

# Ammonite fossil portrayed on an ancient Greek countermarked coin

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*The image on a Greek coin of the second-first century BC is identified as an ammonite fossil and linked to the eponymous Ammon, the Egyptian ram-headed god.*

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## Introduction

Ammonites are fossils of an extinct group of Palaeozoic and Mesozoic marine cephalopods distinguished by their planispiral shells. Ancient human communities are known to have collected and engraved ammonite fossils 25 000 years ago (Riek 1934; Lehmann 1981). In spite of the fact that the ancient Greeks (particularly Xenophanes, in a sixth-century BC fragment preserved in Hippolytus; Mayor 2000: 281) were the first to infer that fossils were the remains of once living organisms, ammonite fossils themselves were apparently never mentioned in ancient Greek writings (Edwards 1967). This may have been because there were no direct modern analogues (e.g. living cephalopods with coiled shells) directly available to the ancient Greeks, thus complicating the interpretation of these fossils as the remains of once living creatures. It should be noted, however, that a third-century Greek poet (pseudonym Orpheus) referred to ophites as a vocal stone in which *'dwells a soul, round, roughly black, hard; all over its circumference run sinews, similar to wrinkles.'* The oracular properties of this stone required the seer to keep a fast, bath the stone in running water, wrap it up like an infant, put it in a shrine, and invoke it by the chanting of spells. With such activation the ophite served as protection from impotence, barrenness, serpent bites and also could cure blindness (Oakley 1965a; 1965b). Earlier representations of the planispiral form (e.g. Mesolithic rock art in south-eastern Spain, Oakley 1965a, 1965b; carving on reindeer horn, France, 15 000 BC, Feliks 1998) are less convincingly related to ammonite fossils.

A countermarked coin described here provides evidence that ancient Greeks created artistic portrayals of ammonite fossils, although they probably valued them more for their religious significance rather than for their significance for the study of natural history. The host coin (Figure 1) is composed of bronze or other base metal (weight = 6.816g), and is 20mm in diameter at its widest point. The obverse is in very good to fine condition and shows a diademed male head facing right. The reverse of the coin is largely obliterated, partly by extended wear and/or a weak strike and partly by flattening due to the impact of the relatively large countermark that was applied to the obverse. The coin is in a private collection and has been listed by Mark McMenamín at the Mount Holyoke College Museum of Art.

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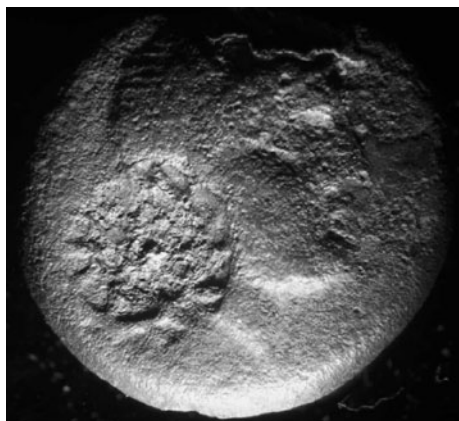


Figure 1. Countermarked ancient Greek bronze coin showing ammonite countermark. Male head facing right bears the countermark at the nape of the neck. The host coin is thought to be from Klazomenai or Thrace, and was minted in the second-first century BC.

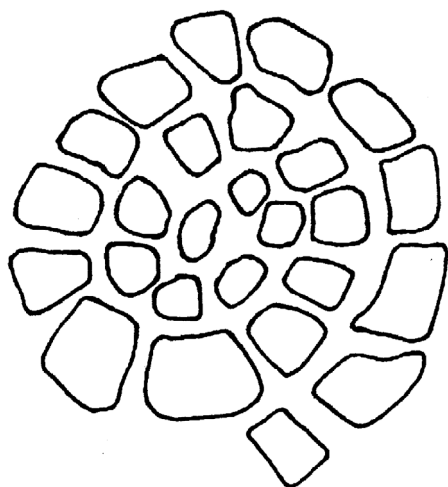


Figure 2. Line art sketch of the countermark shown in Figure 1.

