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Inscribed Greek Thunderstones as House- and Body-Amulets in Roman Imperial Times

Christopher A. Faraone

- 1 Although it was the focus of extended discussion at the turn of the last century, the re-use of Neolithic axe-heads — also known as “celts” or “thunderstones” — as amulets in Roman times is nowadays underappreciated.¹ As a result, the ancient date of two small inscribed examples in the British Museum (BM nos. 1* and 504) is now in doubt,² a negative assessment that arises, I will suggest, from the use of insufficient *comparanda*. When compared with the growing corpus of magical gems, the media of these two small axe-heads (jadeite or serpentine), their high polish and their shape do indeed seem suspicious and difficult to assess as gems, but when viewed alongside other, inscribed and uninscribed thunderstones found in Roman and later sites, we can see that both of the London stones belong to a clearly defined category of body-amulets.
- 2 Such stones were originally shaped and polished in Neolithic times and used as axes or adzes, either hand-held or attached to a wooden haft. But they sometimes turn up in later archaeological sites or graves from the Bronze Age down to the medieval period, because they were apparently thought to have some kind of magical power to protect buildings and people, especially from lightning and violent storms. We know something about these beliefs thanks to a string of testimonia in technical treatises on stones, beginning with a third-century BCE Greek author named Sotacus and ending with a twelfth-century bishop of Rennes. At least ten of these pre-historic axe-heads carry Greek inscriptions and sometimes Egyptianizing images that corroborate their use as amulets during the Roman Empire. We shall see, too, that nearly all of the inscribed thunderstones of known provenance come from the eastern half of the Mediterranean, although many uninscribed examples were clearly reused as amulets in Italy, France, Britain and elsewhere. One should stress, moreover, the fact that there is no evidence that the Greeks or Romans realized that these axe-heads were manufactured by previous stone-age cultures and

indeed the inclusion of them in *lapidaria* or natural histories confirms to the contrary that they were believed to be “natural” stones which, like amber, jet or coral, had special protective powers.

- 3 In what follows I will examine the ten inscribed thunderstones that are known to me. In the first section I study the five larger examples of similar size (roughly 9–13 cm tall and 4–6 cm wide) that were probably used to protect a house or some other building. Then I look at the five remaining stones, which are about half that size and could have easily been worn or carried as a personal amulet — indeed, two of them are perforated near edge for easy suspension. In both sections I combine close readings of the texts, images and symbols on the stones themselves with ancient literary references, recent archaeological surveys and folklore studies to argue that the inscribed versions are merely the most visible evidence of a rich and widespread tradition of using un-inscribed thunderstones, long before and long after the Roman period. I close, moreover, by arguing that the two London stones, when examined in the light of this wider tradition, seem indeed to have been inscribed, at least partially, in the Roman times.

Larger Axe-heads as House Amulets

- 4 It seems fairly certain that the Greeks and Romans, at least from the Hellenistic period onwards, believed that pre-historic axe heads could be used to protect buildings. Our clearest evidence comes from a rather late source, Timotheos of Gaza, a fifth-century CE author who tells us that “you will have an amulet (*periapton*) against a thunderblast (*keranon*), if you inscribe a thunderstone (*lithon keraunion*) with the letters $\alpha\phi\iota\alpha\ \alpha\phi\rho\nu\zeta$ and keep it in your house.”³ This idea seems, however, to have circulated among the Greeks much earlier: Sotacus, the Hellenistic author of a lost treatise on stones maintained (according to Pliny’s abridged account) that *cerauniae* “are similar to axes (*similes ... securibus*)” and can be divided into two types by color and shape: the black and round ones called *baetyli*, which can be used aggressively to attack cities and navies; and the red and oblong ones called *cerauniae*. Sotacus does not mention any special powers for this second category, but he then goes on to remark that a third and rare type were sought out by *magi* in places that had been struck by lightning.⁴ This is a somewhat confused passage, but we can nonetheless make out three important elements that persist in most of the later authors: (i) the name *ceraunia*, derived from Greek *keranon* (“thunderbolt”); (ii) the implicit claim that they were thought to fall from the sky during thunderstorms; and (iii) the interest that these stones held for the *magi*, by which in this case Pliny probably means Persian ritual workers.⁵
- 5 The general idea, then, seems to be that like bans like: a thunderstone fallen from the sky will in future protect against thunderstorms and lightning strikes. All of the other late-antique and medieval sources insist on the protective qualities of these stones. For example, the Latin lapidary attributed to Damigeron-Evax (and roughly contemporaneous with Timotheus) devotes an entire chapter (12) to the *lapis ceraunius*, which is found in places where lightning has struck; a house or villa in which they are placed will never be struck by lightning.⁶ In his *Etymologies* Isidore, the early seventh-century CE bishop of Seville, also notes that thunderstones — he calls them both *brontea* and *ceraunia* — were found in places struck by lightning and could avert lightning (XVI, 13, 5 and 15, 24) and a few centuries later Marbodaëus, the bishop of Rennes (d. 1123), preserves a similar account in his own *Liber lapidum*.⁷ Ethnographers and folklorists have established,

moreover, the existence of similar long-standing and widespread beliefs throughout pre-modern Europe.”⁸ In modern Greece they are called *astropelékia* (“lightening axes”), are kept in houses to ward off lightning and fire, and are likewise sought out at places where lightning has fallen.⁹

- 6 Archaeological evidence confirms, moreover, that this pre-modern practice in western Europe goes back at least to the early Roman Empire.¹⁰ In a survey of Britain, for example, of the forty known pre-historic axe-heads found in Roman sites, twenty nine were found in or closely associated with buildings:¹¹ ten in villas or houses (nos. 7, 12, 14, 17, 18, 23, 28, 30, 32 and 33); eight in forts or other military structures (nos. 2, 8 [barracks], 20, 25 [watchtower], 31, 39 and 40) four in temples (nos. 12, 21, 29 and 35), three in or near kilns (nos. 3, 4 and 15), three in buildings or huts of unknown use (nos. 1, 6 and 26) and one under a Roman bath (no. 19). Five stones of this type were found in a leather carrying case “with Roman remains” in Germany, a context that suggests they were valuable commodities and could be transported rather easily by merchants or soldiers on the move.¹²
- 7 Archaeologists have suggested that the examples found in temples may have been placed there as votives or dedications¹³ and this is certainly plausible, but we should remember that temples themselves, as larger buildings, could also be the frequent target of lightning strikes and that some of these stones may have been used for protection.¹⁴ Medieval sources and northern European ethnography suggest that these axe-heads were often positioned at doorways, in walls and under rooftops,¹⁵ but the British survey gives us little specific information about their placement in Roman buildings, with the exception of the one axe-head found near the entrance of a fort (no. 2). Another example (no. 9), unassociated with any buildings, has a deep notch and grooves in its surface that destroyed its cutting edge, but allowed it to be suspended with this edge pointing downwards.¹⁶ Subsequent to the survey of British sites discussed above, a ground flint axe-head was discovered in a Roman villa in Surrey, whose context amidst a collapsed ceiling suggests that it fell from the roof, where it was “originally kept... as a charm against lightning and other dangers as well.”¹⁷
- 8 Five large axe-heads bear magical inscriptions that confirm their use in Roman or late-antique times as house-amulets. The first is a “hard brown polished stone” that measures 13.5 × 6.3 cm. and was said to come from Ephesus (*Fig. 1*).¹⁸ Near the cutting edge of the axe-head we find engraved the Egyptian “pantheistic deity” and magical names encircled by an *ouroborus*-serpent, the Egyptian design of a serpent eating its own tail that was a common motif on amulets of the Roman period.¹⁹



Figure 1

- 9 The Greek words that surround the god are also popular on magical amulets, for example, the palindrome *ablanathanalba* and the name *Damnameneus* by the god’s feet, as well as the well-known words *akramma-achamarei* and *sesengen-pharanges* inscribed vertically at his sides.²⁰ On either side of his neck and head we see Jewish names and titles — Iao (= Jahweh), Sabaoth, and Adonaie — of the sort that also show up frequently on gemstones and other amulets of the Roman period.²¹ There are, however, two uncommon words above and to the sides of his vegetative headdress: *αιαουαηλ* and *παιζηθφθλωζα*. The first seems to be an angel name (Aiaouael) generated by adding a plausible Semitic ending (-ηλ) to a string of vowels.²² The second, however, seems, (as we shall see below) to be a variation of a special acclamation found on other thunderstone-amulets.²³
- 10 The “pantheistic” or “polymorphic” deity at the center of the design is an Egyptian god not archeologically attested until the first millennium BCE and usually depicted in small-scale statues of bronze or faience or inscribed on papyrus or gems.²⁴ Such figures appear often on personal amulets of the Roman period surrounded, as here, by magical words and vowels, for example, three very similar gems in the British Museum, which each depict the pantheistic god with the same generic phrase: “protect from evil!” (φύλαζον ἄπο κακοῦ).²⁵ There are at least one hundred extant examples of this type.²⁶ There is also a recipe in the Greek magical papyri for creating a small wax statuette (“three handbreadths tall”) of a similar god designed to bring prosperity and success to homes, shops and even temples.²⁷ Since this axe-head from Ephesus is rather large (13.5 × 5.3 cm.), it, too, was most likely used as an amulet to protect a house or a shop or served as a good luck charm. There is no hole or attachment for suspension, and since the top of the scene in Figure 1 lies close to the cutting edge of the axe, we should probably

imagine that this axe-head was set up with the sharp edge pointing up, perhaps against incoming lightning.

