

Pfisterer-Haas (and not Pfsitterer-Hass), and bibliographic details from Steiner's article 'New Approaches' are absent (see my note 1). I would also have suggested labelling the vases Attic rather than Athenian.

These problems, however, should not deter us from reading this book. As many of us who work with Attic vases know, the basic systems underlying their shape and decoration are simple and easy to follow, but detailed contemplation and analysis is often rewarded by deeper understanding and surprise. This is the main contribution of this study. By analyzing repetition on imagery and inscriptions S. has invited us to look at vase paintings with fresh eyes. This interesting, thought-provoking book has many useful analyses and insights. I was particularly interested in her look at repetition to generate parody (18, 200ff.) and to manipulate time, place and sequence (24, 100ff.), as well as her work on the inscriptions (chapter five), analysis of repetition on the first three of her six case-studies (chapter ten), and her association of repetition in images and inscriptions with the symposium (chapter eleven). Intelligent texts and plentiful illustrations, helpful to S.'s main arguments, invite us to look again at Attic vase paintings and remind us of their degree of sophistication and ingenuity.

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Daryn Lehoux, *Astronomy, Weather, and Calendars in the Ancient World: Parapegmata and Related Texts in Classical and Near Eastern Societies*, Cambridge: Cambridge University Press, 2007. XIV + 566 pp. ISBN-13: 978-0-521-851817.

A parapegma is a device for tracking days, either within calendar cycles or within a cycle of annual phenomena (e.g. astronomical events), by the use of a movable peg or pegs. It usually consists of a stone, clay tablet, wall of building, etc., on which a continuous sequence of days is inscribed, some or all identified with a number, date, or astronomical or weather phenomenon, and with a small hole allocated for each day. A peg would have been moved along the sequence and inserted daily into the hole of the current day.

This work is primarily an edition, catalogue, and study of ancient parapegmata. As it turns out, a fairly large number of Greek and Roman parapegmata have been discovered, suggesting that their use must have been common in Graeco-Roman Antiquity. The term 'parapegma' is taken in this work in a more general sense, however, to include not only epigraphic or material exemplars, but also literary texts that are clearly modelled on, or similar to, the sequences of days inscribed in actual parapegmata (some by known authors such as Ptolemy, Ovid, Columella, and Pliny, others anonymous such as the appendix to Geminus' *Isagoge*). Lehoux identifies two very distinct traditions, the Greek and the Latin. Greek parapegmata, first attested in literary form in the third century BCE (*P. Hibeh* 27) and in material form in the first century BCE (Miletus parapegma II), nearly all track annually recurring astronomical events and the meteorological phenomena traditionally associated with them. Thus, they typically offer a single, continuous sequence of peg holes, alongside which are indicated events such as the rising or setting of a particular star, the direction and strength of the wind, etc. This 'astrometeorological' information would have been particularly useful to farmers, sailors, or others for whom annual seasonal changes were of great importance. The astrometeorological tradition was incorporated in the Latin literary parapegmata, but Latin material parapegmata were completely different: they were designed to track the days of shorter cycles such as the lunar month (29- or 30- day cycles), the hebdomadal or planetary (7-day) week, and the nundinal 'week' (8 days), which are all mutually incompatible. Latin parapegmata normally consist, therefore, of several sequences of peg holes (for the lunar month, the planetary week, etc.) that were meant to be used together in combination. According to Lehoux, the main purpose of Latin parapegmata was astrological (lunar and planetary). He argues

further that Greek and Latin *paraepgmata* shared one feature in common: in both traditions, the *paraepgmata* were designed to supply information that could not be supplied by the local civil calendar. Indeed, since Greek civil calendars were lunar, the annual cycle of stars and seasons could not be related to calendar dates and therefore needed *paraepgmata* to be tracked; whereas in the Roman world, the Julian calendar conformed to the seasons and could thus be used for astro-meteorological purposes, but it could not track the days of the lunar month or the week — hence the need for *paraepgmata* to supply the latter. In this sense, *paraepgmata* were always ‘extra-calendrical’. This neat, rather functionalist interpretation of *paraepgmata* is quite original, and I shall return to it below.

This major study represents a radical (and long overdue) revision of A. Rehm’s work (particularly *Paraepgmastudien*, Munich 1941), whom the author frequently takes to task — and with good reason. He takes issue with the established view that Greek *paraepgmata* go back to the fifth century BCE (even though the opinions of fifth century astronomers are frequently cited in later *paraepgmata*), and with the sometimes extravagant extrapolations that Rehm and earlier scholars indulged in. He draws out the wider implications of his subject, in particular for the study of ancient meteorology (chs. 2-3), and also considers, in passing, the distinction between ancient astronomy and astrology (35-9), the importance of lunar astrology in Roman agricultural sources (42-6), and rightly remarks that astro-meteorological *paraepgmata* obviated the need for empirical astronomical observation, thus confining astronomy to a largely theoretical lore (ch. 3). He also considers the broader context of Greek and Roman *paraepgmata* and astronomical and meteorological writings, by investigating possible parallels in ancient Babylonian and Egyptian sources; although he returns largely empty-handed, the exercise is definitely worth while (chs. 5-6).

More than half the volume offers an extensive catalogue of all known *paraepgmata*, material and literary, with full texts, translations, annotations (including some re-evaluations of dates and provenances), and very clear illustrations (photographs and drawings). Some of the Latin texts have been left out because of their length and easy accessibility (the *paraepgma* texts in Ovid, Columella, and Pliny; translations however are supplied), but otherwise this catalogue is comprehensive and highly informative. I should point out, however, a few important items that have been omitted, probably because of their relatively recent discovery: in particular, a *paraepgma* from the territory of Nîmes (Gallia Narbonensis) with both the Julian calendar and a sequence of lunar days, and a clepsydra from the Rhine region (or west of the Rhine) with a full Julian calendar and peg holes: both are listed in *AE* 2003 (nos. 1150 and 1279). This omission is unfortunate, because both these discoveries reveal that Latin *paraepgmata* could also be used to track the Julian calendar. In truth, however, this is not entirely new knowledge, since the Julian calendar appears in a number of other inscriptional *paraepgmata* (the so-called *Fasti Guidizzolenses*, really a *paraepgma*, the Capua *Fasti paraepgma*, the Pompeii calendar, and the Dura-Europos *paraepgma*, all listed in Lehoux’s catalogue; note also that Cicero implies in *Letters to Atticus* 5:14 that *paraepgmata* were used to track the days of the Roman calendar). All this undermines Lehoux’s contention that *paraepgmata* were ‘extra-calendrical’. In this light, it seems to me that the possibly *calendrical* (and not merely astrological) function of the lunar days — just like that of the hebdomadal and nundinal days — in the Latin *paraepgmata* should be given fresh consideration.

Scholarship in this work is impressive, ranging from epigraphy to the history of science, and including linguistic ability in Akkadian, Sumerian, and Egyptian; the competent mark of the author’s doctoral supervisor, Alexander Jones, will not go unnoticed. This book excels in conceptual clarity (essential for a technical subject of this nature); it is clearly written, sprinkled with references to modern life (mostly from the author’s native Ontario), and shifts often into an informal, colloquial style — all of which make it a rather good read. The catalogue of *paraepgmata*, above all, deserves to be commended.