The countermark (Figure 2), 8.5mm in diameter, is in very fine condition and shows a serially partitioned spiral pattern. The spiral makes approximately two revolutions. The partition lines are either perpendicular to the edge of the spiral or slightly inclined to it. The countermark pattern was apparently intended to portray the *cornua ammonis* or Ammon's horns. These fossils were referred to by Pliny the Elder (c. AD 77) in his *Natural History* (37.167): 'Cornua ammonis or horn of Ammon, one of the most sacred stones of Ethiopia, has a golden yellow colour and a shape resembling that of the horn of a ram.' Pliny's reference to a golden yellow colour identifies the fossils he was observing as preserved as calcitic casts and moulds, which typically manifest a honey-yellow colour in the calcitic infillings. Mayor (2000: 275) inferred that the fossils referred to by Pliny were iridescent ammonite fossils. The fact that the identification of ammonite fossils with the horns of Ammon was known to Roman artists is suggested by the portrayal of Zeus Ammon in Figure 3.

Pliny may also have made reference to ammonite fossils in his description (*Natural History* 11.36) of rocks from Egypt's Eastern Desert. Pliny called rocks with markings resembling snakes ophites. More specifically, his Augustean ophites were rocks with markings that 'curl over like waves so as to form coils.' Harrell (1995) interprets Augustean ophites as saussuritised gabbros from the Roman quarry at Wadi Semna, but a better interpretation of Augustean ophites is as fossil ammonites.

The provenance of the host coin is clearly Greek, based on its artistic style and the style of the planchet from which it was struck. Numismatist Andy Metz believes the coin to be Thracian, and this is a reasonable suggestion but is not the only possibility. Its find site was reported as 'found in the Black Sea area' (Andy Metz, written communication, 28 February 2004). The coin is most similar to Sear 4335, a bronze coin minted in Kalzomenai in the second-first century BC. This tentative identification is supported by the reverse of the countermarked coin which shows a seated figure on the left with a right raised hand, similar to the reverse of Sear 4335 which shows Anaxagoras seated on the left with a right hand raised. Unfortunately no epigraphy remains on the countermarked coin to confirm



Figure 3. Onyx brooch portraying Zeus Ammon. The horn strongly resembles an ammonite fossil. Europe, west of Turkey, first-fourth century AD. (Image reproduced by kind permission of Barakat Gallery).

the identification, so it must remain uncertain for the present. The host coin's style, however, is quite in accord with a date of second-first century BC.

The provenance of the countermark is likewise uncertain, but again a Greek origin is assumed. This countermark is unlike any known to occur on Phoenician coins (McMenamin 2000). It also appears that the countermark was roughly contemporary with the coin rather than being a much later addition. The countermark could simply represent a tightly coiled ram's horn. Indeed, bronze coins minted in Klazomenai between the fourth-first centuries BC frequently portray rams or ram's heads (e.g. Sear 4318, 4322, 4323, 4326-29, 4332, 4334). A disembodied horn is unusual, however. If it had been intended to be solely a ram's horn/Ammon's horn, the person striking the countermark would have placed the marking at the side

of the head of the male bust, rather than striking it at the nape of the neck as was done. Thus the image more likely represents a portrayal of an actual fossil ammonite.

This interpretation does not preclude an association between the spiral countermark and the cult of Zeus Ammon. This cult (which originated in Egypt with the Egyptian diety *Amun*, the 'hidden one') enjoyed a phase of great popularity with the Greeks as well as non-Egyptian peoples of third-century BC Africa, such as the Garamantes (Keys 2004). Alexander the Great made a special point of visiting the oasis of Siwa in North Africa (south-west of Nitria in Egypt), and was acclaimed in the Siwa Temple as a son of this god. Alexander is portrayed on some of his coins as bearing the horns of Zeus Ammon, and he is known in this guise as two-horned Alexander or *Alexander Dulkarnayim*. Evidently it was Alexander himself who commissioned this iconography, for the Horn of Ammon is visible on a gold medallion from the Mir Zakah hoard in Afghanistan, revealing that Alexander had proclaimed himself a god (Holt 2003; 2006). Later art took this image as an embodiment of evil, as in the head of Satan as portrayed by Giorgio Vasari in his 1540-41 *Allegory of the Immaculate Conception* (Plate 685 in Andres *et al.* 1994). The Ammon horns are exchanged for more typical devil horns in a 1541 small-scale replica of *The Immaculate Conception* (Plate 278 in Gregori 1994) by the same artist.