- 11 A second large axe-head now in Athens is said to come from Argos. It is of green color (serpentine) and slightly shorter than the Ephesian specimen (10.3 × 5.2). One side was engraved in Roman times with two scenes (Fig. 2).²⁸ In the lower half we see the standing figures of Athena and Zeus in a scene familiar from a gigantomachy like the one on the Altar of Zeus at Pergamon: the goddess is about to stab a tiny snake-footed “giant” with her spear, while her father looks on holding a scepter topped by an eagle, his usual attribute. There are, however, some eastern features: Zeus grasps a wilted *ankh*-sign in his left hand and Athena holds or supports with her left hand a tall ribbed rhyton.²⁹ In the upper register we find a simplified version of the well-known Mithraic icon: the god kneels on the back of the bull and stabs it, while three animals surround it from below. This second scene is encircled by two magical words: βακαζιχυχ and παπαφειρις. The first often appears alone on gemstones and translates the Egyptian phrase “son (or “soul”) of darkness”, even though it paradoxically is used often to describe solar deities, here presumably Mithras.³⁰ The second word has yet to be fully deciphered.³¹ The parallelism between the two scenes on this axe-head is noteworthy: in both powerful gods (Mithras and Athena) threaten or stab powerful adversaries (a bull and a snake-footed “giant”). Because this object is unique, it is difficult to say what it was used for, but the parallel scenes of divine triumph and the magical inscriptions both suggest that it was a protective amulet.³² The orientation of the design, as we can see in Figure 2, suggests that the axe-head was positioned with its cutting edge pointing downwards, that is, in the opposite direction of the Ephesian stone. The back of this axe-head is unscribed.

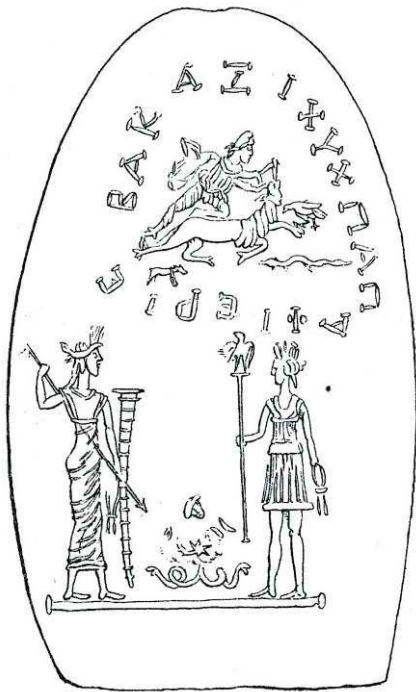


Figure 2

- 12 Our third example combines text, symbols and the stone medium in a somewhat different way. At the turn of the last century archaeologists discovered at Pergamum a so-called “magician’s kit” that contained three longitudinal slices from at least two different axe-heads.³³ All three were inscribed on the obverse and reverse with the same pair of inscriptions, one much larger than the other, as we can see in Figure 3.³⁴

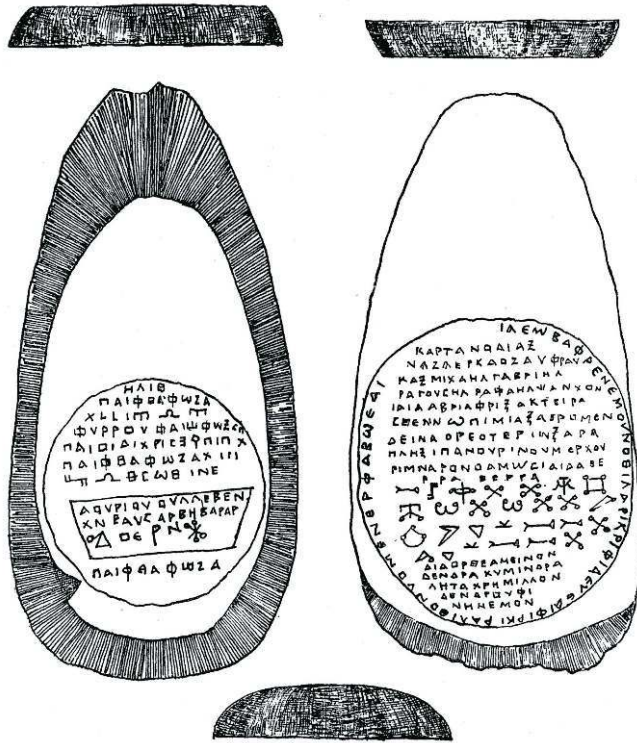


Figure 3

- 13 All three of the Pergamum slices were oriented with the cutting edge pointing down like the Argive stone. The two larger examples were apparently cut from the center of the same bluish-black stone and in their dimensions they are similar (11 × 5.5 cm.) to both the Ephesian and Argive stones. The third slice, however, was cut from the outer edge of a smaller greenish-black stone and, because of it is of smaller dimensions (8 × 4.5 cm.) and has a hole drilled laterally through its top for suspension, it will be discussed below in the context of body-amulets.
- 14 On the Pergamon amulets we find only words and symbols surrounded by a circle and (in the larger inscription) by the well known *iaeô-logos*, a long palindrome.³⁵ Mastrocinque points out, however, that the words *παι φθα φωζα*, which are repeated thrice in the smaller circular inscription (at lines 2, 6 and 11), seem to be a version of the words that appear in the first two lines of the Ephesian stone: *παι {ζηθ} φθλ θωζα*.³⁶ Scholars have, in fact, deciphered the phrase as an Egyptian acclamation: “This is Ptah, the Healthy One!”³⁷ This acclamation, in some cases followed by a similar series of symbols, appears elsewhere on a magical gem,³⁸ in three magical recipes for protection,³⁹ and on three metal lamellae: two gold examples found in Thessaloniki and Italy and a silver Aramaic one of unknown provenance.⁴⁰ A ring-stone in the Skoluda collection, however, provides

the best comparandum, because it is carved from polished obsidian, a type of stone used to make pre-historic axe-heads, and because it is inscribed with similar texts and symbols (Fig. 4):⁴¹

Αβλαναθαναλβα
 παι φθα φωξα
 [SYMBOLS]
 ακραμα-χαμαρει
 σεσενγενβαρφαρανγ
 ης θωβαρραβαυκωπιτει
 ιαρβαθαγραμνηφι
 βλωχνημεωθ



Figure 4

- 15 The name παι φθα φωξα in the second line is, first of all, followed by the same magical symbol (see Fig. 4), which in line 6 of the smaller Pergamum inscription (see the stone on the left in Figure 3) also follows παι φθα φωξα. The magical names above and below, moreover, — *ablanathanalba* in line 1 and *akrama-chamarei* and *sesenen-barpharanges* in lines 4 and 5 — are the same as those that surround the pantheistic god on the Ephesian stone (Fig. 1). This gemstone would seem, in fact, to be a miniature thunderstone in terms of its polished medium and its text, but it does not have the usual shape.
- 16 In the larger inscription on the other side of all three of the Pergamum slices, the *iaeô*-logos encircles a text that begins with magical words and then angel names (Michael, Gabriel, Ragouel and Raphael), the latter of which have been separated from one another, at least on the two larger slices, by extra space, suggesting that the scribe or his source rightly understood them to be discrete words. The inscription continues with a series of magical words that are also separated in similar fashion: ψανχον ια ια αβρια φριξ ακτειρα σθεννω.⁴² In the midst of these words the pair αβρια φριξ recalls the only two words that

are to appear on Timotheus' thunderstone: $\alpha\phi\iota\alpha\ \alpha\phi\rho\nu\zeta$. We expect, of course, that all of the words that follow on the heels of the angels are the names of similarly powerful supernatural allies. The first word $\psi\alpha\nu\chi\omicron\nu$ may be a corrupted transliteration of an Egyptian phrase meaning "he of darkness"⁴³ and the two short words $\iota\alpha\ \iota\alpha$, which seems to be a kind of ritual cry that introduces a powerful name, often of Jewish origins, e.g. *GMA* 7.2 ($\iota\alpha\ \iota\alpha\ \iota\alpha\ \iota\alpha\omega\ \Sigma\alpha\beta\alpha\omega\theta\ [\text{A}\delta\omega\nu\alpha\iota]$) or *GMA* 33, where each of thirty angel-names is introduced by the singular cry $\iota\alpha$.⁴⁴ The doubled cry on the Pergamon stone supports expectation that the next two words $\alpha\beta\rho\iota\alpha\ \phi\rho\iota\zeta$ are also divine names or titles. The word $\alpha\beta\rho\iota\alpha$ certainly fits the bill. A gem in the British Museum depicts Zeus-Sarapis on one side and on the other: $\alpha\beta\rho\iota\alpha\ \iota\alpha\ \iota\alpha\ \alpha\rho\chi\alpha\omega\theta\ \alpha\rho\beta\alpha\varsigma\ \iota\alpha\omega$ (u 31) and on a gold amulet from Sicily that calls itself the "Phylactery of Moses", we find the words $\alpha\beta\rho\iota\alpha\ [\]\zeta\ \iota\alpha\omega$ (*GMA* 32.18). Kotansky (*ad loc.*) suggests, in fact, that $\alpha\beta\rho\iota\alpha$ is a Greek rendering of a common Hebrew epithet for Jahweh "strong, powerful". Given the Jewish epithets and angel names that accompany $\alpha\beta\rho\iota\alpha$ on the Pergamon slices and these two other amulets, his suggestion certainly seems apt.

