

testing of atomic bombs. This section includes Pauling's "Science and Peace" Nobel Lecture, as well as a 1958 transcript dialogue from *Meet the Press* regarding accusations by the House Un-American Activities Committee and the FBI that he was a communist.

This is an informative and enjoyable book that will entice any scholar to visit the Ava Helen and Linus Pauling Collection.

JAN SAPP

Paul Dickson. *Sputnik: The Shock of the Century*. 364 pp., illus., notes, bibl., index. New York: Walker & Company, 2001. \$20 (paper).

The Russians could not sneak a nuclear "suitcase bomb" into the United States, a popular joke in the early Cold War went, because they had not perfected the suitcase. The launching of the *Sputnik* satellite by the Soviet Union in 1957 clearly put a stop to the laughter. By now, it is hardly news that *Sputnik*—pronounced "spootnik" in Russian—marked a turning point in Cold War international politics and in the history of space exploration. Since the publication of Walter McDougall's Pulitzer Prize-winning *The Heavens and the Earth* (Basic, 1985), in which *Sputnik* largely took center stage, several historical works have appeared that focus on the prehistory and the impact of the world's first satellite. These include Rip Bulkeley's *The Sputnik Crisis and Early United States Space Policy* (Indiana, 1991), Robert Divine's *The Sputnik Challenge* (Oxford, 1993), and *Reconsidering Sputnik* (Harwood, 2000), edited by Roger Launius, John Logsdon, and Robert Smith. Now Paul Dickson, a journalist and prolific writer who is perhaps best known to historians of science for his *Electronic Battlefield* (Indiana, 1976), on Vietnam war technology, turns his considerable storytelling talent to the "Red Moon" that shocked the world. What results is a colorful and often fascinating chronicle of the major events and characters in the *Sputnik* drama but a frustrating work of history.

The book opens with the immediate reactions, especially in the United States, to the news of *Sputnik's* launch on 4 October 1957, a Friday. It describes well how the mood of the American public quickly turned from fascination to paranoia over the weekend. The narrative then goes back to the early history of space exploration, with profiles of three pioneers: Konstantin Tsiolkovsky of Russia, Robert Goddard of the United States, and Hermann Oberth of Germany. It continues with the evolution of two rival rocket teams during the Cold War: the Wernher von

Braun group, captured in Germany and moved to the United States by the American Army; and its counterpart in the Soviet Union, led by one-time political prisoner Sergei Korolev. After setting the mid-1950s background to *Sputnik's* launch, the book shifts into high gear as it gives an almost day-by-day account of the public, political, and military reactions to *Sputnik*, the humiliating failures of American launches in contrast to continued Soviet successes. Finally, von Braun's Army group placed *Explorer*, the first U.S. satellite, into orbit, and the Navy's Vanguard rocket redeemed itself in early 1958. Dickson then briefly reviews some of the major space events during the later Eisenhower years and Project Apollo. He concludes the book with some thoughtful observations on *Sputnik's* legacy, ranging from educational reforms to the countercultural movement and the invention of the internet.

To Dickson's credit, the book is well written and based on a large body of both primary sources—mainly news media reports and oral histories and other documents at the NASA History Office—and secondary accounts. It is full of interesting anecdotes and stories, not only on *Sputnik* but also on much else of what went on in American society and politics in this period. Unfortunately, the book, though boasting an eighteen-page bibliography, does not always provide complete and specific references for all the sources cited; footnotes and endnotes are often used to tell more stories. Furthermore, the book contains few new revelations related to major debates in space history. For example, one such debate has been over why the United States chose the untested Vanguard over von Braun's well-developed Redstone rockets in the early 1950s to launch the first American satellite as part of the International Geophysical Year. On this question, Dickson relies on the important recent research by the historian Dwayne A. Day to reach a conclusion that was earlier suspected by McDougall: the Eisenhower administration made the decision because it believed Vanguard, a new scientific satellite program specifically created for the IGY, could establish the "freedom of space" principle and thereby open the way for reconnaissance satellites over the Soviet Union better than von Braun's program, which was too closely tied to the military. In the end, of course, *Sputnik* did exactly that for the United States: it nicely established the freedom of space for everyone.

