

I. Bernard Cohen, *Science and the Founding Fathers: Science in the Political Thought of Thomas Jefferson, Benjamin Franklin, John Adams & James Madison* (New York: Norton, 1995), 368 pp. \$25.00 (hard cover)

Reading I. Bernard Cohen's work reminded me of seminars that I once attended given by Henry Steele Commager. Both men are of the same generation, both focused much of their scholarship on the eighteenth century, and many of Cohen's examples I first heard from Commager. In 1943 Cohen received the first American doctorate in the history of science, and like Commager he has remained productive in retirement with this, his 22nd book. As the subtitle suggests; chapters are devoted to four of the most important political figures of the Revolutionary period. Each chapter can be read on its own, for this is less a cumulative argument than a series of close readings of particular documents, each carefully situated in context. Cohen knows precisely which scientific books Franklin, Adams, Madison, and Jefferson had at their disposal, and what is more, Cohen clearly has read them himself, including Newton's *Principia* in its original Latin. When Jefferson penned the *Declaration of Independence*, for example, Cohen shows that he echoed the specific language of Newton in its first two sentences. Likewise, he shows that Jefferson was a better mathematician than Washington (who was a surveyor) or Hamilton (a businessman). Jefferson devised a system for apportioning seats in Congress that was superior to the others put forward, and he used calculus to design an improved plow.

Cohen reprises his earlier work on Franklin, who was not just a well-known experimental scientist, but the formulator of the first widely accepted theory of electricity and also one of the founders of the field of demography, inventing theories of population growth and decline similar to that Malthus later became known for. As these examples suggest; the book focuses on specific examples more than overarching theories. It is written in a clear and lively style, though at times it becomes a little repetitive. His work is far removed from the sweeping claims of the history of science that Michel Foucault introduced twenty years ago. Cohen works out of an earlier tradition. Close to his documents and versed in the scientific controversies of the time, he describes, as it were, individual trees but takes for granted that the reader already has an overview of the forest and knows the usual haunts of the *philosophes* in that woods. Cohen spends considerable

REVIEWES

space detailing the scientific education of each of his four subjects, but only quickly sketches the theories of Kepler, Newton and other major figures, on the assumption that most readers interested in this subject will have sufficient background. Colzen describes not the science of the day, but rather the ways in which it undergirded political assumptions and provided powerful metaphors to statesmen. A student of Newton could claim that certain truths were self-evident (or axiomatic). By appealing to "the laws of (Newton's) nature" the *Declaration* was given an aura of unquestioned finality.

Woodrow Wilson, when still an active political scientist, mistakenly promoted the view that the conception of the balance of power was a Newtonian idea and that it lay behind the *Constitution*. But as Cohen demonstrates, Wilson and the hundreds who have relied on this argument simply did not know enough science. "The balance of forces, equilibrium or equipoise, is a part of physics known as statics, the science of forces at rest. Newtonian physics...is concerned with a different subject, dynamics, the physics of forces and accelerations." (216) John Adams was well aware that the idea of a political balance of power was an older idea, which he traced to Machiavelli. The most common source was the writings of John Harrington, who not only wrote a generation before Newton but attacked the idea that sciences provided models for politics. Cohen finds that "A close reading of Madison's minutes of the Constitutional Convention ... does not disclose a single example in which the physical and the biological sciences provided an important concept, model, power, or restriction used in framing the principles of the new government." (258) Likewise, in the *Federalist Papers* Cohen finds nothing that would "even vaguely suggest" Newtonian science. The conclusion: dynamic Newtonian physics is embodied in the *Declaration of Independence* but had little bearing on the *Constitution* or its adoption.

A new scholar in the field, with the same materials, would no doubt write much more about slavery, Native Americans, women's rights, and other inequalities of the time and how these same thinkers dealt with them. Cohen does not avoid these topics and at times has interesting things to say about them, but they are clearly secondary to him, as he focuses on the central documents that founded the United States. I am willing to grant him that. A more serious fault is the failure to synthesize his many findings into a larger pattern. The concluding sections on the significance of political metaphor are too brief, and do not draw together the myriad examples and observations. All in all, however, the book is a fascinating supplement to our understanding of American political thought in the age of revolutions.