- 17 Should the second word be $\phi\rho\iota\zeta$ (Pergamon) or $\phi\rho\nu\zeta$ (Timotheus)? There are two more comparanda. In a papyrus recipe for prognostication, a laurel leaf is to be inscribed (*PGM* IV 2209): $\alpha\beta\rho\alpha\alpha$, $\sigma\delta\ \epsilon\acute{\iota}\ \acute{\omicron}\ \tau\grave{\alpha}\ \pi\acute{\alpha}\nu\tau\alpha\ \pi\rho\omicron\mu\eta\nu\acute{\upsilon}\omega\nu\ \mu\alpha\rho\iota\ \alpha\phi\rho\alpha\zeta$ ("Abraa, you who reveal all things, *Mari Aphrax*)." Since $\mu\alpha\rho\iota$ (Aramaic for "lord") appears in other magical invocations as a kind of detachable title,⁴⁵ the words $\alpha\beta\rho\alpha\alpha\ \dots\ \alpha\phi\rho\alpha\zeta$ when taken together appear to be further variations on the two magic words preserved by Timotheus. Elsewhere in the magical papyri, Zeus is invoked as the "star-grouping god, you thunderbolt-with-great-clap-Zeus-confining-world flashing-abundant-bolt-bestowing *daimon*, cracking-through-the-air, ray-producing etc."⁴⁶ The last two compounds appear in Preisendanz' edition as $\acute{\alpha}\epsilon\rho<\omicron\delta>\iota\alpha\phi\rho\acute{\iota}\zeta\ \acute{\alpha}\kappa\tau\iota\nu\omicron\pi<\omicron\iota>\acute{\omega}\nu$,⁴⁷ but the reading of the papyrus ($\alpha\epsilon\rho\iota\alpha\ \phi\rho\iota\zeta\ \alpha\kappa\tau\iota$) needs no emendation, because it most probably is drawn from the same tradition as the words known to Timotheus and the Pergamum stone-cutter:

Thunderstone amulet (Timotheus) $\alpha\phi\iota\alpha\ \alpha\phi\rho\nu\zeta$
 Invocation (Pergamon slices) $\alpha\beta\rho\iota\alpha\ \phi\rho\iota\zeta\ \acute{\alpha}\kappa\tau\iota\rho\alpha$
 Invocation of Zeus (*PGM* XII 176) $\alpha\epsilon\rho\iota\alpha\ \phi\rho\iota\zeta\ \acute{\alpha}\kappa\tau\iota\nu\omicron\pi\omega\nu$
 Invocation for prophecy (*PGM* IV 2209) $\alpha\beta\rho\alpha\alpha\ \alpha\phi\rho\alpha\zeta$

- 18 The first three cases are also linked, of course, by thunder and lightning: the first two are inscribed on thunderstones and the third appears in an invocation of Zeus as a god of thunder and lightning.
- 19 There are, it seems, two plausible readings of the first term. The first is Kotansky's suggestion (mentioned earlier) that $\alpha\beta\rho\iota\alpha$ is a Hebrew epithet ("powerful") of Jahweh, which makes good sense in the context of the Pergamon invocation, where this word is preceded by a string of angel names. Its closest parallel, however, is the $\alpha\epsilon\rho\iota\alpha\ \phi\rho\iota\zeta$ preserved in the *PGM* XII invocation, which can, in fact, be construed as Greek $\acute{\alpha}\epsilon\rho\acute{\iota}\alpha\ \phi\rho\acute{\iota}\zeta$ ("fearful-shuddering up in the air"), an apt description of a thunderbolt. The Greek noun $\phi\rho\acute{\iota}\zeta$ "shuddering" is related to a number of adjectives that show up in curses⁴⁸ and the prefixes $\phi\rho\iota\zeta$ - and $\phi\rho\iota\kappa\tau\omicron$ - stand at the beginning of compound adjectives used to describe the supernatural allies of the magician, for example $\phi\rho\iota\zeta\omega\pi\omicron\beta\rho\nu\nu\alpha\zeta\alpha\sigma\tau\rho\acute{\alpha}\pi\tau\eta\varsigma$ ("hurler of frightful thunder and lightning") describing Zeus-Serapis (*PGM* V 19–20). And given the close similarity of *epsilon* + *rho* to *phi*, is quite easy to understand how $\alpha\epsilon\rho\iota\alpha$ might end up in the Byzantine excerpt of Timotheus as $\alpha\phi\iota\alpha$.⁴⁹ Timotheus, however,

recorded the second word differently as φρούξ, which appears (LSJ s.v.) to be a rare word for “firewood” and is cognate with φρούγειν (“to roast” or “to scorch”) and φρουκτός (“torch” or “firebrand”), the last of which could also be an appropriate term for lightning. Timotheus and the PGM XII invocation, therefore, either invoked a “shuddering high in the sky” or a “firebrand high in the sky”. But Hebrew αβρια can also be construed as part of the other versions of the phrase that we see on the Pergamon slices and the prophetic spell in PGM IV, e.g. “powerful shuddering” or “powerful firebrand”.⁵⁰

- 20 A fourth large axe-head of mottled brown, grey and white color is inscribed with Greek letters and resides in the British Museum. It was purchased in 1885 in Smyrna and measures approximately 8.8 × 4.7 cm.⁵¹ The inscriptions on the sides were read as βακχε/αυρι/ζωεον (obv.) and εχλαμισι/πυ/ον/η (rev.) by Bonner, who found the text to be unintelligible, except for βακχε which he took to be the popular epithet of Dionysus, which is probably correct.⁵² On a recent visit to the museum, however, I was able to make out the following: βακχε/μυρι/ζωον (obv.) and εχλαμισι/πυρ/ον/θη (rev.).⁵³ Dionysus’ presence here is unexpected, until we recall that a thunderblast did, in fact, end the human portion of his life as he lay in the womb of his mother. The epithet Bacchios appears, however, in only one other magical text and the reading is not sure.⁵⁴ The rest of the letters on the obverse of this axe-head (μυρι/ζωον) may be some form of the verb μυρίζειν, “to anoint”. The other side is more promising, but corrupted: εχλαμισι πυρ could easily hide a phrase describing lightning, e.g. something like “the fire will gleam forth”.

⁵⁵

- 21 Our fifth example of a large inscribed axe-head is a dark-green polished stone 11 cm in length that was said to have been found in the ruins of Herculaneum in the nineteenth century.⁵⁶ Although it carries no images, it is inscribed as follows with a series divine or magical names, all but three of which (marked with an asterisk below) also appear on the Ephesian stone:⁵⁷

Ιαω
 Αναλβα-
 Αβλαναθ
 Σαβαωθ
 Αδωναιον
 Ελωαιο*
 Λακιωβ*
 Βηλβλααν*
 Αηιουω
 Σεσενγεν-
 βαρφαραν-
 Γην

- 22 The scribe wrote the text with the cutting edge of the axe pointing downwards, starting at the very top, where the stone is very narrow, as a result of which he divided up the palindrome *ablanathanalba* incorrectly, inscribing the second half of it (*Analba*) first.
- 23 We can, I think, sum up the common features of these larger inscribed axe-heads as follows:

Place	Dimensions/Stone type	Blade	Symbols/Images	Common Inscriptions

Ephesus (Fig. 1)	13.5 × 6.3 cm (hard, brown, polished)	up	pantheistic deity	παῖ {ζηθ} φθλ θωζα <i>ablanathanalba</i> , Jewish names, vowels, and others.
Argos (Fig. 2)	10.3 × 5.2 cm (serpentine)	down	Mithra / bull Gigantomachy	πα πα φειρις βακαζιχυχ
large Pergamon slices (Fig. 3)	11 × 5.5 cm (blue-black, polished)	down	symbols	παῖ φθα φωζα αβρι αφριζ
Smyrna	8.8 × 4.7 cm (mottled brown, grey and white)	up	none	βακχε/μυρι/ζωον εξλαμισι/πυρ/ον/θη
Herculaneum	11 cm long (dark green)	down	none	<i>ablanathanalba</i> , Jewish names, vowels, and others.
Timotheus of Gaza ⁵⁸	axe-head	NA	NA	αφια αφρυξ

- 24 As we saw earlier, the texts on the stones from Ephesus and Herculaneum share many similarities. Those stones from Ephesus and Pergamum seem, however, the most similar, not surprisingly given their geographic proximity. Both have an image or text surrounded by a circular device and preserve different versions of the acclamation παῖ φθα φωζα (“This is Ptah, the healthy one!”). Given the many extant variations of this phrase (see n. 38–40), one wonders if the still indecipherable magical word on the Argive stone (πα-πα-φειρις) is a corrupt version of it. The words αφια αφρυξ, moreover, that Timotheus recommends inscribing on a thunderstone are very close to the words αβρια φριζ on the Pergamum slices. It is important to stress, however, that all of these axe-heads either address, name or depict powerful supernatural entities, who often have the pronounced features of a solar or sky god.
- 25 Since ancient and medieval authors and modern folklorists are in nearly unanimous agreement that such stones protected buildings against lightning, we can probably assume that all of these larger stones were used as to protect houses from this danger. The appearance of the pantheistic god and the Mithraic icon on smaller amulets (both household and personal) corroborates this protective goal. The Pergamum slices can also tell us, I suspect, something about the business of amulets, for it would seem that the person who created them wanted to get as much profit as he could out of the powerful stones in his possession, so he cut them up vertically in such a way as to preserve the outline of the axe-head.⁵⁸

Smaller Axe-Heads as Body Amulets

- 26 Unlike the larger uninscribed thunderstones discovered in Roman buildings, archaeologists can more easily ascertain when smaller prehistoric axe-heads were re-used as personal amulets in the later periods, either because they were discovered in a grave on the neck or chest of the deceased or because they, like the smallest Pergamum slice, have been perforated or otherwise adapted for suspension. A bronze-age grave at Phaistos, for example, yielded a small black example pierced at the top so that the blade hangs down⁵⁹ and in an iron-age grave at Picenum a small Neolithic axe-head was found bound up with strips of copper and bronze, apparently for suspension in the same direction.⁶⁰ An axe-head of green stone also perforated at the blunt end was discovered in an Etruscan grave at Poggio delle Granate and dates to the turn of the 6th and 5th centuries BCE.⁶¹ A tomb at Narce in the Faliscan region contained the remains of a necklace of blue beads and a single pre-historic axe of diorite as a central pendent (*Fig. 5*).

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Figure 5

- 27 The grave of a Christian woman in Syracuse named Epiphania shows that the practice persisted quite late: it contained a thunderstone of green serpentine pierced in the same place for suspension.⁶³ In the case of these smaller axe-heads, then, we can trace the continuous use of uninscribed examples as pendants from the Bronze Age to Late Antiquity: in his recent survey of thunderstones from Italy and Sicily, Cherici listed thirty-seven examples discovered in Greek, Etruscan and Roman graves.⁶⁴ In most cases the stone seems to have been worn with the blade pointing downwards.

