

## ALCHEMY AND CHEMISTRY IN THE 16th AND 17th CENTURIES

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EDITED BY  
PIYO RATTANSI AND ANTONIO CLERICUZIO

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*Edited by*

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**William R. Newman** is Associate Professor of the History of Science at Harvard University. He has published *The Summa Perfectionis of Pseudo-Geber: A Critical Edition, Translation and Study* (Leiden: Brill, 1991), and will soon publish *Gehennical Fire: The Lives of George Starkey, An Alchemist of Harvard in the Scientific Revolution* with Harvard University Press. In addition, he has written numerous papers on the history of alchemy, and is engaged in a study of the general relationship between alchemy and the occult sciences. His current research also includes the development of corpuscular matter theory, the issue of continuity versus disjuncture in early modern science, and eighteenth-century chemistry before Lavoisier.

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## PREFACE

The present volume owes its origin to a Colloquium on “*Alchemy and Chemistry in the Sixteenth and Seventeenth Centuries*”, held at the Warburg Institute on 26th and 27th July 1989. The Colloquium focused on a number of selected themes during a closely defined chronological interval: on the relation of alchemy and chemistry to medicine, philosophy, religion, and to the corpuscular philosophy, in the sixteenth and seventeenth centuries.

The relations between *Medicina* and alchemy in the Lullian treatises were examined in the opening paper by Michela Pereira, based on researches on unpublished manuscript sources in the period between the 14th and 17th centuries. It is several decades since the researches of R.F. Multhauf gave a prominent role to Johannes de Rupescissa in linking medicine and alchemy through the concept of a *quinta essentia*. Michela Pereira explores the significance of the Lullian tradition in this development and draws attention to the fact that the early Paracelsians had themselves recognized a family resemblance between the works of Paracelsus and Roger Bacon’s *scientia experimentalis* and, indeed, a continuity with the Lullian tradition.

Paracelsus himself was contemptuous of Lull and Rupescissa, as he was of all traditional authority, having carried through a reformulation which radically altered the significance of existing alchemical ideas. M.L. Bianchi explores the transition from the visible to the invisible and, conversely from the invisible to the visible, in the various works of Paracelsus. Paracelsus may appear to have done little more than elaborate a theme which was already significant in alchemy, but his originality lay in making it into a central feature of his “theory of knowledge”. Despite marked continuities between the alchemical tradition and Paracelsian doctrines, the discontinuities were so great that they may be said to constitute a veritable “alchemical transformation”.

The interconnection between alchemy, chemistry and medicine in the seventeenth century is examined by Antonio Clericuzio in a paper on the chemical reinterpretation of the traditional Galenical medical spirits. The transformation of medical spirits into a non-elemental and quasi-divine substance by Paracelsus and his followers spurred English chemists, especially

the members of the Hartlib circle, to attempt to extract them through distillation and even to attempt to capture the *spiritus mundi* by using “magnets”. Chemical reinterpretations of the medical spirits were a prominent feature of English medicine, especially in the works of Glisson and Willis, where they provided the basis for a theory of active matter. Boyle studied the composition of the spirit of the blood, and the chemical spirits were central to Newton’s aetherial speculations in his celebrated 1675 letter to Oldenburg.

The interaction between religion, alchemy and iatrochemistry is examined in another group of papers. The aspiration to restore a truly Christian philosophy of nature in place of the one inherited largely from the “pagan” Greeks was a marked feature of the post-Reformation period. It was widely assumed that its basic principles were to be derived from the text of *Genesis*. N.E. Emerton studies the contrast between the interpretations of that text by Robert Fludd and J.B. van Helmont. While Helmont was influenced by the patristic and Augustinian tradition, Fludd drew upon a Gnostic and Neo-Platonic one. A close reading brings to light significant variations in their interpretations, based on fundamental contrasts in outlook and in approaches to the study of nature.

