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Lawrence M. Principe. *The Aspiring Adept: Robert Boyle and His Alchemical Quest.* Princeton, N.J and Chichester, U.K.: Princeton University Press, 1998. xiv + 339 pp. $45.00 (cloth), ISBN 978-0-691-01678-8.

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The Secret Science

It now seems certain that several of the great founders of the modern scientific age, who, as Isaac Newton noted, saw further because they stood on the shoulders of giants, kept one foot firmly touching the Philosophers' Stone. Like Newton, whose alchemical interests have been explored by Betty Jo Teeter Dobbs and Richard Westfall, Robert Boyle, the "Father of Modern Chemistry," did more than dabble in alchemy. It was an integral part of his experimental endeavors and life's work. According to Lawrence M. Principe, an assistant professor in the Department of Chemistry and the Institute for the History of Science at Johns Hopkins University, Boyle's avid pursuit of alchemy, especially metallic transmutation, had a positive effect on his laboratory expertise as well as on his spiritual well-being. Principe maintains that knowledge of Boyle's alchemical quest further documents the transitional nature of seventeenth-century science and better situates the ambitious genius at the crossroads of the intellectual and social context of his day.

The Aspiring Adept sprang from Principe's 1996 Johns Hopkins dissertation, and the influence of two colleagues of the author, Boylean scholar Michael Hunter and alchemy expert William Newman, is profound. In his list of works cited, Principe mentions eighteen titles of Hunter's and eleven from Newman, more than any other author's except Boyle. Chapter One follows the usual dissertation blueprint and assesses the scholarly literature about Boyle. Most are found wanting, even those which acknowledge Boyle's attempts to convert base metals into gold, because they denigrate alchemy as medieval and nebulous.

Chapter Two explicitly deciphers Boyle's *Sceptical Chymist* to determine against whom it was written. Principe notes that he examined the original Boylean publication, not synthesized versions of the work. He also takes a direct look at the appendix to the 1680 edition and finds in it further proof of Boyle's alchemy. Tracing the provenance of the conventional interpretation of Boyle's contributions to modern science, Principe takes issue with Helene Metzger's separation of alchemy from chemistry on the basis of mechanical corpuscularianism, theories that were widely accepted in alchemical circles (p. 48). If Boyle did criticize "vulgar chymists," Principe insists that he did not mean alchemists or chrysopoeians, a useful seventeenth-century term that Principe resurrects to denote those who sought to transmute base metals into noble ones. Boyle targeted "low technicians," expressly Paracelsian chymists and apothecaries, for arguing that fire was a "universal and sufficient analyzer capable of dividing all bodies into their constituent ingredients" (p. 35).

Although Boyle did not publish any works devoted directly to traditional alchemy, he did work on some in manuscript. In Chapter Three, Principe analyzes the *Dialogue on the Transmutation and Generation of Metals*, a fragmented piece that he states was to be part of a longer alchemical exposition and which showcases "Boyle's abiding belief and activity in both chrysopoeia and metallic spagyria" (p. 89). Previous historians of Boyleana have misread aspects of the dialogue, overlooked encoded alchemical messages, and ignored his contacts with adepti, perhaps because these things did not fit the image of Boyle as a modern scientist. Decrying the relegation of alchemy by historians to pseudo-science and the consequent stunting of its investigation, Principe is particularly hard on Marie Boas Hall and her "Enlightenmentization" of Boyle (p. 64). Principe brings together the pieces of the *Dialogue* and provides an essay on it in an appendix to the text.

Chapter Four treats Boyle's contacts with practicing alchemists and pays particular attention to Fragment 10 of *The Dialogue* for evidence. Under the guise of his literary alter ego, Boyle recorded meeting a traveling adept who showed him projective transmutation. Principe traces other collateral stories, many of them transmitted through Bishop Gilbert Burnet, that give credence and

spiritual significance to the episode. Moreover, Boyle played a major part in the 1689 repeal of the Act against Multipliers enacted during the reign of Henry IV, further proof of his alchemical interests. His collective experiences "convinced [Boyle] of the reality of the alchemical adepti and their transmutatory Philosophers' Stone" (p. 111). Still, he desired more practical knowledge of their secret preparations.

To complete his study of how fully Boyle placed himself within transmutational alchemy, Principe allocates Chapter Five to Boyle's combination of textual and experimental chrysopoeia, in marked contrast to Newton's exclusive concentration on texts. Boyle quested after philosophical mercury, indispensable for preparing the Philosophers' Stone. Unable to progress from philosophical mercury to the Philosophers' Stone, Boyle tried through writing about incalescent mercury in the *Philosophical Transactions of the Royal Society* to reach adepti who might teach him their secrets. Another aspect of Boyle's story that emerges from Principe's study is the collaborative nature of his work, including his financial support for many natural philosophers and their laboratories. A second appendix contains Boyle's accounts of interviews about performed transmutations with visitors from the imperial court of Leopold I, as well as some other chrysopoetic writings of his.

Finally, in Chapter Six Principe explores "the driving forces behind Boyle's dogged pursuit of traditional chrysopoetic alchemy" (p. 181). He concludes that Boyle was moved by three great influences: truth, medicine, and religion. He regarded chemistry as a tool for probing nature, envisioned the Philosophers' Stone as a possible universal panacea, and developed a spiritual dimension to his own alchemical pursuits. Boyle certainly knew of the school of supernatural alchemy to which John Dee and Elias Ashmole belonged, but even if he did not subscribe to their beliefs in angelic messengers communicating with magi, "the notion of a spiritually active Philosophers' Stone was extremely enticing for Boyle" (p. 201). A devout Christian, Boyle viewed chrysopoeia as a possible defense against burgeoning atheism.

While Principe's scholarship is impressive and the book's contribution to a truer view of Boyle immeasurable, this is not a tome that many academics will examine in its entirety or assign to their advanced classes. It was written for the specialist in the history of science, although its thesis ought to intrigue generalists, too. Apart from the daunting and highly precise arcana in which Principe labors, *The Aspiring Adept* is nearly unreadable in parts, insufficiently revised from its origins as a doctoral dissertation. Especially in the opening chapters, Principe's writing technique is tortuous and scattered with vexatious parenthetical hurdles, perhaps mirroring Boyle's own convoluted construction. In Principe's defense, his style does clear significantly by the middle of the monograph. However, to intrude further between the reader and the text, each chapter begins and ends relating what the author has done and will do, using an irritating first person narrative that borders on intellectual braggadocio. A conscientious editor could have made Principe's important correction of Robert Boyle's work much more accessible to a broader audience.

Nonetheless, *The Aspiring Adept* should be a valuable addition to the libraries of historians of science and ought to inspire other researchers to re-examine alchemy as an essential component of the seventeenth-century mentality. Unburdened by "Whiggish" biases (p. 18) against the secret science, scholars scrutinizing the work of Boyle, Newton, and other virtuosi should be able, like Principe, to reconstruct the reality of the "Scientific Revolution." Expertly marshaling the evidence, Principe issues a compelling challenge to treat alchemy as seriously as did Robert Boyle.

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