Walter Scheidel (ed.). *The Science of Roman History: Biology, Climate, and the Future of the Past*. pp. xiii+258, 26 b/w figures, 7 tables. 2018. Princeton and Oxford: Princeton University Press. ISBN 978–0–691–16256–0 hardback $35.00; paperback $24.95.

Human history and natural history are intrinsically connected and new scientific advances are increasingly re-shaping our understanding of the Roman environment, which has significant implications for Roman historians. This is the premise laid out in the introduction of this volume. Despite its title, it does not seek to explore all of the numerous and varied ways in which scientific approaches have informed scholarship on antiquity; there is no discussion of new archaeometric techniques now applied to archaeological materials as standard, or indeed of remote sensing or dating techniques. Climate and biology, as the sub-title explains, are the focus here. The broader aim is to test the fertility of the intersection between archaeo-historical research on the one hand and natural-scientific studies on the other.

In Ch. 1, Kyle Harper and Michael McCormick begin with that most current of environmental topics – climate. What is provided is a summary of the key new techniques for understanding climatic shifts, notably those drawing on dendrodate and ice core data. Some clear results emerge. First, the Roman empire flourished in a period of solar stability. The same is true regarding volcanic activity, which was generally low to moderate between the mid 1st c. BC and the 6th c. AD. This is not unique to the Roman imperial period, of course, and indeed the graphs used to support this assertion show similar lows in the last five centuries BC too. But it is the graph that combines tree ring and ice core data,[1] which most clearly shows the distinctive stability of the first four centuries AD especially. Data from Alpine glaciers also suggests this period was comparatively warm, at least up to the 3rd c. AD, while speleothem data indicate a similar pattern, followed by much greater variability thereafter. The earlier part of this period has come to be known as the 'Roman Climate Optimum' (RCO) but from c. AD 150 changes can already be noted, most strikingly in the Nile valley where optimum floods become scarcer after this date. The idea of a 'Late Antique Little Ice Age' (LALIA) in the 5th and 6th c. is generally accepted here, though a recent survey of the evidence quite rightly points to a number of methodological issues not fully explored in this contribution.[2] The challenge for historians and archaeologists remains understanding the impact of these changes, which will not have been uniform across the area of the Roman empire; there is a danger of an overly deterministic approach to these emerging datasets.

In Ch. 2, Marijke van der Veen turns to archaeobotany, but specifically 'human-plant interactions', with an emphasis on food supply. Here five themes are explored: production; distribution; preparation; consumption; and disposal. In the first of these, van der Veen summarises new advances in genetic research to explore changes in crop varieties as well as techniques for identifying increases in agricultural production. The movement of commodities but also the pests that consumed them – such as grain beetles, which are found in Britain only after the Roman conquest – are discussed with regard to distribution. The value of geographically distinct markers, such as the seeds of foreign weeds, in assemblages of wheat in Britain and France shows how close attention to accidental inclusions can point to the long-distance movement of cereals. Van der Veen has a real gift for highlighting key aspects of the discipline that historians might not have appreciated, and the conclusions they can provide. But like many contributions in this volume, the conclusions end up reading like a justification of archaeobotany – a neat encapsulation of its utility – rather than a clear statement about the direction the discipline is taking or its implications for broader historical questions.

Michael MacKinnon's paper in Ch. 3 provides a similarly 'broad overview'. Again, the contribution attempts to show what the particular discipline – in this case zooarchaeology – can do for our understanding of Roman history. There are some wonderful details here, notably on the spread of different species in the Roman period and, perhaps more surprisingly, late antiquity (such as the introduction of the rabbit to Italy and the re-introduction of the porcupine to Sicily and southern Italy). This is an extremely useful chapter for any student working on methodologies within classical archaeology.

Ch. 4 is the first of four chapters dedicated to human biology, and focuses on bones and teeth (Alessandra Sperduti, Luca Bondioli, Oliver E. Craig, Tracy Prowse and Peter Garnsey). It begins with a discussion of how the data that can be acquired from bones have been used by historians, especially economic

[1] Fig. 1.5, using data from Salzer and Hughes 2007.