Strabo (born *c.* 64 BC) in his *Geography* (1.3.4) notes, 'By the Temple of Ammon [at Siwa] and for 3000 stadia along the road to the temple there are great masses of oyster shells.' Most of these fossils were probably Cenozoic in age and so would not be expected to contain ammonites, although outcrops of Mesozoic marine strata occur in the area as well. Kirchheimer (1977), following suggestions by Fourtau (1899) and Blanckenhorn (1901),

argued that Pliny's *cornua ammonis* were in fact large Paleogene specimens of the gastropod *Natica* rather than ammonite fossils.

Howgego's (1985) compendium of Greek imperial countermarks illustrates no countermark resembling the one described here. It seems reasonable to conclude, then, that the countermark: predates Roman administration of the area; dates to the fourth-first centuries BC, and was meant to portray an ammonite fossil, possibly in connection with the cult of Zeus Ammon.

If these inferences are correct, then this represents the earliest surviving representation of an ammonite fossil, an image created (very roughly) around 350-250 BC. It would also represent the oldest surviving numismatic image of a fossil invertebrate organism. Older representations of invertebrate fossils are known from Egyptian representations of Amun's horns and tend to resemble ungulate horns rather than ammonite fossils (Lehmann 1981: 2), although a fossil shell of the nautilus *Cimona* sp. is seen at the back of the headdress and nape of the neck of a sculpted pharaoh head dated to AD 117-38 (Thenius & Vávra 1996). Prehistoric peoples are known to have appreciated fossils, judging by the appearance of macrofossils in archaeological sites, such as decorated specimens of Liassic ammonites (Riek 1934) and specially knapped tools (200 000 years old) where the fossils have been left standing in relief on the stone tools. Flint handaxes feature the Cretaceous clam *Spondylus spinosus*, the sea urchin *Conulus* and fossil corals (Halstead 1982: 68). No known prehistoric site, however, has yielded evidence for representational art showing invertebrate fossils, although vertebrate fossils such as the Monster of Troy vase, a late Corinthian column krater (560-40 BC) shows what has been interpreted as a large fossil animal skull (possibly the giant Miocene giraffe *Samotherium*) exposed in a vertical cliff face (Mayor 2000: 158). Mayor (2000) makes the interesting case that the gold-guarding griffin of antiquity is not merely a legendary animal but is in fact a surprisingly sophisticated reconstruction of a *Psittacosaurus* dinosaur skull (Mayor 2000). The Saka-Scythian gold griffin head of the seventh century BC would thus hold the record for the earliest surviving artistic portrayal of a fossil organism of any type (Mayor 2000).

The identity of the ammonite shown in the countermark is uncertain (the image is too small to make out sutures or other diagnostic features), but it seems to compare most closely to the ceratitid ammonites of the late Palaeozoic and early Mesozoic (see particularly the genera *Xenodiscoides* and *Helenites* with shell ornamentation that slopes away from the direction along the spiral of the shell aperture (Arkell *et al.* 1957), as is the case in the countermark image [the slightly inclined partition lines mentioned above]).

Greeks had ample opportunity to observe ammonite fossils; indeed the famous sanctuary of Asklepios at Epidaurus is in a region rich with ammonite fossils (Jacobshagen 1967). The abundance of ammonite fossils in areas such as Epidaurus might have contributed to the religious devotion of members of the cult of Zeus Ammon. The fossils could not be related to known shell types, and thus might have represented for the ancient Greeks something of the divine.

The numismatic legacy of ammonite fossils continued in modern times with the 'snake stones' of Whitby, Yorkshire, where trade tokens minted in the 1660s showed the arms of Whitby as three separate 'snake stones'. These coiled images are representations of the ammonite *Dactyloceras commune*, a species endemic to the Yorkshire region (Edwards 1967).

