

of the canon of literature in English? It answers to legitimate concerns, but is it cost-free? Does it make for a more or a less cohesive society? One might ask a similar question about the abandonment, in liturgical contexts, of the Bible in the King James Version. Because both these books positively invite such participation and such questions, both are good “machines for thinking with.”

William R. Newman and Lawrence M. Principe. *Alchemy Tried in the Fire: Starkey, Boyle, and the Fate of Helmontian Chymistry*. Chicago and London: University of Chicago Press, 2002. xiv + 344 pp. + 8 illus. \$40.00. Review by LUCIANO BOSCHIERO, UNIVERSITY OF NEW SOUTH WALES.

Historians of science have often questioned the practices of the early modern alchemists; what type of experiments, if any, did they carry out? Precisely what literary sources did alchemists use during the Middle Ages and the Scientific Revolution? And what influence did alchemical studies have on the history of science? With the help of some important manuscript sources, Newman and Principe offer some enlightening answers to these questions. Through the laboratory notes of seventeenth-century American alchemist, George Starkey, these authors provide a rare insight into the field of alchemy. In the process, Newman and Principe also claim that they hope to dispel traditional myths and misconceptions about alchemy/chymistry (Newman and Principe interchange the term “alchemy” with “chymistry”, as if they were synonymous), including the notion that chymists were interested only in finding occult qualities and spiritual harmonies in nature. According to Newman and Principe, this position mistakenly assumes that alchemists offered nothing of value to the emergence of “new science” in the second half of the seventeenth century, since a break supposedly occurred in that period, in which scholastics and alchemists were replaced by experimenting mathematicians.

In 1650, George Starkey moved from America to England in order to meet and work with others interested in alchemy and

mysteriously published under the pseudonym of Eirenaeus Philalethes. Robert Boyle was among those with whom Starkey collaborated in England during the 1650s. Boyle only developed an interest in alchemy after meeting Starkey in January 1651, and from that moment on, began to collect an extensive library of alchemical texts. What is particularly interesting in chapter one, in the authors' analysis of the relationship between these two figures, is the lack of acknowledgment that Boyle gave Starkey and other chymical writers in his own publications. While appropriating claims from alchemists, Boyle did not wish to be associated publicly with them and risk gaining the reputation of an occultist, rather than a mechanical natural philosopher.

However, despite Boyle's attempt to distance himself from the occultist reputation of alchemists, Newman and Principe claim that their research on the collaborative efforts between Boyle and Starkey, shows that Boyle's alchemical interests were far more extensive than what he was prepared to acknowledge publicly. At this point of the book, it becomes obvious to the reader that Boyle is actually the focus of the authors' study. While Starkey provides Newman and Principe with the pertinent issues regarding alchemy in the mid-seventeenth century, this research is actually directed towards understanding Robert Boyle's intellectual background: "our reason for exploring this topic is to show how little one can rely upon the image of the iconic Boyle for grounding claims about seventeenth-century chymistry and Boyle's place therein" (33).

Chapter two provides some background to the emergence of alchemical studies in the seventeenth century. According to Newman and Principe, there was an experimentalist and quantitative aspect of alchemical studies since the Middle Ages that has been ignored or overlooked by many historians. In particular, Newman and Principe identify Joan Baptista Van Helmont, an early seventeenth-century Flemish metallurgist, as the leading figure in experimental quantitative chymistry. Van Helmont was interested in finding the chemical composition of substances and their physical characteristics before and after experimentation, including their

weight and specific gravity. This is part of what the authors identify as the Helmontian technique of "analysis and synthesis" (90).

Newman and Principe conclude the chapter by claiming that Van Helmont's approach to alchemy "found no more eager adherent than George Starkey" (91). Indeed, from Starkey's laboratory notes, examined closely in chapters three and four, we come to appreciate the experimental quantitative technique behind Starkey's work that he acquired from his readings of Van Helmont. Furthermore, Newman's and Principe's analyses of Starkey's projects, such as the preparation of the Philosophical Mercury, reveal the degree to which Starkey's experiments were laden with Helmontian theory. Newman and Principe contend that "Starkey does not deploy mere empirical or unguided trials . . . but rather turns to theoretical principles to direct his practical investigations" (102). Additionally, these manuscripts reveal that Starkey sometimes vouched for claims, not proven through experiment, on the basis of textual authority; his trust of certain authors. This was a typical scholastic technique for presenting claims and further strengthens the notion of continuity in the history of science that Newman and Principe support.