[2] Sessa 2019.

historians. The key point here is that attempts to connect increasing stature to economic growth in the early Roman imperial period have often failed to consider the primary evidence rigorously enough; the estimates that exist to date need to be updated and continually tested (and there is overlap here with Ch. 5). Among the rigorous datasets pointed to are the skeletons from Velia and those from the vaults and beach at Herculaneum, which provide an interesting contrast with the human remains from Pompeii. Particularly welcome is a discussion of the prospects of isotope analysis in the future, as well as its necessary limitations.

Human growth and stature are turned to more directly in Ch. 5 by Rebecca Gowland and Lauren Walther. Here the focus is very much on what can and should be measured to estimate stature and where the pitfalls are. Crucially, the authors demonstrate that the stature of Roman males in Italy has probably been overestimated and that elsewhere, such as Roman Britain, average heights of men seem to drop in the Roman period. Differential body proportions across the area of the empire mean that long bones are not always a suitable basis for calculating stature. The authors propose studying children more intensively to consider health status and indeed for Roman Britain the data indicate that children exhibited stronger growth up until the age of five than eighteenth- and nineteenth-century Londoners, though after this period the patterns reverses.

DNA is touched on in Ch. 4 and 5 but only fully explored in Ch. 6 (Noreen Tuross and Michael G. Campana). The first third of this chapter explains the biochemistry of ancient DNA and explores the history of DNA research, while in the remaining chapter a series of examples of its application are provided. Sadly only half of these examples apply to the Roman world, such are the scarcity of studies using DNA research. The utility of DNA evidence for exploring the origins and spread of ancient plagues, notably to the Plague of Justinian, provides a point of useful discussion, however. DNA is also the subject of Ch. 7 (Roy J. King and Peter A. Underhill) but again the focus here is on explaining the technique and considering ways ahead; only a handful of evidence relating to Roman populations is discussed.

The focus of this volume is certainly selective. There are some unfortunate gaps: the sole archaeobotanical contribution is on food supply, when a discussion of other aspects of the environment, e.g. forestation or fuel, could have been useful; there is little discussion of palynology or charcoal analysis, for instance, except to flag them up as areas of important research. Harper and McCormick, in Ch. 1, in fact, point to questions of wood supply for timber and fuel as a field of enquiry, as does van der Veen in Ch. 2. There is also little mention of soil science – except a note that this 'once received attention from historians.'

Overall, this volume brings together many of the key players in these various fields. The writing is uniformly excellent and it is sufficiently well-illustrated. It represents a good overview of the state of the field and provides a clear explanation of the various techniques and disciplines covered and their potential. It will be extremely useful for students and could be used alongside, for instance, Susan Alcock and Robin Osborne's edited volume on *Classical Archaeology* for core undergraduate classes on the Roman world.[3] More generally, however, it is not always clear who the intended audience for this volume is. Much of it reads like an attempt to convince ancient historians of the utility of certain scientific techniques – almost all of which are well established in archaeology. In this sense, it reads in places like Ray Laurence's short, and very useful, *Roman Archaeology for Historians*, but with a more scientific bent.[4] However, there is also a danger that some of these papers set out with the goal of 'explaining' to historians the datasets available to them. Archaeologists and historians are more than once contrasted and several comments are made about the 'tendencies' of historians, as if they are a group easily categorised. Worryingly, for both historians and archaeologists, there seems to be an acceptance running through sections of this volume that the job of the latter is to provide the data and the former the 'context'. Considering the desire for *consilience* expressed in the introduction to this volume, some further discussion of the shifting, and increasingly porous, disciplinary boundaries between ancient history and classical archaeology might have been useful.[5] While it might be true that '(few) historians... are aware of stable isotope analysis', many classical archaeologists are very familiar with the tools employed, and sources used, by historians on a regular basis (such as historical demography and epigraphy – two examples described in this volume as being cards up historians' sleeves). The editor is careful to note that a survey of the kind can only ever be a 'snapshot' of the current state of the field, such is the speed with which scientific research develops, and already new approaches to the climatic data discussed here are showing this to be the case. The contributions here

[3] Alcock and Osborne 2012.
[4] Laurence 2012.
[5] For relevant discussions, see the papers in Sauer 2004.

highlight a range of approaches and their potential, but what they mean for broader discussions of Roman history remains to be seen.