- 28 There are a half-dozen other inscribed Neolithic axe-heads whose small size suggests that they were probably worn on the body as amulets.⁶⁵ A dark-green axe-head in the Volos Museum, said to come from the Elasson area in Thessaly, is inscribed with a single magical name: Αβρααξ. The stone measures 6.3 cm. in length (no width given) and to read the name one must hold the stone sideways with the blade pointing left.⁶⁶ More complicated is a polished obsidian stone, now in a private Italian collection, which measures 7.2 cm tall and 5 cm wide and is perforated in the blade end for suspension — that is upside down when compared with almost all of the other small thunderstones found in graves. Both sides were, moreover, engraved in the Roman period with similar Mithraic designs.⁶⁷
- 29 On one side, Saturn faces outward, holding a *harpê* in his right hand and in his left a staff topped by two small male busts; he wears a crown that includes two snakes and scarab and he is entirely surrounded by a string of magical symbols. On the other side (Fig. 6), the god Mithras faces right with the usual Persian cap and corona on his head; he holds up a sword in his left hand and spear in his right and the same series of symbols encircles him.⁶⁸ A short text in Greek was inscribed over Saturn's head along the cutting edge of the stone in letters much smaller than the symbols which encircle Saturn: σοσχ μουι σρω ρος μ παμαψι παγουρη φονο θουθο.⁶⁹ These seem to be a series of divine names, of which three are well known: μουι σρω ("lion ram"), παγουρη ("the light that diminishes") and θουθ (Thoth).⁷⁰



Figure 6

- 30 The British Museum has in its collection two now controversial axe-heads of even smaller size, which are decorated or inscribed on both sides. For a long time they were thought to have been inscribed in the Roman period, but more recently they have been suspected as post-classical artifacts, in large part because their media and shape make them strange

outliers among the magical gems with which they were collected and eventually published.⁷¹ These stones do conform well, however, with the corpus of repurposed axe-heads discussed here, both inscribed and un-inscribed. The first of the two in London is a jade (nephrite) axe-head purchased in Egypt in the nineteenth century and covered on both sides with inscriptions.⁷² This stone is not perforated, but it is small enough (4.7 cm × 3.0 cm) to have been worn or carried as a personal amulet. It seems, moreover, that while inscribing Side A (Fig. 7) the scribe avoided an old chip on the top left side of the pre-historic stone by shifting the inscription to the right for the first three lines.⁷³



Figure 7

- 31 When oriented as here with its cutting edge downwards, it reveals rows of Greek letters (nearly all vowels) alternating with those mixed with magical symbols (the symbols are indicated by asterisks):⁷⁴

Εροβ
 χ **η
 αεηιουω (= seven vowels in proper order)
 ιη *****
 **ζη
 ωαιιαω (= inverted palindrome of the name Ιαω = Jahweh)
 ιιου/αωη (= seven vowels out of order, with a second *iota* replacing the *epsilon*)

- 32 The content of this inscription with its vowels and symbols is consistent with other magical amulets, but the workmanship is very low: the letters, for example, are of variable execution (some have serifs, while others do not) and the *omega* appears in two different shapes. It also seems that the scribe initially misjudged how he would fill the entire surface of the blade. After four lines of small, evenly placed letters and symbols, he was apparently forced to double the size of the letters in the last four.

- 33 Side B is inscribed much more competently and consistently (Fig. 8). It is laid out, however, in a unique format: we see a garland with eighteen leaves, each inscribed with Greek letters.⁷⁵

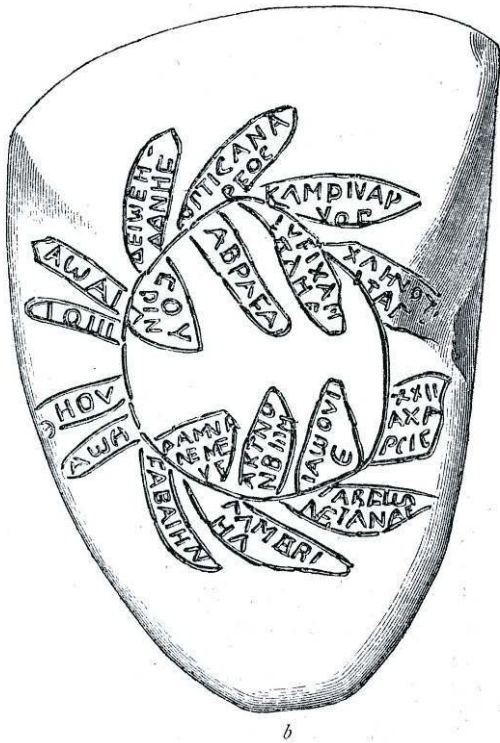


Figure 8

- 34 The inscriptions on the individual leaves are basically vowels or the names of powerful male and often solar gods, whose names presumably give added protection to the already powerful thunderstone.⁷⁶ The green color of this stone may have encouraged the depiction of a garland, which as scholars have pointed out, was sometimes used as an amulet in magical ceremonies. A papyrus handbook from Egypt, for example, preserves a recipe for a *megiston phylaktikon* (“best protective amulet”) to keep the body of a sorcerer safe while performing an elaborate divination spell: we are instructed to inscribe a different magical symbol on each of the seven leaves of a laurel sprig (PGM I 270–71).⁷⁷ We can intuit a similar arrangement in the description of a bough of inscribed laurel leaves in another spell for divination (PGM II 65–68), where the laurel branches are described as ‘twelve-leaved’ (*dôdekaphylla*) and are to be inscribed with twelve magical words (the so-called *uessemigadon*-formula), presumably one word for each leaf.⁷⁸ We are then told to weave this laurel bough into a garland with white and red woolen fillets and wear it, presumably for protection as in the PGM I recipe.⁷⁹
- 35 It is natural, of course, to connect laurel boughs or wreaths used in divination spells with Apollo, but there may be a much simpler explanation for the inscribed garland on the London axe-head: Pliny is at pains to insist that the popularity of laurel has less to do with Apollo and more to do with the belief that laurel could protect against lightning. He points out that garlands of laurel “kept vigil before the doorways” of Roman emperors (NH XV, 127) and that the laurel was the only shrub used as an indoor plant by men, because it is never struck by lightning (XV, 134). More importantly in this context, he

tells us (and Suetonius confirms) that the emperor Tiberius used to put on a laurel wreath whenever he heard thunder to protect himself from lightening.⁸⁰ It would appear, then, that the person who inscribed Side B of this axe-head has cleverly combined two well-known *apotropaia* of lightening — a thunderstone and a garland of laurel inscribed with powerful names. Such a reading helps explain, moreover the puzzling orientation of Side B. We saw that the cutting edge must point downwards in order to read the text on Side A and that this is the orientation of nearly all of the smaller axe-heads, but if we hold Side B in such a position, nearly all of the inscriptions on the leaves are upside down and thus difficult to read. Michel points out, however, that Side B (see *Fig. 8* again) gives us a bird's eye view of the top of the head of a person wearing the garland: the four short leaves trail off the nape of the neck, the longest leaves to the side and a space is left open near the forehead.⁸¹ This would, in fact, be the view that an incoming lightening bolt would have had of the laurel wreath on top of Tiberius' head and it suggests that this amulet was probably placed on some horizontal surface with Side B facing upwards.⁸²

36 Given the great differences in execution and orientation of the two sides of this axe-head, it seems most probable that they were executed at different times by different persons. On Side A, the alteration between lines of Greek vowels and magical symbols is consistent with inscriptions on other amulets, while other details suggest that it was inscribed by an amateur stonemason and used as a simple body amulet with the cutting edge hanging down. Side B, on the other hand, was perhaps inscribed at some later time and combines in a more sophisticated manner two well known amulets effective against lightening: a thunderstone and a laurel wreath. It was, moreover, probably carried or positioned horizontally.

37 A second small (4.5 × 3.25 cm) polished green axe-head (jadeite) in the British Museum has also been recently labeled a post-antique production.⁸³ It is engraved on both sides and but is only convex on the obverse side, unlike the other examples discussed so far, which are all doubly convex. It was designed to viewed with the blade pointing down.

38 On one side we see a finely executed mummiform Osiris, and on the reverse an *ouroboros*-serpent that encloses two rows of symbols followed by five rows of Greek letters. Both designs are curiously dwarfed by the dimensions of the axe-head and one wonders if they were originally created for a smaller oval gemstone. Although some of these symbols on the reverse have raised suspicions (see n. 84), the combination XE and the symbols that look like an asterisk, a *theta* or a reversed Roman E or F do show up on other amulets.⁸⁴ Beneath the symbols we find the following Greek letters:

ταλααρ
αιω
ωαρλορο
ντοκο
νβαι

39 A nearly identical inscription was inscribed on a gem, now lost, but once illustrated by Chifflet in the seventeenth century: ταλα/αραιω/ωαραορο/ντοκο/νβαι.⁸⁵

40 There are signs that this text, like those on the other inscribed thunderstones, is an invocation: the three vowels in line 2 (αιω) seem to be artificially isolated on the London axe-head and contain in scrambled order the letters of the name Iaô. Scholars have long noted, moreover, that the last two lines (ντοκο/νβαι) transliterate an Egyptian acclamation: "You are the lord of the soul!"⁸⁶ In fact, a number of parallels suggest that the second and third lines are also part of this invocation, albeit badly corrupted:⁸⁷ (i)

alone on the reverse of a black jasper gem with the womb-and-key design: μαρμαρ/οτοκομ/ραι);⁸⁸ (ii) isolated by punctuation in the invocation of an erotic spell (PGM IV 2755): μορμορονοτοκομβαι; (iii) in a recipe for a curse tablet that ends with a magical name (PGM IX 14): ιαωμορμοροτοκομβαι; and (iv) on a “jaspe sanguin” engraved with an eagle and βορβοροντοκομβαι ιαω.⁸⁹ We can compare the texts as follows:

- BM 1*: ταλααρ αιω ωαρλορο ντοκομβαι
- Chiflet gem: ταλα αραιω ωαραορο ντοκομβαι
- Black jasper: μαρμαρο τοκομραι
- PGM IV 2755: μορμορο ντοκομβαι
- PGM IX 14: ιαω μορμορο τοκομβαι
- jaspe sanguin βορβοροντοκομβαι ιαω