After revealing the laboratory practices of a typical alchemist in the mid-seventeenth century, Newman and Principe move on to the main target of their research, Robert Boyle. The reason for the authors' interest in Boyle is quite understandable considering that Boyle was both a student and collaborator of Starkey. In fact, Newman and Principe convincingly demonstrate in chapter five that Starkey was Boyle's most influential chymistry teacher, and that the two remained correspondents until Starkey's death in 1665. This means that traces of Starkey's Helmontian experimental quantitative skills and theoretical commitments can be found in Boyle's early alchemical interests and publications throughout his career.

Furthermore, Boyle was one of the most influential figures in natural philosophical circles between 1660 and 1690. To find such a strong link between Boyle and the beliefs and practices of one of the most prominent alchemists of the period, certainly presents the opportunity for the authors to comment about the supposed

origins of chemistry and the experimental philosophy in the mid-seventeenth century. Newman and Principe, therefore, reinforce the historiographical aim of the book by claiming that their research of Starkey's and Boyle's relationship rejects stories about discontinuity in the history of science: "To reiterate what is important for our study is the historiographical consequence—Boyle's silence about his sources has made it seem that he had none and has consequently given the impression of a greater discontinuity in the history of chemistry at Boyle's period than is really the case" (272).

So this research of Starkey's laboratory practices has the potential to create quite an impact on the search for origin stories in the history of seventeenth-century science. However, rather than comment extensively about pertinent historiographical issues relating to this topic and experimental philosophy, Newman and Principe continue in chapter six with an analysis of Helmontian chymistry in the eighteenth-century work of Antoine Laurent Lavoisier and relegate the historiographical issues to a few brief points in the conclusion. Indeed, it would be interesting to read Newman and Principe's opinion of recent writings by Peter Dear, Steven Shapin, John Henry, and Peter Anstey, among others, regarding experimental philosophy, the mathematisation of nature, and the history of the philosophy of alchemical studies in the seventeenth century.

In summary, few significant criticisms can be made of this book. The argument against traditional notions of discontinuity is compelling, but more recent writings should also be considered. Furthermore, clearer definitions of the words "alchemy," "chymistry" and "chemistry" might help to distinguish the application of these terms throughout the text. Also, some questions remain unanswered: exactly why did Starkey use a pseudonym? Did he manage to disguise his identity from all his English colleagues, not just Boyle? What was Starkey's reaction to Boyle's appropriation of some alchemical concepts? Were Boyle's colleagues aware of his collaboration with Starkey? In any case, this is an enlightening account of seventeenth-century alchemy and a de-

light to read. It is well written and narrates some difficult alchemical concepts of the period in a very lucid and comprehensible fashion, even for readers who have limited knowledge about this topic.

Steve Sturdy, ed. *Medicine, Health and the Public Sphere in Britain, 1600–2000*. London: Routledge, 2003. xiii + 290 pp. \$95.00. Review by CELESTE CHAMBERLAND, UNIVERSITY OF CALIFORNIA, DAVIS.

In recent years, Jürgen Habermas's groundbreaking characterization of the public sphere as the main site of "discourse and opinion formation" independent of state control has piqued the interest of historians and sociologists seeking to decipher the intricacies of social interaction and the emergence of civil society in early modern Europe (7). By identifying the demarcation between public and private activity, Habermas has provided scholars with a vital analytical tool for assessing the broad social context of bourgeois capitalism and the legitimization of government action. However, as *Medicine, Health and the Public Sphere in Britain, 1600–2000* demonstrates, Habermas's theory provides a useful starting point for social and cultural historians but is limited in scope by an overly rigid assessment of the distinction between the public and private spheres and an exceedingly narrow definition of public discourse. A collection of essays authored by a diverse range of medical historians seeking to broaden Habermas's account of the public sphere, this volume offers an innovative assessment of the ways in which medicine historically has intersected with collective action and public institutions. As the book's contributors contend, expanding the boundaries of Habermas's deterministic theory to include a more extensive range of communities and multiple modes of action will enrich our understanding of civil society in general, and the medical sphere in particular.

As a key component in the distribution of public services, such as immunization and the general provision of health care, medicine furnishes a fascinating matrix through which the changing