

book reviews

of the sequence. There continue to be irreconcilable differences between the demand by publicly funded laboratories for immediate and unrestricted release of data and the necessity for Venter to maintain some degree of secrecy in order to sell genomic information. The most recent manifestation of this controversy is the failure of the participants to agree on joint publication.

I am not sure who Davies sees as his audience. He includes a chapter on DNA that is aimed at non-scientists, yet much of the book requires familiarity with the genomics research world. Davies tries to show why sequencing the genome is both useful and fascinating by including chapters on the implications for clinical genetics, human evolution and gene therapy, but I found that these broke the flow of the central story of sequencing the genome. It could be argued that Davies' US title is not quite on the mark. So far, we have read the letters of the genome without much understanding; cracking the genome is yet to come.

Davies tells the story with verve, but tends to lapse into hyperbole, as if he feels the need to reassure the reader that this is a big story; for example, the double-helix paper stands "above the entire rest of the pantheon of scientific literature", and the completion of the human genome sequence is "perhaps the defining moment in the evolution of mankind". And there are mistakes; it was Robert Sinsheimer at the University of California at Santa Cruz, rather than Charles DeLisi of the Department of Energy, who first considered sequencing the human genome. Davies' claim that DNA was "virtually ignored" in the period between Friedrich Miescher (1871) and Oswald Avery (1944) displays a disappointing lack of knowledge of the studies of Albrecht Kossel, Phoebus Levene and William Astbury.

Davies closes the book with the charming story of Bateson's conversion to mendelism while travelling by train to give a talk at the Royal Horticultural Society. According to Bateson's wife, Bateson's reading of the experiments performed by the little-known monk 35 years previously transformed his view of heredity. Bateson revised his presentation en route to include Mendel's findings. Unfortunately, historian Bob Olby's recent research suggests that Bateson was reading, not Mendel, but the Dutch geneticist Hugo de Vries.

Davies did not set out to write a definitive record of the politics of the genome project, which is a pity; genome scientists are likely to be left wanting more behind-the-scenes details and scuttlebutt. *Cracking the Genome* is a good start, but the epic that is the Human Genome Project awaits its Boswell, or Watson. ■

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Happy together? Einstein was said to have treated his first wife Mileva Marić with undisguised contempt.

Affairs of the heartless

Einstein in Love: A Scientific Romance

by Dennis Overbye
Viking: 2000. 416 pp. \$27.95

Lewis Pyenson

Seeking the laws of nature, physicist Albert Einstein invoked the Deity's love of harmony. For more than a decade, however, we have been aware that Einstein, the man, surrendered celestial harmony to earthly passion and engendered domestic dissonance. Einstein was the great defender of cause-and-effect in physics, but from his youth, he sought the affection of women, in parallel and in series, with little concern for the consequences. Celebrated as a gentle pacifist, Einstein treated his family with heartless disdain and his first wife with undisguised contempt. He raised large sums for charity while depriving his children of a tranquil existence. In *Einstein in Love*, science writer Dennis Overbye has provided an engrossing narrative of the personal and professional life of *Time* magazine's "Man of the Century".

Einstein's attraction to his first wife Mileva Marić, a free-thinking Serb of Austro-Hungarian nationality, echoed his sceptical attitude towards authority. Both were irreverent and unconventional students of physics. Early in their courtship he called her

Doxerl (Dollie) and she called him Johanzel (Johnny), perhaps allusions to characters in *A Doll's House* (Henrik Ibsen was a notable figure in Munich when Einstein was a boy there). Notwithstanding doubts expressed by the editors of the Einstein papers, there is circumstantial evidence that Marić shared in the genesis of relativity theory.

Just as Einstein took time to obtain a doctorate — failing several times in the attempt — he was also slow to reach maturity in personal relations. Shortly before he finally broke with Marić, when Europe was careening towards war in 1914, Einstein drew up a list of demands for keeping up appearances with her that reads uncannily as if it were the marriage contract of the emotionally crippled scholar Peter Kien in Elias Canetti's 1935 novel *Auto da Fé*.

When Einstein's station in life permitted it, he gave libido free rein. Women became, for him, an anodyne for the rigors of pure thought. Overbye portrays Einstein's second wife Elsa Einstein as a bourgeois comfort, suiting his station as a world-famous professor at Berlin University. Through her efforts, he ate well and recovered his Jewish heritage.