- 41 It seems, then, that the inscription preserved on the axe-head in London originally read something like “Talaar Iao Mormoro, you are lord of the soul!” The names Talaar and Mormoro are of uncertain meaning,⁹⁰ but it is clear that despite the corruption and confusion, the person who inscribed the London axe-head was using a handbook that retained the proper word division of the invocation.
- 42 It may well be the case, however, that this axe-head, like the other London stone, was also inscribed at two different points in time: although, as the parallels show, the symbols and Greek letters on the reverse are consistent with a late-antique date, scholars have consistently compared the image of Osiris on the obverse with much earlier pre-imperial styles, either of the Ptolemaic kingdom or of the late Roman republic.⁹¹ The green color of this stone and the previous example also argues for their authenticity: of the thirty-seven smaller prehistoric axe-heads re-used as amulets in Italian and Sicilian graves, fourteen were of green stone.⁹²
- 43 We can, then, summarize as follows the six inscribed smaller axe-heads, including as an appendix in square brackets for comparison the oval obsidian gem from the Skoluda collection:

<i>Place</i>	<i>Dimensions/ Stone type</i>	<i>Blade</i>	<i>Images</i>	<i>Common Inscriptions</i>
small Pergamon slice (Fig. 3)	8 × 4.5 cm (suspension hole) polished green-black stone	down	none	παι φθα φωζα, αβρια φριξ and many other names
Thessaly	6.3 cm long dark-green stone	sideways to the left	none	Αβρασαξ
NA (Fig. 6)	7.2 × 5 cm (suspension hole) polished obsidian	up	Saturn Mithras	both encircled by symbols; solar names over Saturn’s head

Egypt/BM 504 (Figs. 7–8)	4.7 × 3 cm jade/nephrite	Ob: down	NA	vowels/symbols
		Rev: side	garland of inscribed leaves	many magical names
NA/BM 1* (Fig. 9)	4.5 × 3.25 cm polished jadeite	down	mummiform Osiris ouroborus	Ἰαὼ Μορμορο ντοκον βαι ("you are lord of the soul")
[Skoluda gem (oval ringstone)]	polished obsidian	NA	none	παῖ φθα φωζα and many other names]

- 44 One obvious feature shared by all six stones is their polished black or green media and the appearance of various divine names, as well as acclamations: two Egyptian (παῖ φθα φωζα and ντοκον βαι) and one Greek (ἄερία φρίξ) or Hebrew (αβρια φριξ). In addition to the circles on the Pergamon stones (discussed earlier), we find the ouroborus-serpent on BM 1* and the swirl of symbols around the figures on both sides of the Mithriac axe-head.
- 45 According to Timotheus of Gaza axe-heads were used as amulets to ward off lightning from houses, but can we make the same claim for these smaller examples, many of which seem to have been worn as pendants on the body? The Latin lapidary of Damigeron and Evax, roughly contemporaneous with Timotheus, indeed stresses the personal use of the lapis ceraunius (Chapter 12):⁹³
- 46 If a person carries this stone in a pure state, he will never be struck by lightning, nor a house or villa in which it is placed. Moreover, if someone has one while on a sea voyage, he will run the risk of neither lightning nor hurricane. Even more, whoever carries it for a victory or into a contest, will triumph in everything.
- 47 Here we can see how the personal use of these thunderstones is mainly concerned with protection against lightning, but can be extended to cover other situations as well. And as we saw in the necklace in Figure 5, women might wear these as part of their jewelry, something that Tertullian mentions in passing (*de cultu feminarum* 1.1.3). This personal use of the smaller thunderstones should not, of course, be a surprise, because the ancients, who were often out and away from their homes, used many other kinds of body amulets against lightning.⁹⁴

Conclusions

- 48 Of the ten extant inscribed axe-heads discussed here, six — the stones from Argos, Thessaly and Herculaneum, the two London body-amulets and the smaller Pergamon slice — were fashioned from hard greenish stones and all ten carry Greek letters and/or magical symbols. A circular design informs many. On the Ephesian stone and one of the smaller pendants in London, an *ouroborus* serpent encloses text and symbols, while simple circles and a long palindrome accomplishes this on the Pergamum slices. Lines of text or symbols also encircle images: on the upper register of the Argive stone Mithras and the bull are surrounded by Greek magical words and on different sides of the obsidian pendant Mithras and Saturn are each engulfed by a swirl of magical symbols. There is,

moreover, in the design of these objects a tendency to focus on the cutting edge of the axe, as if this is where the power lies. The two stones with Mithraic scenes, for example, or the small London axe with the laurel wreath seem to fill up the entire surface down to the blade, even if (as on Side A of the London stone) this means increasing the size of the letters to do so. The Herculaneum stone displays the same anxiety: in the bottom line we find the three letters of the last name on the list spread out equally across the line and in a size nearly twice as large as those in the first line. On the Ephesian and Pergamene stones, on the other hand, we find that the design fills up only the half of the axe-head that is closest to the cutting edge. The designer of the Thessalian stone inscribed the single name “Abranax” horizontally beginning near the edge.

- 49 We have already noticed, moreover, the eastern Mediterranean provenance of five of the stones (Ephesus, Pergamum, Smyrna, Thessaly and Argos) and that the London garland-amulet was purchased in Egypt; it is also an easterner, Timotheus of Gaza (see n. 56), who tells us to inscribe a thunderstone with the words $\alpha\phi\alpha\alpha\phi\rho\nu\zeta$, which show up in slightly different form ($\alpha\beta\rho\iota\alpha\ \phi\rho\iota\zeta$) on the Pergamene slices. In fact, there is only one inscribed stone, the one from Herculaneum, that is said to come from the western half of the Empire, although from an area well known for deep Hellenic influence. One sees, moreover, deep Egyptian influence on most of these axe-heads, both in their imagery (the mummiform Osiris, the *ouroboros*-snakes, the image of the pantheistic deity, the *ankh*-sign in Zeus’ hand on the Argive one) and their acclamations: “This is Ptah, the healthy one!” and “You are the lord of the soul!” We have seen, moreover, that others are inscribed with the names or images of solar or sky gods (Jahweh, Mithras, Zeus), who oversee thunder and lightening. When examined, then, in the light of the comparanda assembled here, it seems clear that the two small green axe-heads in the British Museum should not be dismissed too quickly from the ranks of bona-fide Roman-period amulets, although as we have seen there is in both cases a strong suspicion that the obverse and reverse of each were inscribed at different times.
- 50 We can also infer some aspects of the perceived efficacy of these pre-historic axe-heads by stressing how Roman-period craftsmen extended or distributed their power into smaller and presumably more economical forms. The axes discussed as a class above are notable for their medium (usually hard black, brown or green stones), their high polish (thanks to the hard work of Neolithic artisans) and their peculiar shape and cutting edge. We saw, for example, how the creator of the Pergamene amulets cleverly preserved all three of these features by slicing the stones on a longitudinal axis to preserve the outline of the stones’ unique shape and then polishing the cut surfaces before inscribing them. Thus the owner multiplied his profit by producing as many amulets as possible from the stones in his possession. The creator of the Skoluda ringstone seems to have had similar ambitions: he cut and polished a typical oval gemstone from obsidian — perhaps even a fragment of an old axe-head⁹⁵ — and then inscribed its polished surface with texts similar to those on the axe-heads. To do so, he preserved two of the features mentioned above, the medium and the polish, but had to abandon the third: the distinctive shape of the axe-head.
- 51 The larger historical question remains, of course: if beginning in the Bronze Age and continuing down to the Roman period uninscribed Neolithic axe-heads were reused throughout the Mediterranean basin as amulets, why is it that only the Greeks — primarily in the eastern Mediterranean and only in imperial or late-antique times — felt compelled to enhance the apparently inherent protective power of these axe-heads with

special texts, images and circular designs? Indeed, there are to my knowledge no extant examples of such thunderstones inscribed with Latin, Aramaic or Demotic Egyptian or with Greek texts from pre-Roman times.⁹⁶ The answer, I suggest, lies in the epigraphic habit of the Roman Empire, rather than its presumed superstitious proclivities: indeed, although the inhabitants of bronze-age Phaistos, of iron-age Piscenum, of sixth- or fifth-century BCE Etruria and of the Greek and Latin speaking cities of Italy and Sicily all possessed the technology of writing and all apparently used smaller axe-heads as body-amulets, it was only the Greeks in Roman times and perhaps only in the eastern empire that they used this technology to enhance these otherwise perfectly powerful amulets.

Abbreviations

- 52 *AMB*: J. NAVEH AND S. SHAKED, *Amulets and Magic Bowls: Aramaic Incantations of Late Antiquity*, Jerusalem, 1985.
- 53 *BM*: S. MICHEL, *Die magischen Gemmen im Britischen Museum*, London, 2001, 2 vols.
- 54 *DMG*: S. MICHEL, *Die magischen Gemmen: Eine Studie zu Zauberformeln und magischen Bildern auf geschnitten Steinen der Antike und Neuzeit*, Geissen, 2004.
- 55 *GMA*: R.D. KOTANSKY, *Greek Magical Amulets*, vol. 1, Opladen, 1994 (*Papyrologica Coloniensia*, 22.1).
- 56 *PGM*: K. PREISENDANZ [AND A. HENRICHS], *Papyri Graecae Magicae: Die Griechischen Zauberpapyri*, 2nd ed., Stuttgart, 1973–1974, 2 vols.
- 57 *SGG*: A. MASTROCINQUE (ed.), *Sylloge Gemmarum Gnosticarum*, Rome, 2003–2008, 2 vols. (*Bollettino di Numismatica Monografia*, 8.2.1 and 2).
- 58 *SM*: R. DANIEL, F. MALTOMINI, *Supplementum Magicum*, Opladen 1990–1991, 2 vols. (*Papyrologica Coloniensia*, 16.1 and 2).
- 59 *SMA*: C. BONNER, *Studies in Magical Amulets Chiefly Graeco-Egyptian*, Ann Arbor, 1950 (*University of Michigan Studies, Humanistic Series*, 4).

