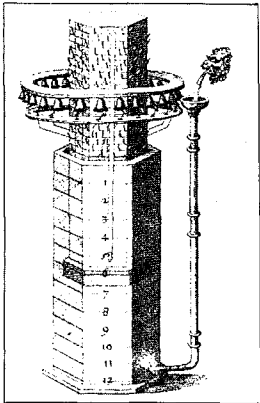


*Science & Technology***DESCARTES' DREAM:
The World According
to Mathematics**

by Philip J. Davis
and Reuben Hersh
Harcourt, 1986
321 pp. \$19.95



Mathematicians have never been popular, partly because tests in their subject are so frequently used as a social filter, a means, for example, of selecting candidates for business school. But most business courses require no knowledge of calculus, and ease with the quadratic formula should be no more a general indicator of future success than knowledge of religion or art. Conclusion: Use math as a filter only "for posts for which it is demonstrably required."

The makers of this argument, Davis and Hersh, are themselves mathematicians at, respectively, Brown and the University of New Mexico. Authors of the award-winning *Mathematical Experience* (1981), they here attempt to detail the various ways that mathematics enters into our everyday lives. Among their topics: the threat of digit overload, as in lengthening zip codes; computer art, a field whose future lies not in static pictures but in "the dynamic, the animated, the interactive" forms; and the meaning of living in a "stochastic" world, where probability explains everything from genetics and physics to voting behavior and actuarial tables. Elsewhere, among the more mind-stretching philosophical essays, Davis and Hersh explain how, by and large, mathematicians have unwisely ignored the role of time (personal "lived" time) in mathematical thinking.

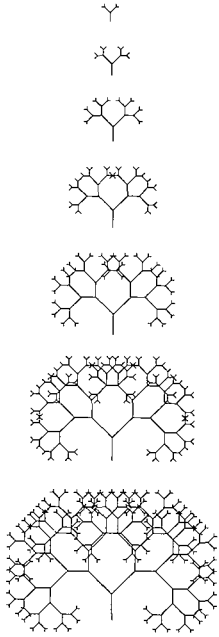
Gradually, a theme emerges in this book: the authors' conviction that people in contemporary society too credulously agree that "the way to arrive at objectivity in the real world is to travel the mathematical road." It is a notion that Hersh and Davis hope to lay to rest.

**THE BLIND
WATCHMAKER:
Why the Evidence
of Evolution
Reveals a Universe
without Design**

by Richard Dawkins
Norton, 1986
332 pp. \$18.95

Playwright George Bernard Shaw lamented that once he understood the "whole significance" of Charles Darwin's theory of evolution, he was struck by its "hideous fatalism" and "damnable reduction of beauty and intelligence." Dawkins, an Oxford zoologist, counters this all-too-common response. Properly understood, he argues, evolution is highly selective and anything but random.

The watchmaker image comes from 18th-century theologian William Paley, who thought that the complexity of nature argued the existence of a



maker (i.e. God). Dawkins agrees that such "technology" as bat sonar *appears* to be the work of a master engineer. But it is the product of eons of cumulative natural selection. Environmental variants (food supply, predators, weather) determine an organism's fitness. Power is measured by the ability of an individual's genes to reproduce themselves. When DNA (the genetic storehouse) fails to make exact copies of itself, producing mutants, selection comes into play, rejecting or accepting the new variations.

The forces of selection are more constructive than destructive, says Dawkins. They engender improvements: Zebras run faster as lions become cleverer. Moreover, natural selection favors duplication of "altruistic" genes, those that favor cooperation with other genes. And cooperative genes work together to create larger organisms.

Large-scale mutations may occur at "punctuated" rates, periods of evolutionary stagnation followed by rapid change. Darwin himself did not believe that change was constant. But, insists Dawkins, he would have rejected the view of paleontologists Stephen Jay Gould and Niles Eldredge that stasis comes when genes reject evolutionary change. Hybridization contradicts that paradox of "active" stasis.

While punctuationism represents a heretical offshoot of Darwinism, Bible-quoting creationists are, in Dawkins's words, simply "lazy." They resist the theory's neatness because it explains "how organized complexity can arise out of primeval simplicity."