

Michael Hunter. *Boyle Studies. Aspects of the Life and Thought of Robert Boyle*. Farnham, Surrey, and Burlington, VT: Ashgate, 2015. xiv + 244 pp. £63,00. Review by ALESSANDRO GIOSTRA, DEPUTAZIONE DI STORIA PATRIA—ANCONA.

Robert Boyle (1627–1691) belongs to that small group of researchers able to introduce very significant innovations in natural science. Both the breadth and depth of his interests make his achievements all the more significant. The distinctive features of his biography and scientific inquiry render this historical character a very difficult figure to study. He is described as the father of modern chemistry who supported the view of nature as a mechanism. Moreover, he owed very much to the English medieval natural philosophy, although that influence did not prevent him from formulating innovative ideas. Similar to other protagonists of the Scientific Revolution, he was a man of remarkable piety and believed in God as Creator and sustainer of the natural order. His “wishlist,” reported as an Appendix to the Introduction (1–32), witnesses how his promotion of science included scientific and non-scientific matters.

Recent research has begun to change our understanding of Boyle. “The result is that, in the twenty-first century, Boyle has become a more mixed-up and perhaps therefore more interesting figure” (131). This collection of nine essays, some of which have been published elsewhere, offers a detailed account of Boyle’s thought, even if some aspects still need further investigation by historians. Notwithstanding the major role Boyle played in the progress of modern science, he has not occupied much space in historical essays. However, that paradoxical situation has been partially changing in the last decades, thanks to the work made in archives, and the advancement in history of science as a specific discipline. In the Introduction, the author highlights the fact that the Newtonian paradigm dominates the common perception of English scientific tradition. Moreover, the celebration of Newton during the age of Enlightenment brought about the decline of Boyle. Thus, “our task in relation to Boyle [...] is to restore prominence to those aspects of his science the Newtonian paradigm tended to occlude” (25).

The reconstruction of Boyle's early intellectual evolution (33–52) is complicated by the wide spectrum of topics he dealt with. His early writings on moral and religious questions reflect the deep learning he had gained in traditional subjects. After 1649 experimental science became his main concern, though he had been engaged in the English scientific context since the mid-1640s. That decisive turning point determined a radical change in his activity, but it was not due to the cultural context surrounding him. The adoption of the experimental scientific approach, indeed, did not represent a discontinuity with his religious preoccupations, as the understanding of nature as a whole mechanism was closely connected to a broader religious viewpoint that was based upon divine creation as the reason of natural order and beauty. Moreover, in Boyle's mind his study of the *Book of Nature* was a response to the attacks to religion launched by modern scientists or natural philosophers. In any case, all the aspects pertaining to his own scientific research "owed much to the sheer range of traditions on which he drew and the eclecticism he deployed" (51). Another important historical matter was Boyle's participation in the Royal Society. Since the foundation of that institution in the period 1660–1662, its membership included different kinds of scientists, who started holding informal meetings to discuss scientific questions. However, the Baconian approach to scientific practice and the new mathematical trend in investigating nature can be seen as common grounds for its members. The early Royal Society exerted an influence on Boyle: his organizing data through "heads" and "inquires," that is a typical Baconian methodology, is a clear instance of that influence, even though it could have started in the years preceding the establishment of the Society.

Understanding his attitude to secrecy (131–48) is essential to grasp some distinctive features of his own personality. In some of his important works, Boyle upheld the necessity for the dissemination of knowledge as a moral duty for every man devoted to science. Despite that purpose, during the same years, in accordance with traditions surrounding alchemy, he maintained secrecy as part of his chemical experimentation; thus, he was not always eager to popularize all types of knowledge. The same sort of ambivalence can be found in his use of print (149–162), which was making available more books and at a

lower cost to the scientific community. Since the end of the decade of the 1650s, Boyle realized the importance of print, and in the following six years he published some of his most relevant works. Since Latin remained the official language of the academic world, he provided Latin versions of his works. Those Latin editions included additional material that were not part of the originals in English. Despite the common use of Latin as an academic language, finding professional translators was not so easy in seventeenth-century England, especially because of the new technicalities about experimental practice. One original solution adopted by Boyle from 1665 onwards was to list in each work all his writings in chronological order. That strategic use of print was part of his effort to communicate science, aimed at achieving a large audience.

Boyle made his mark not only in chemistry, but in theology too. He devoted himself to biblical studies, and ancient languages such as Hebrew and Arabic. The religious dimension of his thought perfectly fits with his corpuscular worldview, as he warned against the mixing of religion and science. For instance, he was sure that a literal interpretation of Genesis 1 could be a stimulus for atheism. The relationship between Boyle and the *Supernatural* (163–84) represents probably the most intriguing aspect of his writings. Broadly speaking, he considered his own investigation as a kind of religious obligation or worship. The optimistic view on human abilities and the trust in the natural order established by God's creation were an integral part of his scientific approach and Christian belief. He used the word "Supernatural" to indicate above all questions, such as creation, that go beyond the dominion of science. He did not favor supernatural explanations of natural phenomena, which was the dominant tendency within the English academic world. However, some elements of his view show a more ambivalent attitude. Despite his attacking vitalism as a kind of pantheism and denial of divine power, the influence exerted by alchemy, indeed, led him to believe in the possibility of contact with supernatural agents such as the presence of supernatural entities in the work of witches and magicians. Boyle's conception of the supernatural was also part of his criticism to Descartes' mechanical philosophy, which excluded final causes, namely the goals for which the natural mechanisms are created by God. The need to reconcile the idea of

the clockwork universe while leaving God with room to act led him to believe that some divine purposes can be known and that science was the right way to achieve that knowledge. The addition of a small collection of “Strange Reports” to his *Experimenta & Observationes Physicae* (1691) reflects this interest in extraordinary phenomena. They were natural anomalies that could not be explained through the basic tenets of mechanical worldview. Moreover, one must recall Boyle’s distinction between “supernatural” and “preternatural,” the last indicating perfect natural phenomena transgressing the ordinary course of nature.

This collection of essays is the last of a series of collections by Michael Hunter, Emeritus Professor of History at Birkbeck, University of London. As it deals with some specific aspects of Boyle’s thought and personal events, it is suitable to readers who have already acquired a basic knowledge of the topics belonging to the Scientific Revolution, the discussion on science in modern Britain, and the impact of the Irish scientist on the achievement of the scientific account of nature.

*The Spanish Golden Age: Painting and Sculpture in the Time of Velázquez*, exhibition catalogue, München: Hirmer, 2016. 334 pp. + 122 colored plates. €29. REVIEW BY LIVIA STOENESCU, TEXAS A&M UNIVERSITY.

The catalogue associated with the exhibitions *El Siglo de Oro: The Age of Velázquez* (Gemäldegalerie – Staatliche Museen zu Berlin, 2016) and *The Spanish Golden Age: Painting and Sculpture in the Time of Velázquez* (Kunsthalle der Hypo – Kulturstiftung 2016/2017) is a scholarly undertaking. While the exhibitions’ purview was to present the German public with an unprecedentedly comprehensive access to leading seventeenth-century Spanish artists, the catalogue provided the theoretical undergirding for such enterprise. The focus on the significant, albeit understudied, painter Alonso Cano and sculptor Gregorio Fernández; on the cultural differences and similarities between Spanish and Italian Baroque; on technical difficulty (*dificultad*) as a feature central to the iconographical multiplicity of Spanish Baroque; on naturalistic tendencies and highly individualized styles for depicting the Spanish mystical lore thus distinguish the catalogue *El Siglo de*