century research as unsophisticated compared with nineteenth-century advances in cellular theory and pathology.

This book will be indispensable for historians of microscopy and eighteenth-century natural science. Historians of medicine will find the book of interest, although the focus is not on medical microscopy. Two chapters on microscopes in the market-place provide a context for understanding microscopy questions and research. Copious illustrations and tables enhance the reader's understanding of the eighteenth-century microscopy enterprise. The book has some weaknesses. Sloppy copy-editing detracts from the reader's experience. Furthermore, Ratcliff may have included too much information: the book is dense. All in all, however, Ratcliff deserves much credit for this fine scholarly monograph.

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James C. Whorton, *The Arsenic Century: How Victorian Britain was Poisoned at Home, Work, and Play* (Oxford: Oxford University Press, 2010), pp. xxii + 412, £16.99, hardback, ISBN: 978-0-19-957470-4.

No mere chronicle of lives of the great poisoners, *The Arsenic Century: How Victorian Britain was Poisoned at Home, Work, and Play* takes up the broad question of a society's response to a cheap and lethal substance present in multiple consumer products. Whorton's twelve chapters range widely across fashion, medicine, and technology, in exploring how arsenic got into Victorian bodies. Beyond purposeful poisoning there were many non- or less-deliberate poisonings from accidents or from chronic exposure in homes, on farms, or in mines or factories. A white powder in some common forms, arsenic was readily mistaken for innocuous white powders. Arsenical compounds brightened candles, and, as Schweinfurt green, dyed dresses and wall-papers, including those of William Morris. Low doses were held to strengthen the heart and beautify the complexion; arsenic was an active ingredient in popular medicines. It was in sheep dip and clung to the shepherd. As a contaminant of sulphur ores, it got into sulphuric acid, and into whatever was made with that industrial mainstay, such as Manchester beer, brewed with sugar rather than malt, the sugar having been refined with such acid. Of course, arsenic's ubiquity left Victorian murderers and murderesses with ample alibis – she had bought all that arsenic only to kill rats, said one.

For most of the century it was tricky to prove arsenical poisoning, much less identify a culprit. By mid-century, the Marsh and Reinsch tests had helped to consolidate a cadre of forensic experts. But hope of certainty in outing poisoners only spurred ingenuity among defence attorneys – perhaps the arsenic seeped into the buried corpse in the groundwater? Thus arsenic remained a destabilising power within Victorian society – it affected gender roles, relations of master and servant; relations within families; among professions. A series of trials in the late 1840s disclosed a league of lower-middle-class Essex women who pursued mutual improvement via strategic poisoning and were able successfully to hint that local (male) juries would be unwise to convict any of them. The new life insurance industry, particularly in the form of burial clubs, may have served as a stimulus package for arsenic use – there could be a premium on the elimination of an extra child or inconvenient spouse or relation.

Yet much arsenical poisoning was due to frivolousness – fashion over safety – or to institutionalised neglect. Whorton also draws attention to the sort of surplus-extracting bargains between capital and labour (or consumers) that so horrified Karl Marx: at best, the response to regular damage to health of those who mined or refined arsenic ores or prepared wall-papers was minimal mitigation – a handkerchief over the face.

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Systemic poisoning was no ground for overthrowing the prevailing view that the market compensated for any harm to health.

Britain failed to grapple effectively with arsenic, Whorton believes. In some cases arsenical technologies were superseded, or the glacial pace of public concern (or the quicker one of changing fashion) forced manufacturers to abandon arsenical products, but arsenic scandals kept coming. Noting that continental governments, with stronger traditions of medical police, sometimes acted more energetically in regulating arsenical commerce, Whorton reflects on the sanctity of *caveat emptor* in Victorian culture. Yet in other areas of public health British governments did overcome any principled reluctance to act.

The Arsenic Century is a good read, reflecting Whorton's fine eye for evidence and broad sweep, yet vignettes and grisly tales sometimes get in the way of historical analysis: a book about a Victorian sensation (arsenic was one) does not fully escape the sensationalism of its sources. Like forensic science today, arsenic was a boon to Victorian publishers. Murders thrilled readers: poisoning was the most lurid sort of murder. Adulterated foods, stupid fashions, and industrial victimisation could also draw readers. Medical weeklies like the *Lancet* fed on that sensation at one remove. One may wonder if Victorian Britain's unwillingness to take arsenic more seriously stemmed from the public's ambivalence toward its journalism. Some pervasive threats to health do exercise us most fully as occasions for venting or hand-wringing; any effective action would be complicated and highly inconvenient.

My criticisms are equally suggestions for further work. First, a more systematic comparative treatment would clarify any British uniquenesses (Whorton occasionally alludes to European or American practice, but in no sense is this book a comparative treatment). Second, however helpful Whorton's topical ordering, it obscures change, yet he suggests that there was greater responsiveness by the end of the century. Finally, we need to know more about who the poisoned were and how many. Arsenic mimicked common illnesses, including infectious diseases. If the sensationalists are right, a revision of a received view, in which poisoning is rare and infection common, would be warranted. Or perhaps this is mainly a story of the power of mass media to embellish environmental (and social) danger. With this fine introduction to an overlooked threat to health, Whorton has earned the right to address that question more fully.

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Christoph Gradmann and **Jonathan Simon** (eds), *Evaluating and Standardizing Therapeutic Agents, 1890–1950* (Basingstoke: Palgrave Macmillan, 2010), pp. xiv + 266, £55.00, hardback, ISBN: 978-0-230-2-281–8.

This collection of articles edited by Christoph Gradmann and Jonathan Simon, investigates an important, and timely topic: the history of the standardisation of therapeutic agents, or, to use the term chosen by the volume's editors, *Wertbestimmung*. This word does not correspond precisely to the English term 'standardisation', since it contains also a dimension of 'evaluation' and 'regulation'. The difficulty of defining what exactly standardisation/*Wertbestimmung* is, and how it unfolds in different sites, is at the very centre of this volume. The final essay by Alberto Cambrosio quotes Samuel Krislov's apt formulation: 'there is no standard way to define standards'. On the other hand, if *Evaluating and Standardizing Therapeutic Agents* does not provide a single definition of standardisation/*Wertbestimmung*, it conveys a good understanding of the importance of this topic and its central role in the development of twentieth-century medicine.

The first part of this collection is composed of seven papers (by Cay-Rüdiger Prüll, Axel Hüntelmann, Anne I. Hardy, Gabriel Gachelin,

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