

through the use of experts is firmly rooted in our culture. (Legal historians say the practice dates from the fourteenth century.) The broadening scope of subjects in which expertise is now needed is briefly surveyed; and Smith ends by quoting approvingly a leading article in *Nature* (362, 481; 1993) recommending that scientific evidence should be admitted in court only if the claim is testable, it has been

tested, and the methodology is sound. This is close to the conclusion reached by the US Supreme Court. The book therefore describes the kind of scientific testimony the courts now require. □

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## On the evolutionary treadmill

Magnus Enquist and Risa Rosenberg

**The Red Queen: Sex and the Evolution of Human Nature.** By Matt Ridley. Viking: 1993. Pp. 405. £17.99.

In Lewis Carroll's *Through the Looking Glass*, the Red Queen perpetually runs yet forever remains in place. She has become a metaphor for a problem in

This problem is the subject of Matt Ridley's book. The reader is treated to an intellectual journey focusing on sex and sexual behaviour in an attempt to define human nature. The first third of the book perceptively concentrates on basic descriptions and why sex occurs as seen from the different viewpoints of molecular biologists, geneticists and ecologists.

Later chapters question why there are different sexes, and how animals choose and acquire sexual partners. It is not until midway through the book that human nature is addressed. The last part of the book takes us through discussions of how the brains of males and females differ, the meaning of beauty, male and female reproductive strategies, intelligence, and, of course, how all these issues relate to matters of sex.

There is a wealth of information here, and it is an excellent source for researchers because of the descriptions of studies and its extensive reference section, as well as being an interesting book for a scientifically literate public. The book is entertaining, with such descriptive phrases as "amorphous blobs of insectness" (scale insects), and information from *Romeo and Juliet*, *Julius Caesar*, *James Bond*, *Cain and Abel*, and a number of meetings with Mar-

tian scientists. The quality of writing only rarely falters.

A book that discusses human nature cannot avoid being speculative, given the present scarcity of knowledge about this topic. The author makes no secret of his adaptationist leanings, and unfortunately the adaptationist programme is sometimes pushed a bit too far, with arguments raising more questions than they answer. For instance, the provocative discussions

of the ideal (thin-waisted) female form, true Nordic blondes and homosexuality are treated rather narrowly and not always convincingly.

We are most troubled, however, by the seminal role Ridley has given the Red Queen in the evolution of humans. He claims that human nature is primarily a product of sexual rather than natural selection, and that human nature is mainly a result of competition for mates in an evolutionary race that will both never end and never lead anywhere. This conclusion is difficult to accept. The fact is that in humans the Red Queen seems to have outrun her surroundings; humans have become one of the most successful species of all time, in terms of numbers and distribution. Such success cannot be explained by sexual games. Individuals capable of making more efficient use of their environment and those able to cope with new environments must have been favoured by selection.

We look forward to a time when we really know the answers to some of the questions raised by the author and the extent to which adaptive explanations are valid. Ridley's book and others in this genre go far in stimulating interest in evolutionary biology which is crucial to anyone seriously interested in human nature. □

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## Cultured minds

Chris Stringer

**The Runaway Brain: The Evolution of Human Uniqueness.** By Christopher Wills. BasicBooks: 1993. Pp. 358. \$25.00. To be published in the United Kingdom by HarperCollins on 24 March.

THIS is an attempt to explain what factors lie behind human evolution. Wills argues that "what is unique [about our evolution] is not the process, but the result. That is why the subtitle of this book is *The Evolution of Human Uniqueness*, not *The Uniqueness of Human Evolution*." He follows an initially rather conventional view that a culture-brain feedback loop was established early in human evolution, and that this was fuelled by the stimulating effect of the African environment. In his view, through selection for the increased power of the human brain to process and synthesize vast amounts of stored and new data, and for longer and deeper spells of concentration, the feedback loop gradually accelerated to a runaway pace.

The book covers a lot of ground, much of it a familiar retelling of the historical



Going nowhere fast — Alice and the Red Queen.

evolutionary biology. The success of an organism is partly influenced by the strategies used by others around it (frequency-dependent selection). Such problems may lead to evolutionary equilibria and, in other cases, there will be an evolutionary race with continuous changes in counteracting strategies. Sometimes, as the Red Queen found, such races will seem meaningless as there seems to be little progress.