NOTES

1. I owe thanks to Gideon Bohak, Fred Brenk, Attilio Mastrocinque and Arpad Nagy for reading and commenting on earlier drafts and special thanks, as always, to Chris Entwistle for his repeated help with information on the artifacts in the British Museum. Many thanks also to Andrew Reynolds for his help with the medieval and ethnographic materials.

2. Studies at the turn of the last century include EVANS (1897), p. 50–59, BLINKENBERG (1911), COOK (1925), SELIGMANN (1927), p. 181–197 and HARRISON (1927), p. 56–60, most of whom understood the practice to be some kind of human or at least European universal. Historically nuanced studies have been few and focused on some discrete social group, e.g. the Gnostics in KING (1868) and ILIFFE (1931) or the Mithraists in DELATTE (1914) and MASTROCINQUE (1998), p. 51–64. In recent times archaeologists have become increasingly interested in the widespread distribution of these Neolithic axe-heads in Roman sites, e.g. ADKINS – ADKINS (1985), MERRIFIELD (1987), p. 10–12 and

QUAST (2011) and medieval ones, e.g. CARELLI (1997). For the recent doubts about the British Museum stones see MICHEL (2001), nos. 1* and 504 and the detailed discussion in the second half of this paper.

3. For Greek text and app. crit., see HAUPT (1869), p. 30, lines 26–28, quoted and discussed by COOK (1925), p. 507 n. 1. For translation and discussion see BODENHEIMER – RABINOWITZ (1949), who argue that the fragments of Timotheus are prose excerpts from a hexametrical poem on animals written around 500 CE. The recipe for a thunderstone amulet appears in their edition as Chapter 57k; this chapter survives in a single manuscript in Paris (no. 2422). The sentence about thunderstones is appended to the excerpt about the kingfisher (*halcyon*), which claims that the heart of the bird worn in a gold capsule at the neck protects the wearer from thunder or lightning. At this point Timotheus adds his advice about the thunderstone, presumably because the kingfisher amulet recalled it to his mind. The unique manuscript preserves the letters of the magical words as $\alpha\phi\alpha\ \alpha\phi\rho\nu\xi$ and if these words were excerpted directly from his hexametrical poem, one would expect them to be metrical. COOK (1925), p. 507 n. 1 interpreted these words as a corruption of the phrase $\acute{\alpha}\phi\acute{\iota}\epsilon\iota\ \acute{\alpha}\phi\rho\nu\kappa\tau\alpha$ (“let [sc. my belongings] be unscorched!”).

4. Quoted by Pliny the Elder, *NH* XXXVII, 51. Sotacus is the only ancient or medieval author who mentions the hostile or aggressive use of these stones.

5. RIVES (2009), p. 61–65 points out that Pliny generally uses the word *magus* to indicate experts (often of an unsavory nature, but without any explicit Persian orientation) in the plant and mineral lore that makes up much of the content of the *Natural History*, whereas earlier prose writers like Cicero uses the term more narrowly in its ethnic sense of Persian ritual workers. But here it is quite possible that Sotacus actually used the Greek word *magos* in his text to refer to a Persian practice, especially since elsewhere in the fragments he mentions the Persian king. Either way the passage is good evidence that in the Hellenistic period thunderstones were sought out in the eastern Mediterranean as powerful objects.

6. HALLEUX – SCHAMP (2003), p. 250.

7. Quoted in full by MERRIFIELD (1987), p. 10 and CARELLI (1997), p. 402.

8. CARELLI (1997), p. 403.

9. EVANS (1897), p. 53 and COOK (1925), p. 506–507, who also notes that in 1081 CE Alexios Comnenes, the emperor of Constantinople, sent as a gift to Henry IV, the emperor of Germany, an *astropelêkys* set in gold, which given the gold setting was probably designed to be worn as a body amulet – for which see the next section.

10. See ADKINS – ADKINS (1985), whose nos. 15 and 37 date to the first century CE.

11. The parenthetical numbers that follow refer to the sites listed in ADKINS – ADKINS (1985). EVANS (1897), p. 50–59 long ago noted the presence of thunderstones in Bronze Age and later sites and he lists a number of Roman ones.

12. EVANS (1897), p. 109 and ADKINS – ADKINS (1985), p. 69.

13. ADKINS – ADKINS (1985), p. 69–67, MERRIFIELD (1987), p. 10–11 and CARELLI (1997), p. 399 all citing the list in HORNE – KING (1980), who note examples of polished axe heads in temple sites, primarily in BURGUNDY – NORMANDY (p. 374, 379, 382, 392–3, 410, 428–30, 434–35, 458, 464, 468 and 474).

14. See n. 27 below for a magical recipe for an amuletic statuette that could be used to protect a temple. The three axe-heads found in or near Roman kilns are initially puzzling, because they would not seem to protect people directly, but I suggest that these stones were thought by analogy to prevent the explosions and fires frequently associated with kilns. For special amulets hung on kilns in ancient Greece, see FARAONE (1992), p. 55–57. Fear of fire may also explain the one axe-head found beneath a Roman bath.

15. ADKINS – ADKINS (1985), p. 70. CARELLI (1997), p. 404 summarizes the evidence as follows: “The ethnological material contains numerous descriptions of where in the house the thunderstones were kept. [They were] commonly walled in, placed under the floor or the threshold or hung

under the roof.” Figure 5 (published in a 1957 ethnography) shows a drawing of a thunderstone hung under a roof.

16. MERRIFIELD (1987), p. 11–12 with fig. 1, who argues that it is of Roman date.

17. See MERRIFIELD (1987), p. 10. EVANS (1897), p. 13 and 58 reports that a large jadeite axe head was found in the roof of the granary of a ruined Cistercian nunnery in Bonn of twelfth- or thirteenth-century date.

18. ILIFFE (1931). It was purchased in Smyrna and is now in the Royal Ontario Museum of Archaeology. Figure 2 is after his Figure 2. Judging from the small photograph in his Figure 1, the design carved on the stone takes up half its surface: the full width and half the height.

19. See LANCELOTTI (2002) for the use of the *ouroborus* on Greek magical texts.

20. The last named has been abbreviated: it is missing the letters “*bar*” which usually appear before *pharanges*.

21. ILIFFE (1931), p. 307. For a more recent assessment of their role on amulets, see the appendix to MICHEL (2004) *ad loc.* The Greek letters ουηε between Iaô and Sabaôth consist of the four other Greek vowels that do not appear in Iaô’s name, so perhaps we should understand ιαωουηε as the seven vowels rearranged, so that they can begin with Iaô.

22. ILIFFE (1931), p. 306–307.

23. ILIFFE (1931), p. 307 suggests that παιζηθ be parsed in Greek as “Son of Seth”, but the phrase is entirely Egyptian; see notes 38–40 below for other Egyptian names or titles added to the end of the acclamation, e.g. “Lord of the Abyss” or “Thoth”.

24. The god is usually winged, holds Egyptian staffs or flails, while leaves and animals seem grow from his head and neck. For background and bibliography, see QUACK (2006) who points out that the traditional moniker “pantheistic” over-reaches, since not all the gods are included. He sensibly opts for “polymorphic”, but I use the more familiar term to avoid confusion.

25. BM nos. 290 (dark hematite), 291, (dark green jasper), and 292 (obsidian).

26. See the list in MICHEL (2004), p. 316–321, many of which are inscribed on the same unusual stones, e.g. obsidian, steatite, serpentine, that were used by Neolithic men to make axe-heads.

27. PGM IV 3125–71. The image has the heads of three different gods growing from its neck. For discussion, see MICHEL (2005), p. 144–147, who points out important parallels (in both image and text) between this recipe for a house amulet and a personal amulet of similar design (BM no. 173).

28. Figure 2 is after COOK (1925), p. 512, fig. 390. Below I follow the interpretation of DELATTE (1914), p. 8–9 and MASTROCINQUE (1998), p. 25–27.

29. It is an Egyptian rhyton according to DELATTE (1914), p. 8–9 and MASTROCINQUE (1998), p. 26–27. HARRISON (1927), p. 57 apparently interpreted the lower scene as some kind of Mithraic initiation: “a figure that looks like a Roman soldier bearing a rod surmounted by an eagle is received by a priest: the soldier is probably qualifying to become an ‘Eagle’.” In the drawing that accompanies her discussion, the snake-footed giant is invisible.

30. DELATTE (1914), p. 10 for evidence of the solar nature of Bakazichuch; MASTROCINQUE (1998), p. 26–27 explains the appropriateness of the name “son of darkness”: since in Egypt the sun travels through the underworld every night, it too is associated with darkness.

31. DELATTE (1914), p. 10 and MASTROCINQUE (1998), p. 26–27 review the debate and try to connect it with other solar names of Egyptian orientation, like Φιρι and Παφιετι. I offer below a new suggestion below based on parallels from other thunderstones.

32. For the use of the Mithraic icon on amulets, see FARAONE (2013b).

33. WÜNSCH (1905), p. 16 refers to them as “polierte schwartz Steine” and as “Probersteine” (“touchstones”) that have been polished, perhaps by running water, but GORDON (2002), p. 195 rightly points out that “their true composition has never been ascertained.” In the wonderful color photographs of Norbet Franken available on the Pergamon Museum website — search for

«Pergamon Stein» (Inv. Misc. 8612.1–3) at <http://emp-web-24.zetcom.ch/eMuseumPlus> — the two larger slices appear to be of a dark-grey bluish stone, while the smaller is of a greenish-black hue. Both WÜNSCH *loc. cit.* and COOK (1925), p. 512 considered these stones to be amulets.

34. The drawing is after WÜNSCH (1905), plate 4.

35. For the *iaēō-logos*, see BRASHEAR (1995), p. 3587 *s.v.* The word has solar connotations and connections to both Jahweh and Ra.

