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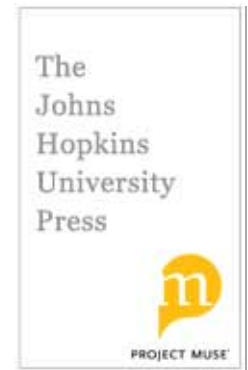
Draw the Lightning Down: Benjamin Franklin and Electrical
Technology in the Age of Enlightenment (review)

Arthur P. Molella

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According to Tucker, this created a dilemma for Franklin, who often performed electrical shows for friends. Their supposed pleas that he repeat the Marly experiment caused Franklin to invent and publish the kite story.

But this alleged motive is flimsy, if not whimsy. As Steven Shapin notes in *A Social History of Truth*, a lie exposed could, in the gentlemanly culture of natural philosophy, fatally tarnish one's reputation. Why would the clever and ambitious Franklin run this risk when he could have devised other stratagems for satisfying his friends? On this obvious question Tucker is silent.

Following Cohen, who showed that Franklin's fame for his electrical researches gave him easy entrée into the French court and thereby helped him secure crucial financing for the American Revolutionaries, Tucker concludes that "It might have been a kite, the story of a kite, the hoax that won the American Revolution" (p. 234). Appreciative of Franklin's pivotal role in creating the new nation and respectful of his genuine scientific accomplishments, Tucker's overall portrait of Franklin is sympathetic—perhaps too sympathetic. There is no trace of dismay over his protagonist having committed the ultimate scientific sin.

Perhaps Tucker knows that he did not clinch his case against Franklin. After all, he furnishes no compelling motive for fraud, no grounds for believing that Franklin's propensity for storytelling found expression in his scientific reports, no convincing argument that the kite experiment as he described it was impossible, and—above all—no smoking gun. Despite its lack of closure, *Bolt of Fate* is an engaging and provocative book that brings to light new archival evidence on the social and political dimensions of mid-eighteenth-century electrical technology.

MICHAEL BRIAN SCHIFFER

Dr. Schiffer is Fred A. Riecker Distinguished Professor of Anthropology at the University of Arizona. His recent books include *The Material Life of Human Beings: Artifacts, Behavior, and Communication* (1999) and *Draw the Lightning Down: Benjamin Franklin and Electrical Technology in the Age of Enlightenment* (2003).

Draw the Lightning Down: Benjamin Franklin and Electrical Technology in the Age of Enlightenment.

By Michael Brian Schiffer. Berkeley: University of California Press, 2003.
Pp. xiv+383. \$34.95.

In the 1770s, wealthy Londoners found comfort and occasionally a cure in the Temple of Health of physician James Graham, a flamboyant practitioner of electromedicine. The showpiece of Graham's establishment was his Great Apollo Apartment, an enormous room outfitted with huge and beautiful electrical machines, a "magnetic crown" that could be raised and lowered, and a giant electrical connector in the form of a gilded dragon

with a crimson tongue and eyes lit by “liquid fire.” Graham’s apparatus bathed patients in soothing effluvia of electricity and magnetism. Although he was widely condemned as a quack, the controversial electrotherapist finds a place in Michael Schiffer’s narrative as a member of one of the many electrical communities that sprang up in the eighteenth century.

An anthropologist with a longstanding interest in the history of electrical technology—his books include *The Portable Radio in American Life* (1991) and *Taking Charge: The Electric Automobile in America* (1994)—Schiffer believes that the history of electrostatics is too important and exciting to leave to scholarly specialists. Accordingly, he took special pains to fashion an engaging narrative line. As his hook he uses a biographical approach, highlighting the lives of the many colorful figures involved in the invention and diffusion of electrical technology, from Franklin to the likes of James Graham. The result is a spirited panorama of a mostly forgotten era of eighteenth-century electrostatics. Besides the famous figures, the Franklins, Priestleys, and Cavendishes, Schiffer introduces us to little-known instrument makers, electrobiologists, makers of lightning rods, and chemists, among others.

Draw the Lightning Down offers something for specialists as well. Its originality lies in Schiffer’s archaeological approach, an omnivorous gathering of evidence to document the diffusion of electrical instruments and activities throughout society. He adopts an expansive definition of technology, embracing everything from Paleolithic stone chips to modern microelectronic chips. In addition to secondary literature his sources range from published scientific papers and museum collections to trade catalogs and boy’s books (he admits not finding traditional archaeological evidence, such as parts of electrical machines in digs of eighteenth-century homes). Based on the evidence of widespread diffusion, Schiffer makes a strong case for pushing back the bounds of the electrical age to the eighteenth century, despite the fixation of historians on the great age of electromagnetism, the nineteenth.

Ultimately concerned with the cultural relationship between technology and human behavior, Schiffer organizes his book around communities of practice, with electrostatic artifacts as the nuclei. He identifies eight such technology-shaped communities: electrophysicists, disseminators, collectors and hobbyists, electrobiologists, earth scientists, property protectors (such as makers of lightning rods), “new alchemists,” and visionary inventors. He then traces the development of electrostatic technology as it moves from community to community, from the scientists outward into society. His theoretical goal is a new technology transfer model with eighteenth-century electrostatics as a case study. He offers a multistage process of information transfer, experimentation, redesign, replication, acquisition, and use. Most interesting of these is the role of the user, who can be as much an innovator as the original inventor. Here Schiffer corroborates the recent findings of historian Edward Tenner, among others.

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These theoretical constructs never obscure the main narrative. Schiffer takes an archaeologist's joy in material evidence. Instruments and experiments are described in loving detail. Explanations are clear and accessible, and my only quibble concerns a need for more diagrams to guide the reader visually. Schiffer concludes that artifacts motivate and channel technological thinking, highlighting in particular the role of the investigator's playful instincts.

Schiffer the anthropologist is at his best in revealing the symbolic functions of electrical artifacts. They served variously as signs of prestige, of modernity and progress, and of safety. To alternative medical practitioners, they signified a concern for the whole human being, especially compared to the often barbaric practices of contemporary physicians. Finally, Schiffer makes an additional case for the import of eighteenth-century electrostatics as a precursor of telegraphy, the internal combustion engine, xerography, and even nanotechnology. While this is suggestive, it is enough to show that electrostatics enjoyed its own day in the sun, which Schiffer documents with persuasive enthusiasm.

ARTHUR MOLELLA

Dr. Molella, director of the Smithsonian Institution's Lemelson Center for the Study of Invention and Innovation, began his career at the National Museum of American History as curator of electricity.

The Middle-Class City: Transforming Space and Time in Philadelphia, 1876–1926.

By John Henry Hepp IV. Philadelphia: University of Pennsylvania Press, 2003.
Pp. ix+278. \$36.50.

In this fluent study, John Henry Hepp traces the geography of middle-class life in Philadelphia between the Centennial Exposition in 1876 and the Sesquicentennial in 1926. He uses "three quintessentially bourgeois enterprises" (p. 8), department stores, newspapers, and transit, as starting points for an analysis of how a city-within-a-city emerged during the late 1800s that middle-class residents could experience as a complete world—"one great big stretch of middle class" (p. 169)—despite the obvious coexistence of a huge working class, along with a formidable elite.

Hepp begins with the assertion that the Victorian middle class undertook to imprint a "scientific worldview" on its environment (p. 2). The middle class defined "science" broadly to encompass classification, organization, and system as well as the expansion of knowledge and technological innovation. Basing his argument on a dogged combing of diaries and other manuscripts distributed among Philadelphia's archives as well as on printed sources, Hepp insists that the Victorian effort to create an orderly city arose from a "middle-class faith in progress and the future" (p. 8).