

# [Review of the book *Men, Women, and the Birthing of Modern Science*]

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tions between students and their teacher to ideals of experimentation and their divergent implications. He insists, *contra* Andrew Cunningham, that there was an experimental physiology—not just an anatomy—before the nineteenth century. And he details the complex experimental process behind Haller's famous claim of the strict distinction between irritability and sensibility. The dynamic of experimentation transformed small observed variations into larger divergences with far-reaching consequences. To put it simply, Haller claimed vivisection to have shown that irritability, an ability of contraction that caused movement, was strictly possessed by the muscular fibers. Sensibility, which was responsible for sensual impression, inhered exclusively in the nerves. The new understanding of animal motion and sensation was a genuine challenge to traditional, mechanical models of the body.

The resulting controversy led to a wave of experimentation across Europe. Coming into Florence, one mathematician reported limping dogs, the unlucky victims of experiments on the tendon, on every city corner. Some 150 persons took an active part in the debate; about 120 dissertations or treatises were prompted before Haller's death in 1777. Nor was this activity restricted to the physiologists. Surgeons took up the implications for their own field, as did practitioners concerned with pathology. (The torture of Robert Damiens, the failed Louis XV regicide whose nasty end was made familiar to many scholars by Michel Foucault, drew deliberately on the Hallerian controversy.) The ironic effect was to enshrine Haller as a kind of Newton of physiology—Condorcet told him admiringly that he had newly based physiology in experimentally proven fact instead of in metaphysics—but to reject the main and careful physiological claim itself.

What of the links between literature and medicine? Steinke has little patience for those who see in Haller's physiology an impetus or reference point for the literary culture of sensibility. He seeks to qualify the claims of those scholars who have forged links between the medical and the fictional too readily. Arguing from the silence of a loquacious man, he asks us to imagine Haller deliberately refusing the link between moral sensibility and physical sensibility, and he points to the sharp disconnect between Haller's physiology and that taken up elsewhere. This may be to refuse the distinct generic and cultural concerns of literary writers animated by Haller's ideas even as they deployed them to much looser ends. But Steinke's account does furnish an explanation for Haller's personal disincentive, at

least: those cruel animal experiments necessary to his experimentalism hardly fit with the concerns for right feeling of sensibility's literary proponents. If so, it is a marvelous irony: the scientist most popularly associated with the concept was also among those most apparently resistant to moral sensibility or, indeed, even to sensibility as scientific style.

In addition to Haller the experimenter and the stoker of controversy, Steinke also gives us Haller the reviewer. As chief editor of one of the most widely read among German general review journals, Haller had a particular set of criteria about reviewing, which included judgment over mere summary and, if necessary, politeness over censure. A review should encourage the reader to buy good books and keep him from reading bad ones. Steinke's *Irritating Experiments* is certainly a good book in the carefulness of its interpretations, the originality of its claims for experiment, and the ambitions of its pan-European reach. It can be recommended without need for politeness to historians of eighteenth-century medicine and to scholars concerned with the histories of experimentation, the dynamics of the Republic of Letters, and the ideas of the European Enlightenment.

SARAH KNOTT

**Judith Zinsser** (Editor). *Men, Women, and the Birthing of Modern Science*. vi + 215 pp., index. Dekalb: Northern Illinois University Press, 2005. \$38 (cloth).

It is generally agreed that before about the middle of the seventeenth century, the activities and investigations of nature that eventually became modern science were open to participation by both men and women. Though women certainly did not engage in such activities in numbers equal to men, there was nothing in the culture, law, or institutions of the late medieval period that directly ruled out female practitioners of medicine, science, or philosophy. Historians of science and medicine have been gradually piecing together the ways that the new scientific institutions of the seventeenth and eighteenth centuries and the new methods employed to ascertain the truths of experimental facts operated to exclude women from what was inexorably becoming a system for producing and publishing scientific knowledge. The essays in *Men, Women, and the Birthing of Modern Science* seek to address and to complicate this important development in the history of science by examining a number of transitional cases where ex-

ceptional women and a few enlightened men held open, for a longer time than is often acknowledged, the door to a club that was gradually becoming altogether masculine.

