BOOK REVIEWS

Chemistry in 17th-Century New England, Gary Patterson, Springer, Cham, 2020, 94 pp, ISBN 9783030432607, $69.99 (paper), $58.90 (ebook).

Stemming from a symposium supported by the History of Chemistry Division of the ACS concerning the history of chemistry in America before the induction of the Society in 1876, this concise but dense work deals with the acts and deeds surrounding the southern New England-based alchemical *milieu* of John Winthrop Jr (1606-1676), monopolist, founding member of the Royal Society, third and fifth Governor of the Connecticut Colony.

Scholars who write on topics concerning the conceptualization of chemical knowledge usually take care to spend some time discussing the issue of the historical demarcation between alchemy and chemistry. This sort of categorization is not part of Patterson's purpose in this book. Some scholars will object to the author's approval of so much of Winthrop's conceptual, working and human framework and to his avoidance of those methodological constructs which have become a permanent fixture in the so-called "new historiography of alchemy." But more than one of those same scholars will have to admit that we can all learn from someone—a scientist, in this case—who writes like a fan rather than the umpteenth unconvincing epistemologist.

Fascinating as it is, the spread of European alchemy and chemistry in the New World is a subject that has rarely met with scholarly interest, and no major contribution was produced until 1994, the year of publication of the seminal work by William R. Newman, *Gehennical Fire: The Lives of George Starkey, an American Alchemist in the Scientific Revolution*. Since then, several other scholars have produced contributions to the history of alchemy in New England, focusing exclusively on the Boston area. Patterson's book, however, represents the second contribution dedicated to the topic but with a different geographical focus. In fact, it owes much to the only other monographic work dedicated to Winthrop, published in 2011 by the State Historian of Connecticut, Walter W. Woodward: *Prospero's America. John Winthrop, Jr., Alchemy, and the Creation of New England Culture (1606-1676)*.

Of the eleven chapters constituting the book, the first and the last (pp 1-7, 91-94) are an introduction and general conclusions. Chapter 2 (pp 9-13) deals with the religious and philosophical thought of Winthrop. The author proves to be well aware of the hermeneutic shortcomings of the historiography preceding Newman's breakthrough, which mistakenly sought to identify alchemy exclusively as a branch of magical thought and, as such, incompatible with the colonists' Puritanism. The current state of research recognizes instead how alchemy proved to be consistent with Puritan values. As shown by Winthrop and his circle, Connecticut and Massachusetts Congregational Puritans broadly understood alchemy to be an intellectual and utilitarian endeavor but simultaneously offering the possibility for unmediated spiritual practices. Fostering propensities towards horizons of shared knowledge and common weal, Puritan alchemists hoped to achieve scientific advancements of both practical value and religious relevance. As for the supposed adherence of Winthrop's philosophical

thought to that of Francis Bacon (pp 12-13), although it is a suggestive hypothesis, it requires dedicated studies and cannot be accepted uncritically for a number of reasons. First is the mixed evaluation of alchemy espoused by Lord Verulam; second is his general aversion to the combination of natural philosophy and religious beliefs characterizing alchemical thought. On the other hand, as the author clearly shows, Winthrop fully understood the centrality of technological advancement for social purposes—constantly seeking the commercial stability and industrial independence of the territories under his political control—and generally endorsed the Baconian call for an empirically based "great instauration of knowledge." In Patterson's words: "John Winthrop, Jr., understood both the need for spiritual guidance and the constraint of public knowledge judged by groups of active researchers" (p. 12). Thus, for Winthrop, being a proto-industrialist in public and an alchemist in private did not represent a contradiction but a coherent balancing of his scientific, religious and social hopes and designs.

Chapter 3 (pp 15-22) presents a rapid overview of the situation of the Connecticut settlers upon Winthrop's arrival in the New World, while chapter 4 (pp 23-32) discusses his alchemical formation and accession to the Massachusetts Bay Company, with interesting insights on his passion for alchemical book collecting. Chapters 5 to 8 (pp 33-70) are undoubtedly the most compelling in the book, as they cover those aspects of Winthrop's work not dealt with or only hinted at in Woodward's contribution, from the foundation of the city of Agawam (today Ipswich, MA) to the implementation of industrial planning including the establishment of saltworks instrumental for the conservation of fish to be exported and the introduction of ironworks in the city of Braintree (MA). Related chemical processes and operations are reconstructed and described (offering the possibility for future in-depth research pertinent to archaeological chemistry) together with insights concerning their technological-industrial rendering. By the way, since these chapters are largely interested in topics concerning the exploitation of land and natural resources, maybe a wider examination of relations and knowledge exchanges between settlers and Native American people (i.e. Pequot and Mohegan nations) would have been advisable, especially since dedicated literature is vast and updated.

Chapters 9 and 10 (pp 71-89) respectively offer a reconstruction of Winthrop's alchemical circle with short biographies of prominent members (e.g., the young George Starkey) and a brief discussion concerning the teaching of medicine and elements of chemistry (especially iatrochemistry) at Harvard during the first decades of the institution's history.

Written in a swift and agile style, nearly narrative and at times (a bit too) apologetic for the story's main character, *Chemistry in 17th-Century New England* is a far cry from the way professional historians have been accustomed to conducting research in the history of science over the past fifty years or so. Nevertheless, in the most varied—sometimes even unorthodox—ways, it offers interesting food for thought, as well as delving into little-explored topics and pointing to new research possibilities.

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Technoscience in History: Prussia, 1750-1850, Ursula Klein, The MIT Press, Cambridge (MA)-London, 2020, 336 pp, 24 figs, ISBN 9780262539296, $40 (paper), $35.90 (ebook).

> Historians and philosophers of science have long treated the engineering and technological sciences as the natural sciences' poor relatives, and they have scarcely paid attention to the eighteenth-century sciences of mining, technical chemistry, mechanical engineering, civil engineering, and other "practical" or "useful sciences." "Science" was measured against the standard of "pure science" and epistemic values such as truth to nature, rationality, and objectivity. The historiography of science was thus framed by a concept of science that was only fully articulated by the middle of the nineteenth century and reached its height during the Cold War. Even today, long after the end of that conflict, historians and philosophers of science are rarely concerned with the engineering and technological sciences. The recent debate on "technoscience" also remains fixated on the newest application-oriented research projects at universities, while for the most part neglecting to make the obvious comparison to the tradition of engineering and technological sciences. (pp 3-4)