Clearly this book targets a popular audience, not the scholarly community. But to the extent that Dickson is able to capture well the dramatic

aspects of the *Sputnik* episode and relate it to other events and currents in American and world history, the book might serve as suitable supplemental reading for students in an undergraduate class on space history or the Cold War.

ZUOYUE WANG

John L. Rudolph. *Scientists in the Classroom: The Cold War Reconstruction of American Science Education.* x + 262 pp., index. New York: Palgrave, 2002. \$65 (cloth); \$22.95 (paper).

What were American scientists really up to when they championed educational reform in American high schools at the height of the Cold War? The educator and historian John Rudolph argues that the scientists behind the Physical Science Study Committee (PSSC), the Biological Sciences Curriculum Study (BSCS), and similar programs hoped not only to improve science education but also to promote (and validate) their own investment in instrumentalist research. Remarkably little has been written on these attempts to reform precollege science education, especially considering that—or perhaps because—so many American historians suffered through the curriculum. Existing accounts tend to view the reforms as either a heroic improvement of pedagogical method or a direct response to the Soviet threat. Rudolph achieves this new interpretation through an almost seamless application of the historiography of Cold War science, technology, and medicine onto Herbert Kleibard's "competing interests" approach to curriculum history. The results are impressive; but as with all good revisionist history, there is much to disagree with as well as to applaud.

Starting in the mid 1950s, a number of scientific groups, including the major professional organizations of physicists, biologists, mathematicians, earth scientists, and chemists, turned their attention to the sorry state of high school education. Although university science professors had long complained about secondary school education methods, the Soviet Union's remarkable and terrifying ability to educate technicians spurred American scientists to action. Many of these men had been involved in the so-called big science programs of World War II, and several had participated in the interdisciplinary, project-oriented, military-sponsored "summer study" groups of the postwar era. In both their personnel and their methods, Rudolph argues, there was a "surprisingly direct lineage" (p. 88) between the science education reform programs of the 1950s and 1960s and earlier military research projects such as the Rad Lab at

MIT. The physicists were especially effective at mobilizing both the social and financial resources to "reconstruct" American science education away from the practically oriented stuff of daily life and toward the high-tech machinery and theory of modern military technologies. Instead of learning about the Newtonian forces that make soapbox carts roll downhill, for example, students learned about subatomic particles and electromagnetic fields.

Each curriculum project created course outlines, textbooks, and laboratory manuals that attempted to redirect science education toward "intervention in and control of the natural world" (p. 7), which just happened to be the very goals of the postwar scientific and military establishment.

To argue, as Rudolph has, that these scientists were primarily pushing an instrumentalist agenda shared by their government sponsors is a profoundly dramatic shift away from both previous interpretations of these education reforms. This approach does have its limitations, and the book is most frustrating when Rudolph relies too heavily on a body of literature largely developed in response to the militarization of the physical sciences. Historians of biology, in particular, may groan at yet another study that purports to show biologists' postwar physics envy.

Rudolph's interpretation of the BSCS as an attempt to replicate the PSSC and therefore impress National Science Foundation officers with biology's modern methods, for instance, glosses over a host of other agendas. The BSCS was the first program that systematically and unapologetically introduced evolution to American classrooms. It also introduced adolescents to a sanitized, postwar eugenics in the guise of "human genetics." And perhaps—though I too am reluctant to admit it—these biologists may genuinely have wanted to share their enthusiasm for their life's work with the next generation. Though I am not as familiar with the physicists behind the PSSC, I would hazard a guess that they likewise envisioned their program as one with multifaceted goals.

The same sort of criticism has, of course, been leveled at most historians who see Cold War ideology as the driving force of postwar science. Perhaps the argument seems more strained here because the intended audience for the scientists' performance was millions of adolescents instead of faceless government technocrats. In pushing the limits of what has now become the standard interpretation of Cold War science, Rudolph has dared postwar historians to search for