The term “club” is entirely appropriate, because many of the essays in the volume touch on the ways that men organized private space and activities and reserved them for the public good, thus excluding women from participation in these domains to the extent that they were held to be inferior to men in rights and duties. Some of the exceptions noted here were women of the aristocratic classes, such as Margaret Cavendish, the marquise de Châtelet, Princess Ekaterina Dashkova of Russia, and Queen Christina of Sweden, patron of Descartes. These women were either politically powerful or rich in their own right, were allied with powerful men, or learned the rhetorical skills necessary to position themselves authoritatively in contemporary scientific or philosophical debates and engage in the correspondence networks of the Republic of Letters. Judith Zinsser’s essay on the successful rhetorical strategies of the marquise de Châtelet contrasts dramatically with Hilda L. Smith’s account of Margaret Cavendish’s oscillation between open skepticism toward and flattery of men of science. For her part, Susanna Åkerman draws an interesting account of Queen Christina of Sweden, whose conviction that she was more a man than a woman became the grounds for her androcentric bias in the “feminine” alchemy she pursued. Despite their own limited successes, none of these women effectively defended the right of women in general to have access to higher education and scientific careers—with the exception of Ekaterina Dashkova, Catherine the Great’s director of the St. Petersburg Academy of Sciences between 1783 and 1796, who sponsored an egalitarian treatise presented by a male author.

In the realm of ideas, three interesting essays challenge some of our conventional understandings of the place of women in the conceptual space occupied by scientific discourse. Margaret Osler critiques the accounts of Carolyn Merchant, Evelyn Fox Keller, and others that hold that the masculinist language of the mechanical interpretation of nature was itself the operational cause of women’s exclusion from scientific activity. Osler provides examples of exceptions to presentations of a “feminine” science that must be mastered by men and argues that premechanistic philosophers such as Paracelsus expressed as much or more animus toward women in their work as did the “moderns.” The scientific mar-

ginalization of women, she argues, was a social matter, not one of a masculine discourse of nature. J. B. Shank and Franco Arato argue, respectively, that Bernard de Fontenelle’s *Entretiens sur la pluralité des mondes habités* and Francesco Algarotti’s *Newton’s Philosophy for the Ladies*, which popularized Cartesian and Newtonian science, did so in language that acknowledged the social space of the mixed-sex salon and the putatively “imaginative” nature of “ladies” eager to learn science in the company of men. Like Osler, they hold that, at least for elite women, participation in scientific learning was regulated more by social conventions than by the intellectual conventions inherent in a world of masculine scientific ideas.

Lynette Hunter, Stephen Clucas, and Monika Mommertz echo this position in their essays. Hunter argues that women’s discursive practices in premodern science were grounded in oral and community-based networks, which were ultimately badly suited to the geographically broader communication by letter and print employed by men in scientific organizations. Clucas uses the example of a medicine prepared by the “doctress” Joanna Stephens as a remedy for the “stone” to show how male experimenters and all-male institutions appropriated and “improved” her work according to their own standards, without acknowledgment and indeed with withering disdain. And Mommertz, in a persuasive essay, follows up the fate of the female members of the Winckelmann-Kirch clan who were astronomers to the Prussian Academy of Sciences. They were formally excluded as members of the academy when they lost their male heads of household, but their essentially household science of astronomical calendar-making was so important to the institution that an “invisible economy” continued to support the Winckelmann women more or less off the books.

In sum, all these essays usefully direct our attention to the social history of women’s exclusion from modern science, which was—social development being so differential and uneven—partial, incomplete, and complicated by local developments.

ROBERT A. NYE

#### ■ Modern (Nineteenth Century to 1950)

**Katharine Anderson.** *Predicting the Weather: Victorians and the Science of Meteorology.* ii + 331 pp., illus., bibl., index. Chicago/London: University of Chicago Press, 2005.

Katharine Anderson presents readers with a model analysis of the complex social, cultural,