The legend that the Whitby Abbess St Hilda turned Whitby snakes to stone has been embellished by the carving of snake heads into the ammonite fossils (Monks & Palmer 2002), continuing a tradition of carving ammonite fossils that began at least 25 000 years ago with the carved Liassic ammonite from Middle Aurignacian strata in the Volgerherd Cave north of Ulm, Germany (Riek 1934).

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## References

- ANDRES, G.M., J.M. HUNISAK & A.R. TURNER. 1994. *The Art of Florence*. Volume II. New York: Artabras.
- ARKELL, J.W., W.M. FURNISH, B. KUMMEL, A.K. MILLER, R.C. MOORE, O.H. SCHINDEWOLF, P.C. SYLVESTER-BRADLEY & C.W. WRIGHT. 1957. *Treatise on Invertebrate Palaeontology. Part L. Mollusca 4. Cephalopoda. Ammonoidea*. Lawrence (KS): Geological Society of America and University of Kansas Press.
- BLANCKENHORN, M. 1901. Neues zur Geologie und Palaeontologie Aegyptens. III: Das Miozän. *Zeitschrift der Deutschen Geologischen Gesellschaft* 53: 52–132.
- EDWARDS, W.N. 1967. *The Early History of Palaeontology*. London: British Museum (Natural History).
- FELIKS, J. 1998. The impact of fossils on the development of visual representation. *Rock Art Research* 15: 109–34.
- FOURTAU, R. 1899. Révision des échinides fossiles de l'Égypte. *Mémoires de l'Institut Egyptien*, fasc. 8, série 3.
- GREGORI, M. 1994. *Paintings in the Uffizi & Pitti Galleries*. Boston: Bullfinch Press.
- HALSTEAD, L.B. 1982. *The Search for the Past*. Garden City (NY): Doubleday.
- HARRELL, J.A. 1995. Ancient Egyptian origins of some common rock names. *Journal of Geological Education* 43: 30–4.
- HOLT, F.L. 2003. *Alexander the Great and the Mystery of the Elephant Medallions*. Berkeley: University of California Press.
- 2006. Ptolemy's Alexandrian postscript. *Saudi Aramco World* 57: 4–9.
- HOWGEGO, C.J. 1985. *Greek Imperial Countermarks* (Special Publication Number 17). London: Royal Numismatic Society.
- JACOBSHAGEN, V. 1967. Cephalopoden – Stratigraphie der Hallstätter Kalke am Asklepieion von Epidaurus (Argolis, Griechenland). *Geologica et Palaeontologica* 1: 13–33.
- KEYS, D. 2004. Kingdom of the sands. *Archaeology* 57: 24–9.
- KIRCHHEIMER, F. 1977. Ein fossiler Nautilus und die aus ihm in ägyptisierender Manier gestaltete Skulptur. *Aufschluss* 28: 509–24.
- LEHMANN, U. 1981. *The Ammonites: Their Life and Their World*. Cambridge: Cambridge University Press.
- MAYOR, A. 2000. *The First Fossil Hunters*. Princeton: Princeton University Press.
- McMENAMIN, M.A.S. 2000. *Phoenician Coins and their Countermarks*. South Hadley (MA): Meanma Press.
- MONKS, N. & P. PALMER. 2002. *Ammonites*. Washington D.C.: Smithsonian Institution Press.
- OAKLEY, K. 1965a. Folklore of Fossils Part I. *Antiquity* 39: 9–16.
- 1965b. Folklore of Fossils Part II. *Antiquity* 39: 117–25.
- RIEK, G. 1934. *Die Eiszeitjägerstation am Vogelherd, Vol. 1*. Tübingen: Heine.
- SEAR, D.R. 1979. *Greek Coins and the Values*. London: Seaby.
- THENIUS, E. & N. VAVRA. 1996. *Fossilien im Volksglauben und im Alltag: Bedeutung und Verwendung vorzeitlicher Tier- und Pflanzenreste von der Steinzeit bis heute*. Frankfurt: Kramer.