36. MASTROCINQUE (2002), p. 175 n. 6.

37. Noticed by R.K. Ritner *apud* BETZ (1986), p. 195 n. 143 and 270 n. 2, and MERKELBACH – TOTTI (1990), p. 222 and (1991), p. 57, who supply many parallels. The extra letters on the Ephesian stone (ζηθ) perhaps add the name of another Egyptian god, Seth.

38. MICHEL (2004), p. 243: the *anguipede* on one side and on the other παι φθα φωζα in a sea of vowels.

39. PGM XIII 1055 is a recipe for “the spell to annul”: an inscribed amulet with παιθ φθα φωζα and three rows of symbols, the last of which begins with XIII. PGM XXXVI 43 preserves a recipe for an inscribed silver amulet for charm and victory that begins with Iao Sabaoth Adonai, includes *ablanathanalba* and *akrama-chamarei* and ends with πε φθα φωζα φνεβεννουvi. PGM XXXVI 211–30 is a recipe for victory charm entitled “Prayer to Helios” that ends with: *ablanathanalba akrama-chamarei* πε φνα φωζα φνεβεννουvi. The last two recipes add a further title, φνεβεννουvi (“Lord of the abyss”), for which see RITNER n. 37 above.

40. KOTANSKY (1994), no. 40. The phrase παιθ φθα ρωζα appears at the start of a lengthy invocation and is followed by the word παιφωυθ, for which Kotansky suggests reading πεφωυθ which “is perhaps Coptic/Egyptian for ‘the Great Snake.’” MASTROCINQUE (1998), p. 56 n. 186 has more recently suggested, however, that the *phi* is a mistake for *theta* and that παι θωυθ means “this is Thoth”, which introduces another Egyptian god, for which compare addition “this is Seth” (παι Ζηθ) in the middle of the acclamation on the Ephesian stone (discussed above). A version of this name appears in Greek letters on a silver Aramaic amulet against the evil eye and fever of similar date; see AMB no. 14, where (see fig. 16) the words ζαιρ φθαω φωζα are followed by XII and three-tined fork pointing downwards. Another gold *lamella* found in a gold amulet case and published by MALTOMINI (2006) has the phrase παιθ φθα φαζαρ followed by XIII *ablanathanalba akrama-chamarei* and then φνεμενουvi (lines 5–9). We find similar symbols in line 2 of the smaller Pergamon stone (see Figure 3), where παιθ φθα ρωζα is followed by XIII (the first two have serifs) and the triple tined fork, and on the obsidian ring stone (see Figure 4), where it is followed by a line of symbols that ends with XX (one on top of the other) followed by III.

41. MICHEL (2001a), p. 118–119, no. 136 with Tafel 22. My text, which based on the photograph in Figure 4, differs slightly from Michel’s text in lines 6 and 8.

42. These spaces are not always obvious in Wünsch’s drawing (Figure 3 above), but he himself acknowledges some of them when he prints his text (1905), p. 16 as follows: ψανχονιαια αβρια φριξακτειρα σθεννω, translating the fourth word (a *hapax*) as “Shauderbringerin” and understanding most of these words to be female epithets modifying Sthenno at the end, whom he equates with the Gorgon Sthenno mention briefly by Hesiod (*Th.*, 276). The smaller stone, perhaps because of the limitations in space, shows no spaces between the angel names or the magical words that follow. MASTROCINQUE (1998), p. 55 uses a word division closer to mine (ψανχον ιαια αβρια φριξακτειρα σθεννω).

43. The word ψανχον could be a corruption of πανχουχι on a number of gold lamellae and is an Egyptian phrase meaning “he of darkness” (see GMA 4.8, 38.4 and 42.1 and the comments *ad loc.*).

44. JORDAN (1985), p. 254 suggests that ιαια on an Athenian *defixio* is the tetragrammaton, but here the letters are printed as if they are two words ια ια.

45. For the Aramaic derivation, see BRASHEAR (1995), p. 3591 *s.v.* See, e.g. “*mari* of high renown [ἐνδόξου]” (PGM IV 365, SM 46.17 and 48.18), 18 “*mari baiôth/beôth*” (PGM IV 367, SM 46.18, 48.18

and 30, 49.36–37 and 50.48), “*mari onioxas*” (SM 4.37–38, probably a mistake for ἐνδόξου), *mari anou* (PGM V 16) and *mari thaia* (PGM XIb 8).

46. PGM XII 75–77 in the translation of R.F. Hock in *GMPT*.

47. He seems to have had second thoughts, however, about the word division here, because in his notes he cites the suggestion of WÜNSCH (1905), p. 27 that the word be φριξακτί (based on the parallel from the Pergamon slices φριξάκτειρα) and then in the index he printed in the ill-fated third volume to the *PGM*, gave this entry “φριξακτινοπέ (XII 176).”

48. See, e.g. the φρικτὸν Στυγὸς ὕδωρ (PGM IV 1460: “the horrible water of the Styx”), the φρικτὰ ὀνόματα used to frighten demons in an exorcism formula (SM 49.49), the φρικτὰ κόραι invoked on a curse in iambic trimeters (SM 42.6) or the φρικώδης φωνή of Hekate in a hexametrical passage that goes back to late classical times (SM 49.69).

49. We should also recall that this word originally appeared in a hexametrical poem and since it sits at the very end of the extract, there is cause to believe it was placed at the end of the verse. The phrase ἀερία φρίξ would, in fact, fit nicely at the end of a hexameter and φρίξ itself is primarily a poetic word (see the preceding note for two other instances where adjectives derived from φρίξ appear in poetic passages preserved in Roman-era incantations). Because adjective ἀερία is feminine and modifies the feminine noun φρίξ, it cannot refer to Zeus himself, although ἄεριος is in fact an epithet of Zeus in Anatolia (e.g. TAM V, no. 616, 3rd cent. CE). In the magical papyri the adjective ἄεριος modifies Arktê the pole-star in an all-purpose invocation (PGM VII 697: ἄ<ε>ρία), as well as the stars (XII 11), *daimones* (I 216 and IV 2699) and *pneumata* (e.g. I 97 and 179 and IV 1116).

50. We might imagine, too, that the alternate Pergamon version contained one of two alpha-privative words, either the word or *ἄφρυξ (“unscorched”) or *ἄφριξ (“shudder-less”, i.e. “fearless” or “intrepid”). Neither adjective seems to exist, however, although closely related forms do, for example, the adjective ἀφρυκτός, suggested by Cook as an emendation for the Timotheus passage (see n. 3) or the Callimachean adverb ἀφρικτί, “without shuddering” (*Hymn to Diana*, 65). It is difficult to imagine a god invoked as “unscorched”, but an epithet of a form similar to *ἄφριξ (“fearless”) does appear on a series of rock-crystal gems that show Helios on one side holding his whip and globe and on the other side an invocation that begins Ζηθ ἄφοβε (“Fearless Seth”).

51. BM +2402.

52. BONNER (1946), p. 36–37 n. 30.

53. I am grateful to Chris Entwistle for allowing me to study and photograph the stone and to publish my new readings here.

54. PGM VII 460–461. It appears in the position in an exorcistic formula where one expects to find the name of Jahweh or some other all powerful sky god: “I adjure you by the glorious Bacchic name!” The papyrus reads οβα (κ)χιουξ (the kappa is over the chi), which can be read as the common abbreviation of *onoma* followed by “of Bacchios”. But see BRASHEAR (1995), p. 3594 s.v. “οβακχιουξ” for possible Egyptian interpretations, e.g. “Grosser der Toten”.

55. For the verb *eklampein*, see e.g. Hippocrates, *Epidemics* VII, 88.

56. This is the “green jasper” reported in KOPP (1829), p. 215 — see MASTROCINQUE (1998), p. 54 n. 182 — which was only recently published properly in QUASt (2011).

57. This is the text of QUASt (2011).

58. WÜNSCH (1905), p. 39–43, because he insisted that everything found in the “Pergamum kit” was used by the owner during a complicated divinatory session, imagined that the magician stood with one foot upon each of the two larger stones, and around his neck wore the smaller one with the hole bored in its upper edge. There is, however, no compelling evidence that all of the objects found together in Pergamum were designed for a single ritual or purpose — See GORDON

(2002) and JACKSON (2012) — and the fact that the extant slices seem to come from at least two different stones suggests there were once other slices, which had presumably been sold off.

59. BLINKENBERG (1911), p. 23 and COOK (1925), p. 507, fig. 382.

60. CHERICI (1989), p. 363.

61. CHERICI (1989), p. 356.

62. The illustration of the necklace in Figure 5 is after BLINKENBERG (1911), p. 29 = COOK (1925), p. 508, fig. 384. Blue beads, of course, have an apotropaic value of their own.

63. See COOK (1925), p. 509, fig. 385; see also CHERICI (1989), p. 362.

64. CHERICI (1989), p. 368–369.

65. MASTROCINQUE (1998), p. 54 discusses another possible example known in the nineteenth century, but whose whereabouts are unknown: KING (1885), p. 207 mentions in passing — as proof of the “immense diffusion of these talismans” — “an oval chalcedony ... from India [i]ts face (i.e. the obverse) covered with rows of Greek numerals, arranged in sets of four.” He says that the reverse has a long and lacunose text “invoked for the protection of the wearer of the gem” that includes the following: ΩΝΩΞΕ/ ΜΕΣΙΛΑΜΣ .../ΑΗΙΕΗΙ.../ΩΝΗΓΗΙΑ .../ΣΑΒΑΩΘ. The problem here is King’s vague reference to “these talismans”, which could refer to pre-historic axe-heads or just personal amulets inscribed with what he calls “Gnostic” formulae.

66. THEOCHARIS (1973), plate 240. The author apparently does not discuss the axe-head in his text, but the caption to the plate reads: “Stone axe-head with incised inscription: ΑΒΡΑΣΑΕ (length 0.063 m). Region of Elasson. Volos Museum M 5088.”

67. MASTROCINQUE (1998), p. 59–80 with figures 15–16. The photograph in Figure 6 is by Mastrocinque and is used here with his permission.

