

Seth Shulman. *Undermining Science: Suppression and Distortion in the Bush Administration.* xix + 202 pp., index. Berkeley: University of California Press, 2006. \$24.95 (cloth).

The subject of Seth Shulman's book is the overt manipulation and abuse of science under the administration of George W. Bush, a topic that has been much publicized over the last few years. From the president's stance on stem-cell research, to the administration's denial of global climate change and refusal of the Kyoto Protocol, to many instances of overtly political obstruction of public health initiatives by government agencies (such as the "Plan B" contraception fiasco), it has been clear to many observers that the current regime is fairly hostile toward science and scientists. Shulman's book comes on the heels of Chris Mooney's similar and very successful book *The Republican War on Science* (Basic, 2005), and comparisons between the two are inevitable. Both authors are journalists, not academic historians, and both cover essentially the same territory in terms of cataloguing abuses by the Bush administration. What sets the two apart initially is that while Mooney's study covers the history of science politicization from the Nixon years forward, Shulman focuses only on the current Bush administration and limits his analysis to a series of case studies designed to illustrate a pattern of abuse he argues has set a "new standard" for "overt politicization" (p. xvi).

As a journalist and science writer, Shulman is admirably qualified to write on this topic, and his descriptions of scientific concepts and issues are pithy and lucid (for example, his summary of stem-cell science is among the best I've read). He also tips his hat to historians by acknowledging the importance of establishing a historical record of the Bush administration's policies and actions—which he compares to Lysenkoism and the McCarthy affair—for future study. But Shulman makes no bones about his intention to write an exposé, not a detached account: in explaining the motivation for the book, he confides that "as a working journalist, I feel compelled to speak out when the government lies to its citizenry" (p. xvii). Indeed, the book itself began as a report Shulman was commissioned to write for the science advocacy group Union of Concerned Scientists in 2004 for the express purpose of challenging the Bush administration in the political arena.

Overall, *Undermining Science* does a fine job of reporting many of the more spectacular instances of manipulation, intimidation, suppres-

sion, and outright lying by Bush administration officials and their political appointees across a fairly wide spectrum of scientific and public health issues. Some topics, like stem cells, global warming, sexual abstinence, and prescription drug protocols, will be familiar to many readers, but others, including an eye-opening chapter on manipulation of the Endangered Species Act, bring to light important facts that have escaped wider public attention. Shulman's intentions are certainly laudable (at least from the perspective of those readers who believe that science matters), and his journalistic skill is more than adequate for his task, but I felt the composition of the book left something to be desired. In the first place, it is rather short (only 158 pages of actual text), and the treatment of topics in each of the book's ten chapters is necessarily fairly cursory. Shulman does a fine job of convincing the reader of the prevalence of abuses through the brief anecdotes he recounts, but he doesn't provide the kind of in-depth exposure of the start-to-finish paper trail for each case that Mooney's longer treatment of the same subject allows. Because of this, the book at times feels like a didactic catalogue of sins that has the unfortunate effect of leaving the reader numbed rather than outraged. Perhaps this is in part due to the increasingly wide coverage many of these topics have received in the popular media and in other books—which one assumes Shulman would appreciate and for which he can hardly be faulted—but in the end the book struggles to find a consistent analytical or narrative thread to make the reader keep turning the pages.

Where the book has unquestionable value, however, is in drawing parallels between the Bush administration's abuse of the public trust with regard to science and its handling of broader domestic and foreign policy issues. Shulman hones in on these connections in the latter part of the book, where it becomes clear that similarities between the administration's handling of scientific expertise and, say, the Iraq war or Justice Department dismissals are hardly coincidental. In both instances the administration applied the same tactics: manipulating facts, using political appointees as "gatekeepers" in ostensibly nonpolitical government agencies, applying political "litmus tests" to load agencies with ideological soldiers, and intimidating and silencing dissenters within the ranks. Historically speaking, this disastrously arrogant policy may have consequences we are only beginning to appreciate, but authors like Shulman deserve our appreciation for taking the time and effort to root out and expose the kinds of abuses that all

too often happen silently and outside of the public view.