That the recovery of a truly Christian natural philosophy was divinely ordained by God for the last age, preceding the Second Coming, and would result in the disclosure of the secret of the Philosopher’s Stone and the Universal Elixir, was a belief that was widely propagated through the early Rosicrucian manifestos. New light is cast on the religious and intellectual milieu in which Rosicrucianism developed in Bruce T. Moran’s paper, based on extensive research in continental archives. It centres on the otherwise obscure figure of Raphael Eglinus, who formed a link between the Swiss-Italian and German cultural areas, and was acquainted, among others, with Giordano Bruno and Angelus Sala. Eglinus later secured the protection of Prince Moritz of Hessen, and the paper illuminates another area which is now attracting greater historical attention, the patronage of alchemy and chemistry by the princely and ducal courts.

A more celebrated alchemist, sustained by numerous aristocratic patrons, including the Emperor Rudolf of Prague and Prince Moritz of Hessen, was Michael Maier, who has hitherto lacked a reliable biographical account. Karin Figala, who has contributed so much to our understanding of Newton’s alchemical interests, has collaborated with Ulrich Neumann to furnish a much more detailed bio-bibliography, which draws upon a hitherto unnoticed work by Maier, and succeeds in dispelling many of the legends which have surrounded him in the past. Some of Maier’s wanderings were caused by patrons who had become too importunate in their demand for alchemical secrets. John Dee, during his continental travels with Edward Kelley half a century

earlier, had known that, too, and although he never himself took up Boris Godunov's offer of the post of physician, his son, Arthur, who also had alchemical interests, became physician to Tsar Michail. He flits through W.F. Ryan's study, which enlarges our otherwise scanty knowledge of alchemy in Russia, tracing its history from Kievan to Muscovite Russia. He points out the importance of the pseudo-Aristotelian *Secretum Secretorum* in stimulating interest in magic and the occult sciences in Muscovy.

Maier occupied a prominent place among the authorities who guided Newton's labours in alchemy. Another author, among the more recent alchemists, whom Newton avidly studied was Eirenaeus Philalethes. On the basis of new documentary evidence William Newman has now conclusively identified him as the New England chemist George Starkey. Starkey was a member of the Hartlib circle during the Civil War and Commonwealth period. Newman explores a novel feature of the Philalethes work: a "naive corpuscularianism", which, nevertheless, in its exposition of a "shell-theory", displays a striking resemblance to Newton's later "nutshell theory" of matter. It has been usual to regard alchemy and the corpuscular philosophy as totally opposed to each other and this division has succeeded in deepening the enigma of Newton's alchemical studies. Newman's paper, in common with some other recent studies, helps to explain that this attitude was not necessarily shared by contemporaries, who were able to regard alchemy and the corpuscular philosophy as compatible with each other.

In the concluding paper, Anita Guerrini shows that the close association between chemistry and medicine, and the equivocal status assigned to chemical theory, prevented chemistry from becoming an integral part of the curriculum at the two English universities of Oxford and Cambridge at the close of the seventeenth century. Scotland presented an interesting contrast, with chemistry ensconced securely as part of medicine, especially at Edinburgh.

The papers brought together in the present volume display the variety of themes and approaches currently adopted in the study of the history of alchemy and chemistry in the early-modern period and their importance for the history of science, religion, philosophy, and culture.

As Pereira, Emerton, Figala-Neumann, and Ryan have shown in their contributions to the volume, a great variety of motives inspired the individuals who engaged in alchemical investigations in the 16th and 17th centuries. Although some of the papers, particularly those by Bianchi, Clericuzio and Newman, point out a much greater continuity between the alchemical tradition and early-modern chemistry than had hitherto been assumed, the aim of the volume is by no means to reinstate the old and now discredited view of the entire history of alchemy purely as the pre-history of chemistry.

The studies by Moran and Guerrini bring to light a hitherto somewhat

neglected aspect of alchemy and chemistry in the early modern period, namely the social and institutional context in which alchemists and chemists pursued their activities. The particular strength of a number of the papers is in their use of unpublished and original archival materials. It is hoped that it will draw attention to the wealth of still largely untapped resources in this area of studies.

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