68. This is the text of MASTROCINQUE (1998), p. 59.

69. MASTROCINQUE (1998), p. 59–61.

70. MASTROCINQUE (1998), p. 63–71. ΜΟΥΙ ΟΡΟ is part of one of the compound names for the Egyptian sun god (σερφοουτ-μουι-ορο) that reflects his shape in the morning (lotus), at noon (lion) and in the evening (ram); see MASTROCINQUE (1998), p. 64 and MICHEL (2011), p. 85. Π?????? usually αγουρι usually appears in Greek magical texts as part of a pair of Aramaic words also seem to track sunrise and sunset Ζαγουρι-Παγουρι, which means “the light that increases” and “the light that diminishes”; see FARAONE (2013a).

71. MICHEL (2001) dates BM nos. 1* to the eighteenth century and labels 504 “neuzeitlich”. For previous opinions, see, e.g. BONNER (1951), no. 1, who accepted, with reservations, the authenticity of BM no. 1*, and the title of KING (1868), which refers to 504 as a “Gnostic Talisman”.

72. BM no. 504 (= inv. 56587). This stone was first discussed by KING (1868), p. 103–116 = idem (1887), p. 197–212. His illustrations and interpretation were used by EVANS (1897), p. 55 fig. 11 and COOK (1925), p. 511–513, fig. 391. I use the text of MICHEL (2001), p. 308–309, who labels it “neuzeitlich” on the basis of the cuttings, the polish and the type of stone.

73. MICHEL (2001), p. 309 thinks that the chip is more recent and that there are letters or symbols lost at the start of the first three lines.

74. One could argue that all of the characters in lines 2, 4 and 5 are symbols, because *zeta* and *chi* sometimes appear in this guise; see, e.g., Mastrocinque, *SGG*, p. 94–96. I print the final two lines as one, because the last line is slightly indented and because the scribe after line 4 doubles the height of the individual letters and symbols and apparently no longer had room to print his seven letters on the same line.

75. Figures 7–8 are after KING (1868) unnumbered figure facing page 104 = COOK (1925), p. 513, fig. 391. The stone has been republished as Michel (2001), no. 504 and (for a color photograph) Farbtafeln VII. Both King and Michel say that number of leaves on the garland is “fourteen”, i.e. twice the magic number seven, but there are in fact eighteen — unless we discount the four short strands on the left side.

76. The four short leaves at the back of the wreath are each inscribed with three or four vowels (αωη, θηου, ιωω and αωαι) and the rest are clearly all meant to be names in the nominative case of powerful supernatural beings, for example, Sabaôth, the names of angels (Gabriël and Souriel) or magical demons (Damnameneus, Actinophis, Abrasa[x] and Neixaroplê[x]), and a name consisting of the seven vowels (Iaôouie) that begins with Iaô (= Jahweh) — i.e. similar (with only one letter changed) to the vowels string Iaôouêe found on the Ephesian stone (see n. 20). The remainder are, to the best of my knowledge, unparalleled on any other magical texts, although their endings suggest that they were designed to be exotic masculine names as well: Iaksiêkezanos, Xriiaxaros, Deimendanês, Orgizamarsos, Kamonaruos, and Xrphneix. For text and discussion of these names see KING (1885), p. 207, MICHEL (2001a), no. 504 and MASTROCINQUE (1998), p. 54.

77. Cited by MICHEL (2001), p. 309.

78. BONNER – YOUTIE (1953) must be correct in assuming that we are to inscribe each of the twelve leaves with a different magical name.

79. For the Greek use inscribed leaves as amulets see FARAONE (2009).

80. NH XV, 136 and Suetonius, *Tiberius*, 69.

81. See the comments of MICHEL (2001), no. 504 *ad loc.*

82. The *Geoponika* (VII, 11) tells us to place a bay branch on top of wine-vats to prevent the wine from turning because of thunder and lightning. Here, too, the laurel is on top, i.e. between the sky and the object to be protected.

83. BM 1* = inv. 56024. MICHEL (2001) *ad loc.* dates it to the eighteenth century for three reasons: (i) the mummiform Osiris recalls “Etruscanizing” images dating to the late Roman republic and are thus anachronistic; (ii) the appearance of the Latin letter “F” amidst the magical symbols; and (iii) the variety of stone (jadeite). When BONNER (1951), p. 320 no. 1 published this stone sixty years ago, he suggested, in fact, that the image was perhaps of Ptolemaic date and he dated the inscription on the reverse to the Roman period, although he voiced some concern about “suspicious circumstances”: (i) the letter “F” mentioned by Michel, although he grants that this letter can appear as a magical symbol; and (ii) the fact that the second part of the inscription appears on another stone that was a certain forgery. He concluded, however, that the second point was not “conclusive evidence of a forgery.” Neither scholar notes that the stone takes the shape of an axe-head, although this the main focus of the work of King, which is cited elsewhere by Bonner. Michel describes the shape as an isosceles triangle; Bonner says it is “like a lead plummet”.

84. See, e.g., MASTROCINQUE, *SGG I*, p. 96 (F and asterisk), 97 (*theta*) and 423 n. 71 and 73 (for the XE). Some of these also appear in the popular *Aianagba-logos*; see MICHEL, *DMG*, p. 134–137 with *Tabelle 3*.

85. CHIFLET (1637), pl. 3.14: it shows the *anguipede* on the other side. Chiflet’s drawing was in modern times copied onto a grey agate, but as Bonner says in his notes to SMA no. 173: “There is no reason to doubt the authenticity of the stone published by Chiflet.” For a comparison of the seventeenth century drawing and the stone, see MICHEL, *DMG*, *Tafel 104 nos. 1–2*.

86. See, e.g., Michel *ad BM 1**.

87. BONNER (1950), p. 188 n. 9 noted both of these parallels, but he did not see the full extent of the parallel, undoubtedly because it was so corrupted.

88. DELATTE (1914), p. 87–88 no. 35.

89. VINCENT (1908), p. 412–414 no. 7.

90. Talaar remains inscrutable, but Hesychius glosses the Greek word μórμopos as φόβος (“fear”) and it seems to be related to a child-killing demoness named Mormo. DELATTE (1914), p. 87–88 mistakenly tried to connect μopμopo with Marmaraôth, because variant he was studying

had *alphas* instead of *omicrons*. BRASHEAR (1995), p. 3592 discusses *μορμπονοντοκουμβαί* found in the two papyri.

91. Bonner (“Ptolemaic”) and Michel (“Republican”), the latter of whom understood this anachronism to be the mistake of an eighteenth-century carver. J.F. Quack *per litteras* also has the impression that the mummiform Osiris resembles late-period Egyptian bronzes.

92. CHERICI (1989), p. 354–363 notes green axe-heads from Susa (“serpentina verde”), Populonia (three examples in “pietra verde”), Monte Pitti (“roccia verde”), Bolsena (“nephrite”), Nocera (“giadeite”), l’Aquila (“giadeite”), Castrano (“giadeite”), Tivoli (“pietra verde”), Marino (“giadeite”), Valvisciolo (“pietra verde”), Satricum (“pietra verde”), and Siracusa (“pietra serpentina”).

93. I translate the text of HALLEUX – SCHAMP (2003), p. 250. At the start of this passage Damigeron and Evax claim that the Egyptians call this stone *smaragdum* (“emerald”), a detail that might reflect the common Neolithic use of green stones (e.g. steatite and jade) to make these axe-heads.

94. Timotheus, for example, in addition to talking about thunderstones, also tells us that a seal skin, when wrapped around a child (?) “averts the missile from heaven” and that the heart of a halcyon bird, encased in a gold capsule protects the wearer from the same; see BODENHEIMER – RABINOWITZ (1949), p. 49. Suetonius remarks (*Augustus*, 29 and 90) that Augustus, after he was nearly struck by lightning, dedicated a shrine to Jupiter the Thunderer, but henceforth also carried a seal-skin for protection. For similar devices to protect vineyards and crops, see *Geoponica* I, 14 (sealskin attached to a vine) and I, 16 (hippopotamus skin buried in a field). Plutarch, *Mor.*, 684c reports that soldiers used tents of or seal- and hyena-skin to ward off lightning strikes (664c and 684e).

95. See the report of COOK (1925), p. 506 that in nineteenth-century Greece parts of thunderstones were worn as protection against evil spirits or the evil eye.

96. This pattern seems to persist into the Byzantine period as well. QUAST (2011) Figure 7.1–2 shows two examples of inscribed Greek crosses (without any text).

ABSTRACTS

The re-use of Neolithic axe-heads (also known as “celts” or “thunderstones”) as amulets in Roman times is nowadays underappreciated. As a result, the ancient date of two small inscribed examples in the British Museum (BM nos. 1* and 504) is now in doubt, a negative assessment that arises from the use of insufficient comparanda. When compared with the growing corpus of magical gems, the media of these two small axe-heads (jadeite or serpentine), their high polish and their shape do indeed seem suspicious and difficult to assess as gems per se, but when viewed alongside other thunderstones, inscribed and uninscribed, found in Roman and later sites, we can see that both of the London stones belong to a clearly defined category of thunderstones reused as amulets.

La réutilisation des haches néolithiques (également appelées « celts » ou « pierres de foudre ») comme des amulettes à l’époque romaine est aujourd’hui sous-estimée. En conséquence, la date ancienne des deux petits exemples inscrits du British Museum (BM n^{os} 1* et 504) est maintenant remise en doute, en raison d’une évaluation négative qui découle de l’utilisation insuffisante de comparanda. En comparaison avec le corpus croissant de pierres magiques, les médias de ces deux petites haches (jadéite ou serpentine), leur poli et leur forme semblent en effet suspects et

difficiles à évaluer comme gemmes en soi, mais quand on les compare à d'autres haches néolithiques inscrites et anépigraphes trouvées dans sites romains et plus tard, il s'avère que les deux pierres à Londres appartiennent à une catégorie bien définie de « pierres de foudre » réutilisées comme amulettes.

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