DAVID SEPKOSKI

Joel N. Shurkin. *Broken Genius: The Rise and Fall of William Shockley, Creator of the Electronic Age.* ix + 207 pp., illus., bibl., index. New York: Palgrave Macmillan, 2006. \$27.95 (cloth).

William Shockley (1910–1989) might be best known to the readers of *Isis* for leading the team at the Bell Telephone Laboratories that invented the transistor in 1947. Those who are more familiar with the history of the microelectronics industry might also know that Shockley moved to his hometown, Palo Alto, in 1955 to set up his own semiconductor business, Shockley Semiconductor Company, which was the first semiconductor start-up in the region now known as the Silicon Valley. He managed to hire a group of extremely talented scientists and engineers, including Robert N. Noyce and Gordon E. Moore, who subsequently revolted against Shockley to found Fairchild Semiconductor Company, which in turn spun off a string of semiconductor start-ups. Shockley's business failed in large part because of his stubborn management style and a distrust of subordinates that verged on paranoia. After the failure of his business venture, he transformed himself into a pseudoexpert on sociobiology, making provocative and sometimes annoying remarks on the genetic origins of human intelligence. He died in 1989 with a tarnished reputation.

What we have not known as much about was where this man came from. Joel N. Shurkin, a former science writer for the Stanford News Service, tells the life story of the enigmatic physicist in compelling detail in a volume based on Shockley's personal papers, held at the Stanford University Archives and in the Shockley home. Quite tellingly, Shockley began as a little boy to show his "violent temper," which his parents found difficult to suppress and to which they often acquiesced. Nevertheless, his parents had enough confidence in their abilities to homeschool their child until he was eight, which kept him insulated from social interactions during his formative years. While these episodes by no means provide definitive explanations, we can at least begin to comprehend this eccentric man who later threatened his employees with lie detectors. After attending college at UCLA and Caltech in the midst of the "revolution of physics," Shockley pursued graduate studies in phys-

ics at MIT under John Slater and Philip Morse. Upon graduation in 1936, at the height of the Great Depression, he accepted a position at Bell Labs.

The years before and after World War II were Shockley's golden years. He was drafted into military service, for which he used his mathematical skills to devise methods of efficiently spotting enemy submarines and utilizing B-29s for aerial bombing campaigns over Tokyo. His work was highly appreciated within military circles and earned him the National Medal of Merit at war's end. He practiced what came to be known as "operations research," although it might be a slight overstatement to claim that "much of the science of operations research in the US derives from Shockley's work for the military in the 1940s" (p. 85). After the war he returned to Bell Labs to continue his work on solid-state physics, which eventually led to the invention of the transistor. The transistor earned him the highest honor as a scientist—the 1956 Nobel Prize in Physics. But this was only after Shockley's lengthy dispute within Bell Labs alienated him from his team, including John Bardeen and Walter Brattain. He evidently felt unappreciated at Bell and decided to leave.

This, according to Shurkin, was the turning point in the Shockley saga. As we already know, Shockley's new business venture ended in failure by 1960. His first pronouncement on the issue of human intelligence came in 1963, during his speech at the first Nobel Conference hosted by Gustavus Adolphus College. Shockley argued that "there is no reason to doubt that genetic probability laws apply to human intellectual and emotional traits" (p. 195). By the mid-1960s he was devoting the bulk of his time to this topic in human genetics. Shockley's views on the matter, together with his unsociable delivery style, made him an easy target for his opponents. He was quickly relegated to a pariah within the scientific community. Even Frederick Seitz, one of his oldest friends and the president of the National Academy of Sciences, refused to back Shockley's 1969 proposal that the NAS fund his research on "dysgenics," which—along with nuclear war and famine—was one of "three things he felt threatened humanity" (p. 194).

Shurkin's main interest in Shockley's life is in this later phase as pseudosociobiologist. He is more concerned with the "fall" than with the "rise" of William Shockley. This interest is related to Shurkin's earlier project on Lewis Terman's longitudinal study of young geniuses in the California area. He published this story as *Terman's Kids: The Groundbreaking Story of*