

it have geneticists scratching their heads in confusion. It's in such poor shape that scientists are wagering about how many genes the genome contains—and the bets run from a few tens of thousands to a few hundred thousand. And when scientists *do* succeed in decoding the genome, producing a computer disk full of As, Gs, Cs, and Ts, they will still have to figure out precisely what those chemicals mean.

Genetics has gotten much more complicated in the century and a half since Gregor Mendel figured out heritability in his field of pea plants. Our genetic code contains the instructions for creating proteins, but proteins control the way the cell follows those instructions. In this vast, complicated web of cause and effect, genes control proteins that control genes, and proteins control genes that control proteins.

Keller, a professor of science, technology, and society at the Massachusetts Institute of Technology, notes that the very concept of the gene has been muddied. In the early days of Mendelian genetics, the gene was thought of

as a biological atom—an uncuttable, indivisible particle responsible for a trait in an organism. Since then, scientists have learned that a gene is not indivisible and not necessarily responsible for a trait. These and other complications make it difficult for a biologist to answer even the simple question, “What is a gene?” Indeed, the crux of Keller’s book is that the word *gene* needs to be replaced because its imprecise nature may be impeding biological progress.

She presents this argument rather oddly. When summarizing the history of genetics, she pays more attention to scientists’ writings than to their laboratory work. Many of her allusions to experiments are so quick as to baffle the uninitiated. It makes sense to dwell on a corpus of literature when studying Aristotle or Kant or Hume, but scientists speak most eloquently through their experiments. That is the difference between philosophy and science, and it should be the difference between a history of philosophy and a history of science.

—CHARLES SEIFE

HISTORY

COAST TO COAST

BY AUTOMOBILE:

The Pioneering Trips, 1899–1908.

By Curt McConnell. Stanford Univ. Press. 368 pp. \$45

At 11:02 a.m. on Thursday, July 13, 1899, John and Louise Davis left New York’s Herald Square in their two-cylinder National Duryea “touring cart,” headed, they told reporters, “to ‘Frisco or bust!’” Bust it was. A one-armed bicyclist who left New York 10 days after the couple passed them in Syracuse. By the time the Davises arrived in Cleveland, their cart had been repaired at least 20 times. When they reached Chicago in October, they abandoned their transcontinental journey. An

automobile, Louise Davis concluded, “is a treacherous animal for a long trip.” Automobile touring demanded “plenty of pluck, patience, and profanity,” her husband said, “and I think that I am becoming proficient.”

Four years later, Dr. Horatio Nelson Jackson tamed the treacherous animal. After sending his wife ahead on a train, he



Stuck in the mud in Woodside, Utah

embarked from San Francisco for New York on May 23, 1903, with a mechanic named Sewall K. Crocker in a one-cylinder Winton touring car. Axles broke. Tires blew. Getting up steep grades or through deep mud required a block and tackle or a team of horses. Gasoline often proved hard to come by. So, sometimes, did food. But they persevered. At 4:30 a.m. on July 26, 63 days after setting out, Jackson and Crocker, along with a stray dog that had joined them in Idaho, pulled up before the Holland House on Fifth Avenue. They were the first to cross the continent in an automobile.

Others followed, often cutting the time of the trip. Manufacturers such as Winton, Oldsmobile, Packard, and Franklin used the publicity to demonstrate the endurance and power of their automobiles. Speed became all-important. In 1906, a team of relay drivers running their car around the clock completed the trek in 15 days. One intrepid driver crossed the country three times and served as a guide on a fourth voyage.

All of these facts come from *Coast to Coast by Automobile*. McConnell, the author of *Great Cars of the Great Plains* (1995), has studied his subject exhaustively. In addition to sifting through *Scientific American* and *Motor Age*, he has consulted such obscure sources as the *Harney Valley Items* of Burns, Oregon, and the *Daily Hub* of Kearny, Nebraska. From them he has carefully culled stories about the various trips, correcting common misconceptions and constructing detailed itineraries.

Occasionally, McConnell recounts the trips in such detail that the narrative gets a little bumpy, as when he tells us three times that a driver was stopped for speeding in Buffalo. At other times, we might wish for a larger perspective. What were Americans reading and thinking between 1899 and 1908? What other stories were reported in all those newspapers that McConnell read? But these are minor quibbles about an important, amply illustrated work. Anyone who has read accounts of early automobile travel knows how difficult it is to separate fact from fiction. Because of McConnell's meticulous research, we at last have a reliable guide to the first decade of cross-country automobile travel.

—TOM LEWIS

**ROBERT KENNEDY:
His Life.**

By Evan Thomas. Simon & Schuster.
509 pp. \$28

Of the making of books about Robert Francis Kennedy (1925–68) there seems no end. After *Robert Kennedy: Brother Protector* (1997), *The Last Patrician* (1998), *Mutual Contempt* (1999), and *In Love with Night* (2000), to name just a recent few, comes this biography by a *Newsweek* journalist. Thomas believes he is the first writer since historian Arthur M. Schlesinger, Jr., Kennedy's friend and admiring biographer, to gain access to important closed papers at the Kennedy Library. Thomas also has mined other resources, conducted interviews, and read the literature.

The result will not supplant Schlesinger's masterly *Robert Kennedy and His Times* (1978), but it does shed additional light here and there, offering appraisals from a more detached yet still fair-minded perspective. Of the futile, "more silly than sinister" plots by the CIA-cum-Mafia to kill Fidel Castro, for instance, Thomas writes that Kennedy's involvement, if any, was probably "peripheral," and that RFK himself later became the real victim, growing "very fearful" that the plots might have sparked his brother's assassination. The author finds Attorney General Kennedy more culpable for the Federal Bureau of Investigation's extensive use of electronic listening devices. Kennedy later insisted that he had not known about the practice, but "the evidence strongly suggests that RFK was not speaking truthfully," writes Thomas. "At the very least, [he] displayed a notable lack of curiosity about the source of the FBI's intelligence on the mob."

Under pressure from FBI Director J. Edgar Hoover, Kennedy did authorize the wiretapping of Martin Luther King, Jr., whose adviser Stanley Levison was alleged to be a secret Communist and Soviet agent. The wiretapping seems to trouble Thomas much more than it did Levison, who, while denying the allegations against him, told Schlesinger that he understood the political necessity for the Kennedys to avoid any scandal, given their support for the civil rights movement. Though later remorseful about Hoover's "grotesque