

affinity for the secularist Jacobins (p. 72). And although his wife's posthumous destruction of the family correspondence makes it difficult to speculate on the character of Smith's – apparently heartfelt – attachments to other men, scholars of gender and sexuality will probably be disappointed with Kennett's seemingly casual pronouncement that 'Smith's sense of morality rules out anything but the most platonic, though intense, of relationships' (p. 45).

These foibles do not, of course, detract from the book's many strengths. For one thing, it ties in with a growing body of scholarship concerning the difficulties involved in establishing a paying scientific career in the nineteenth century, and the cultivation of non-expert readerships this often necessitated. Like any good biography, it likewise succeeds at illuminating not only Smith's life but also the lives of his inner circle, including lesser-known individuals like the Swiss English botanist Edmund Davall, and Mary Watson-Wentworth, Marchioness of Rockingham, an important botanical patron. Kennett sheds a similarly intriguing light on Norwich itself, which, we learn, developed into a centre of textile manufactures, religious Nonconformity, radicalist politics, horticulture and natural history owing largely to a sixteenth-century influx of Protestant refugees from the Spanish Netherlands. As befits its subject matter, *The Lord Treasurer of Botany* is also a beautifully crafted volume, complete with numerous illustrations and coloured plates. These factors combine to make a biography that historians of popular science will probably reckon useful, and that scholars of eighteenth- and nineteenth-century botany and natural history will no doubt regard as indispensable and overdue.

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SARAH K. GILLESPIE, *The Early American Daguerreotype: Cross-currents in Art and Technology*. Cambridge, MA: MIT Press, 2016, Pp. x + 213. ISBN 978 0 2620 3410 4. £23.95 (cloth). doi:10.1017/S0007087417000711

The daguerreotype – a photographic image exposed on a polished metal plate – as Sarah Kate Gillespie demonstrates in this recent book, is a photographic technology which took root in America immediately after the invention was announced in 1839. While the process was invented in France, Gillespie traces how it was brought to the United States – first by the artist, inventor and experimenter Samuel Morse, to then be adopted by a range of practitioners along the eastern seaboard. Gillespie's book follows the invocation in Robert Taft's early seminal work (*Photography and the American Scene, 1839–1889*, 1938) to examine more closely this important history of the daguerreotype in America. The subject of Gillespie's book is a welcome addition to the history of nineteenth-century photography, the aim of which is to explore the intersecting roles of science, art and technology in the decade following the invention of the daguerreotype.

The book's aims are admirable, but its potential is let down by the perspective taken on the relationship between science, art, technology and photography. The book's structure, featuring four chapter-length case studies, compartmentalizes science, art and technology into discrete forms of perspective and practice. While the first chapter attempts to integrate science, art and technology as equal pursuits of Morse's work in daguerreotyping, the distinction between these categories remains at the forefront. The remaining three chapters reinforce these differences – with stand-alone case studies on the art, science and technology of American daguerreotypes. Describing Morse, for instance, Gillespie writes that while he 'had engaged with technological experiments for years ... the daguerreotype provides an obvious link between Morse's two careers, art and science, which are typically treated as separate and distinct' (p. 17). This perspective of a divide between art and science – and technologists as 'tinkerers' – is reflective of how the author conceptualizes and historicizes the relationship between photography, science and art. Borrowing the label from the historian of photography Allan Sekula, Gillespie defines science as the 'flip side of art' (p. 11). For historians of photography, science or technology, the reification of such

distinctions is highly problematic, especially considering the broad body of research over the last twenty years which has worked to erase them.

The fundamental flaw of the book, therefore, is that it does not engage with recent literature on the history of science, technology or photography. Considering the emphasis on science within the book, for instance, it is disconcerting that Gillespie writes in her introduction that ‘by the early nineteenth century the term “science” was used much as it is today, referring both to the types of topic studied (the occurrences of the material universe) and to how those studies were conducted’ (p. 3). Recent works, such as Bernard Lightman’s *Victorian Popularizers of Science: Designing Nature for New Audiences* (2007), John Tresh’s *The Romantic Machine: Utopian Science and Technology after Napoleon* (2012), Josh Ellenbogen’s *Reasoned and Unreasoned Images: The Photography of Bertillon, Galton, and Marey* (2012) or Kelley Wilder’s *Photography and Science* (2009) would have dissuaded Gillespie of the belief that these histories have remained unchanged since the nineteenth century.

The potential of a book-length study of daguerreotyping in America is rich – and this emerges most clearly in Gillespie’s final chapter, where she highlights a variety of practitioners who were adapting and inventing new techniques, emulsions and perspectives for daguerreotypes. These photographers were integrating the crafts of portrait perspective, advances in chemistry and optical and mechanical instrument-making – and if Gillespie had taken this perspective as the core of her argument throughout the book, then her study would have greatly improved our understanding of the integrated histories of science, technology, art and photography in this early period. The historiographic perspective adopted by Gillespie, however, is likely influenced by the context of the book’s publication – it is part of a series on studies of innovation and invention. To this end, Gillespie’s argument focuses on explaining why the daguerreotype came to be understood as an ‘American process’. The answer to this question, for Gillespie, is that while American science was undervalued, the ideal of technological invention was privileged. American culture, in this argument, was not scientific but technologist, and thus the daguerreotype was privileged because it was a material achievement, not an intellectual one. This kind of argumentation demands compartmentalization of science and technology as epistemologically and materially distinct. In this way, Gillespie has created a history of the daguerreotype which is not reflective of the historical actors’ beliefs or actions toward photography in the mid-nineteenth century. The book, therefore, for historians of science or photography, unfortunately occludes more than it clarifies of the history of the American daguerreotype.

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PETER HOBBS, *Venomous Encounters: Snakes, Vivisection and Scientific Medicine in Colonial Australia*. Manchester: Manchester University Press, 2017. Pp. xiii + 202. ISBN 978-1-5261-0144-0. £70.00 (hardback).

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Part of the long-running Studies in Imperialism series from Manchester University Press, this animal-centred account tracks the development of snake venom science in colonial Australia between 1840 and 1914. Across six thematic and broadly chronological chapters, Peter Hobbs demonstrates how animal experimentation to investigate the action of venoms and potential antidotes was practised widely across the antipodes. He seeks to write animals back into colonial science as sentient beings and indispensable (though unwilling) participants. Rather than authoritative assertions by individual investigators, venom science in Australia was characterized by ‘crowd participation and plebeian expertise’ (p. 164). Snakes loomed large in the Australian ‘ecology of dread’ (p. 3). Finding which were harmful and what to do when bitten were enduring preoccupations for white settlers as they co-colonized alongside their domesticated animals. But