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Alcock, S.E. and R. Osborne (eds) 2012. *Classical Archaeology*, 2nd edn., Oxford: Wiley-Blackwell.

Laurence, R. 2012. *Roman Archaeology for Historians* (Approaching the Ancient World). London and New York: Routledge.

Salzer, M.W. and M.K. Hughes 2007. Bristlecone pine tree rings and volcanic eruptions over the last 5000 yr. *Quaternary Research* 67.1: 57–68.

Sauer, E. (ed.) 2004. *Archaeology and Ancient History. Breaking down the Boundaries*, London and New York: Routledge.

Sessa, K. 2019. 'The new environmental fall of Rome: a methodological consideration'. *Journal of Late Antiquity* 12.1: 211–255.

Tamara M. Dijkstra, Inger N.I. Kuin, Muriel Moser and David Weidgenannt (eds) *Strategies of Remembering in Greece under Rome (100 BC – 100 AD)* (Publications of the Netherlands Institute at Athens VI). pp. 190, b/w and colour illustrations. 2017. Leiden: Sidestone Press. ISBN 978–90–8890–480–6, paperback € 34.95, hardcover € 95.00, PDF e-book € 9.95.

This collective book is the result of a conference 'Strategies of Remembrance in Greece under Rome,' held at the Netherlands Institute at Athens in October 2016, and it stemmed from three research projects run in Germany and the Netherlands, in which the editors participated. It consists of 11 articles (two papers presented at the conference are not included in the volume), and geographically it is focused on the Roman province of Achaea.

The present volume, clearly inspired by exemplary publications of a similar kind,[1] questions the view that the period of the 1st century BC and the 1st century AD was one of economic, political or cultural decline and weakness for Greece, pointing to the cultural vitality and the persistence of traditional forms of power, as the editors note in their introduction. 'It seeks to show that even though the cities of ancient Greece underwent major political and cultural transformations during this time, it was also a period of great dynamism, innovation, and adaptation.' Moreover, it seeks to establish 'how communities and individuals of Roman Greece used their cultural and historical legacy to engage actively with the increasing presence of Roman rule and its representatives' (p. 13).

That the 1st century BC and the 1st century AD was a period of great dynamism is sure, self-evident and already known (it suffices to remind ourselves of the historical facts that took place on Greek soil and the consolidation of Rome in Greece). It is also sure, despite the editors' questioning, that the 1st century BC and the 1st century AD, *was*, actually, a period of economic and political weakness for the Greek cities. Economically, in this period the Greek cities were still suffering the consequences of the turbulent situation of late Hellenistic times, while politically they have definitely become subjects of Rome. The use, thus, of the 'engagement' of the cultural and historical legacy of the Greeks, as a counterargument against the view of the political and economic weakness of the Greek cities in the 1st century BC and the 1st century AD, cannot stand. What is interesting, however, is the cultural aspect of this engagement.

The editors have divided the eleven articles of the volume into four sections: the first, entitled 'Building Remembrance,' focusses, according to the editors, on urban and provincial landscapes. It includes three articles, but the first, 'Roman Greece and the Mnemonic turn. Some critical remarks,' by Dimitris Grigoropoulos, Valentina di Napoli, Vasilis Evangelidis, Francesco Camia, Dylan Rogers and Stavros Vlizos, has basically nothing to do with the theme of this section. It is an introductory article which offers a keynote on the subject and creates the framework in which the rest of the contributions (not only of the section but generally of the volume) move. Discussing Greece as a whole and also retrieving evidence from the rest of the empire, the authors illuminatingly conclude that valorisation and mobilisation of the past were neither unprecedented in earlier Greek self-perception, nor unique amongst other conquered societies of the empire. As they note, '[b]y the time of the Roman conquest Greek communities had already developed the frameworks, elements and specific practices through which perceptions of the past were shaped and materialized'. Under Roman rule the tradition of commemoration has been reproduced and, additionally, has acquired a special

[1] Alcock 2002; Spawforth 2012.