. So publication of *The River* is a great social as well as scientific accomplishment. Whether a fair and open evaluation of the theory will occur remains to be seen.

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Reconstructing Biology—Genetics and Ecology in the New World Order
JOHN VANDERMEER
Chichester, Wiley, 1996. 478 pp. ISBN 0 4711 0917 7

This work manages to dance away from easy categorization, which is not a reflection on its quality but rather on its complexity. For long stretches it is a careful explanation of biology aimed at teaching undergraduates, either from the biological or social sciences. This it does admirably, laying open the debates that are scattered around the popular understanding of biology. Often Vandermeer's logical demolition of the central clichés of popular biology racism and twin studies in particular—leave his targets flapping in the wind. His method of moving from an abstract example or elaborate metaphor to attack the intellectual premises of his opponents is always illuminating and often entertaining. As a teaching resource, Vandermeer's work is powerful intervention and corrective to the slipshod uses that biology is often put to.

Vandermeer also has a project for making political intervention, against the uses of biology in supporting racism, neo-Malthusianism, sexism and genetic determinism. In tackling such vast topics within one text, he is both ambitious, and frequently capable of making telling points against his opponents. In line with the eco-socialist dialectical analysis he is making, he refuses to make an explicit account of what programme he might adopt. Simultaneously this appears to disparage those who are working for social justice in the present and to ignore the urgency of his analysis of the need for change. In combination with the occasionally stilted correctness of his terminology, it gives the book on occasions, a worthy tone. It is this tone, more clearly than the American examples, that distinguishes it from a European perspective.