'appropriate method' are contingent categories, and the outcome of much negotiation, *The Essential Naturalist* should stand as evidence that conservation biology is in the midst of such argument.

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DARYN LEHOUX, **What Did the Romans Know? An Inquiry into Science and Worldmaking**. Chicago and London: The University of Chicago Press, 2012. Pp. xii + 275. ISBN 978-0-226-47114-3. £29.00 (hardback).
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This book focuses on texts produced between the first century BC and the second century AD. This is glossed as 'unquestionably the most prolific period of ancient science' (p. 17), which immediately gets one thinking as it invites the reader to question it. The core assumption is that science is best understood in the context of its users' pre-existing knowledge of the world, and of individually perceived experiences of the world. Both of those are conditioned by intellectual constructs concerning truth, logic, coherence and credibility. So Lehoux examines the creation of facts in ancient Rome from the perspectives of historical, intellectual and experiential contexts. Understanding of the natural world is shown to be the product of both perception ('observation' in a simpler version of the general idea) and intellectual context ('theory' in the same). So far, so orthodox, in the history and philosophy of science.

Lehoux is less orthodox in his assertion of greater independence for Roman science than is normal, the latter being considered merely 'warmed-over Greek science' by some (p. 3). In this, the book echoes Ridgway's *Roman Copies of Greek Sculpture: The Problem of the Originals* (1984), which drew attention to the weakness of the argument (or assumption) that every good statue of Roman age is a Roman copy of a Greek original. Roman science has suffered, Lehoux argues, partly because of excessive focus on origins rather than on impact or use (as is also common in the history of technology). Most importantly, he argues that it changes in Roman hands. Another factor that contributes to Roman science's neglect is Rome's success and cosmopolitanism: Greek was a living language in ancient Rome, Greeks lived in Roman cities, and Rome dominated Greek cities, so although some of the science was written by Greeks or in Greek, nevertheless those people were living in Roman times; under Roman laws; with Roman patronage, plumbing, security, circuses and everything else that falls under the umbrella of 'culture'. In that sense, the science produced was Roman, irrespective of the language or land in which it was written. The Romans did not see themselves as merely preserving Greek learning, but as building upon it, as Lehoux shows.

Pursuing 'wrong' ideas in the history of science equally with 'right' ideas, Lehoux devotes a good deal of his attention to what would now be considered not-science, such as ancient claims about gods, monsters, astral influences, spontaneous generation and so on, in order to emphasize how knowledge is constructed rather than simply observed. Ancient scientists offered rational argument and evidence for and against different positions on these topics, and it is instructive to examine them, instead of simply ignoring or dismissing them. The book originated in the pursuit of such a claim – the putative antipathy of magnets and garlic (p. 244). 'Wrong' ancient ideas occur throughout, but are the special burden of Chapter 2, on the gods' role in the Roman world; Chapter 7, on astrology; and Chapter 8, on harmony.

The theme of Chapter 3 is the intellectual association of nature and law. The notions of 'laws of nature' and 'natural laws' appear in Latin sources of the first century BC, where the two foci of reference are distinct but intersecting. Laws of nature, of the sort that we would now express as, say, force equals mass times acceleration, related to understanding the natural world, while natural laws related to the obligations of people based on 'human nature'. The 'legalization

of nature' (p. 76) was not conceived the same way by the ancients as it is by the moderns, but it should not be ignored, and deserves and requires further conceptual (as opposed to lexicographical or philological) study. In pursuit of this, Lehoux draws attention to key juxtapositions of conceptions of law and of nature in ancient sources, and maintains that we cannot properly understand the use of either in isolation from the other. The subtle argument draws on work by, for example, Descartes and Newton, as well as an assortment of ancients, including even the atomists, to assert that the gods are never completely excluded, even if their role is merely as divine legislator or moral exemplar and even if they do not interfere in individual cases. For example, Aristotle's unmoved mover, who provides the primary motions in his physics, is divine.

The issues of theory-laden or -tainted observation, and the credibility of witness, as a procedure, and witnesses to support an argument, are addressed in Chapters 4 and 5. Lehoux's reading of Seneca's *Natural Questions* unites the themes of the foregoing chapters with rhetorical procedures that would have been present in every educated Roman's intellectual toolkit. The importance of a witness's character or moral standing to the perceived validity of their testimony brings the ethical and moral dimension to the forefront: we do not receive all witnesses' testimony equally. The burden of Chapter 5 is that we see what we are looking for or trained to see, and that different cultures have different blind spots, determined by the whole intellectual context in which the seeing takes place. As a result, the ancients may consider something explained by reference to something else, but that something else seems to us to be a black box rather than a cause.

This problem is probed in more depth in Chapter 6 by examining ancient claims that we think are incredible, such as the antipathy of magnets for garlic, a 'fact' retailed repeatedly down through the centuries to AD 1653. The gainsayers began in 1589. Proponents of both sides claim empirical evidence for their views, while those of neither actually bother to perform the experiment because to them/us it would be pointless, if not silly: the proposition is self-evident (see, especially, p. 149). The last two chapters pursue the philosophical quarry of realism. All in all, this stimulating book richly repays study.

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Elaine Leong and Alisha Rankin (eds.), **Secrets and Knowledge in Medicine and Science 1500–1800**. Farnham: Ashgate, 2011. Pp. ix + 247. ISBN 978-0-7546-6854-1. £60.00 (hardback).
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Secrets were once considered to be, at best, marginal to the history of science and medicine. In this volume's first essay, William Eamon recalls that when he initially presented his research on these matters to historians of science in the early 1980s, it was greeted with scepticism and confusion. Over the course of the following thirty years, and especially since the publication of Eamon's groundbreaking study *Science and the Secrets of Nature* (1994), the study of secrets has become an established field of scholarship. Whilst many historians have taken up themes identified by Eamon, others have pursued new avenues of research. Developed out of a series of papers delivered at a symposium held in Cambridge in 2008, the essays contained in this volume further contribute to this established historiography.

Since the field is now so rich it is useful to pose the question, what do these essays taken as a whole contribute to our present knowledge? In their introduction the editors state that the volume has three key aims. First is to demonstrate that research has extended beyond 'books of secrets'; that is, published works often penned by learned or professional men. Consequently, the range of potential sources for studying secrets has been expanded, so that it now includes manuscript sources such as household recipe books and medical case notes. This development also extends the array of potential authors who can be studied, so that it can include groups previously