The charming affair between Einstein and Marie Curie, portrayed by Yahoo Serious in his underrated 1988 comedy film *Young Einstein*, is entirely fictitious, but it invites us to consider how Einstein loved. If we may infer from his correspondence, his love is largely sexless; momentous thoughts find little place in it. In addition to cute nothings, letters sent to his wives refer to

food and drink, to the small universe of an apartment, and to the recollection of a night of mutual comfort. There are petulant, uncharitable judgements along with naive self-deprecation. *Einstein in Love* reveals Einstein's sadness at his personal failings alongside his elation at the prospect of a tryst. We are a long way from John Donne's "Extasie", in which mutual attraction leads to transcendence.

To hear Einstein's physicist friends speak about him is to imagine a figure of great strength and sensitivity. Einstein's portrait in Leopold Infeld's 1941 autobiography *Quest* (Chelsea, 1980), for example, radiates humility, honesty and charity. In Infeld's account, and in many others, the man behind the intellectual revolution produced by the energy quantum and relativity has the face of a kindly, absent-minded sage whose own historical account of what happened (written with Infeld) has the comforting English title, *The Evolution of Physics*. It is hard to overestimate the impact of such an image.

In his account, Overbye juxtaposes Einstein's emotional state and his scientific research. Einstein's love affairs and his thoughts about physics appear serially without connecting commentary. (The physics receives unnecessary and sometimes confusing explanation, while there is little attempt to analyse matters of the heart.) The disjointed style reinforces the reader's sense that the qualities of kindness and humanity, as represented in the larger-than-life statue of Einstein on the Mall in Washington, are social constructions.

Einstein in Love ends abruptly with Einstein's triumph in predicting the deflection of starlight during the solar eclipse of 1919. The story carries a disturbing moral: repelled by the flawed genius of Wagner and Nietzsche, scientists in the twentieth century have portrayed this man as a personification of his great work. ■

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An excavation of the drug myth

Intoxicating Minds

by Ciaran Regan
Weidenfeld & Nicolson: 2001. 164 pp.
£14.99

Leslie Iversen

At first sight, Ciaran Regan seems to have attempted the impossible — a summary of the whole of psychopharmacology in less than 50,000 words aimed at a general readership. But he has been remarkably successful and has written an entertaining and informative account of mind-altering drugs, with a minimum of technical jargon or chemical structures.

The book covers essentially all of the drugs that are used recreationally — both the legal ones (caffeine, nicotine and alcohol) and the illegal ones (amphetamines, ecstasy, cocaine, cannabis, heroin and the hallucino-

gens). For all of these he manages to convey up-to-date information about how they work, at the same time giving the reader basic information about the brain and neurotransmitter mechanisms involved. The book gives a very good basic overview of brain function, including a digression into the mechanisms involved in memory.

The author takes a non-judgemental approach to his subject matter. As he puts it: "What is needed is an excavation of the drug myth. This [book] does not extol or condemn drug use; it simply invites reflection." This refusal to demonize drug-taking is refreshing.

Another large section of the book describes the drugs used to treat mental disorders — the anti-anxiety agents, antidepressants, antipsychotics and lithium. There are accurate and insightful descriptions of the illnesses themselves, with plenty of up-to-date information. The discussion of antidepressants, for example, accurately points out the irony that the pharmaceutical industry has now come full circle. The early antidepressant drugs imipramine and amitriptyline inhibited the reuptake by neurons of the two neurotransmitters noradrenaline and serotonin. The Prozac generation of serotonin-selective reuptake inhibitors replaced these. But the latest antidepressants are again combined noradrenaline- and serotonin-reuptake inhibitors — albeit with fewer side effects than imipramine and amitriptyline. Similarly, in the development of new drugs to treat schizophrenia there has been little success in breaking away from dopamine-receptor blockade as the universal mechanism of action.

The author writes in a lively and engaging style, and the text is full of anecdotes about how drugs were discovered or how their use originated, in many cases early in human history. I could find little to criticize in terms of the scientific accuracy of any part of the book, although the description of significant alcohol abuse as requiring the consumption of "at least a bottle of whisky a day for a period of several weeks" did seem to smack a little of Irish hyperbole!

Professional neuroscientists and pharmacologists will find little here that they do not already know — although they may find many of the historical anecdotes interesting and amusing. Did you know, for example, that the first antidepressant drug, the hydrazine derivative iproniazid, originated in part because Germany was left with a large stock of unused hydrazine rocket fuel at the end of the Second World War? The book can certainly be recommended to non-experts who want to know more about mind-altering drugs. ■

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Whether we approve or disapprove, mind-altering drugs are central to the human experience.

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