

The Organic Components of Scale Armour in Antiquity

Sean Manning

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As part of a comparative study of ancient small-plate armour (variously called scale, lamellar, locking scale, *Schuppenpanzer*, *lorica squamata*, *lorica plumata*, θώραξ φολιδωτός), I am collecting a list of examples preserved with significant evidence of the backing, lacing, edge binding, and other soft parts. While finds of individual scales or even rusted clumps are common, without the soft parts many questions cannot be answered. Conserving and publishing these pieces requires a wide range of skills and knowledge. A comparative study might shed light on where the Roman style of small-plate armour, with its distinctive metal ribbons holding adjacent scales together (and sometimes to the row above and below) developed, and on the question whether Roman soldiers used padded arming garments.

At present, I know of the following finds from western Eurasia up to late antiquity with remains of the organic parts. Centuries are abbreviated with Roman numerals, with - for BCE and + for CE.

- Valley of the Kings, Egypt (-XVIII): A complete armour of hide scales on a multi-layered linen and leather backing was found in the tomb of Tutankhamun. Unfortunately, it was not examined in detail for seventy years after the excavation, and much of it was lost or decayed in the meantime.

Literature: Hulit 2002

- Nimrud, Iraq (-VII): The destruction at the end of the Neo-Assyrian period buried entire rooms full of armour beneath the rubble. When Nimrud was excavated, many large chunks of ferrous or copper-alloy armour with traces of the cords or lacings were found and photographed. **Literature:** Mallowan 1966: 409-411, 426

- No provenance, "Subeixi or Scythian armour" in the Metropolitan Museum of Art, Accession Number 2000.66a-c (date unknown) This charismatic find consists of a complete body armour of hard leather scales sewn to a soft leather backing with leather thongs. Unfortunately, nothing is known about its origins. **Literature:** <http://www.metmuseum.org/art/collection/search/26565>

- Nymphaeum, Crimea (-V): Grave VI in the necropolis contained a leather flap from the shoulder of an armour covered with bronze scales which is said to be in the Ashmolean Museum, Oxford, number 188/465. **Literature:** Vickers 2002: 46, pl. 17 (*non vidi*), Černenko 2006: 21 and no. 271, Fabrice De Backer 2012: fig. 47

- Gordion, Turkey (-III): Most of an armour of long, narrow iron scales was found intact in "disturbed fill" of the Persian period at this site. The scales had been folded over and over themselves many times and rusted into a solid mass, with holes for the lacing visible: a close examination would probably reveal traces of the backing material in the rust. Its current location is not known to me. **Literature:** Young 1956: 27, plate. 86, fig. 22

- Golyamata Mogila, Bulgaria (-III): This Thracian tumulus contained an armour with a leather base and ferrous scales in the form of a 'shoulder-flap cuirass' and a matching leather gorget covered with ferrous scales. The wearer of this armour seems to have shared Xenophon's taste in cavalry armour, as many details agree with *On Horsemanship* 12. **Literature:** Agre 2011: 72-84

- Derveni, Greece (-III or -II): Tumulus B at Derveni contains a gorget of bronze scales over a

leather base. Plutarch, *Alexander*, 32.9 mentions that the king wore a similar gorget (περιτραχήλιον) of iron scales. Before it was displayed in the museum it was "restored and supplemented with leather." The latest dated object in the tomb is a gold quarter-stater of Philip II minted no earlier than 340 BCE, and on art-historical grounds the excavators estimate a date c. 320-290 BCE (Themelis 1997: 221). **Literature:** Themelis 1997: 84, 85, 166, 221, pl. 19, 95 (object B46).

- Vize/Bizye, Turkey (+I): An armour of mail and scales in the form of a 'shoulder flap cuirass' lined with a single layer of linen was deposited in the sarcophagus of a princely burial in Thrace sometime between 35 and 50 CE. It may have been built or modified for burial rather than everyday use. **Literature:** Wijnhoven 2016, Dreihaus 1968 (*non vidi*), Dreihaus / Raub / Bakker 2010.

- Carnuntum, Austria (+II?): Oberst von Groller's report on the building which he called the *Waffenmagazin* contains a number of descriptions, sketches, and photographs of backing and lacing preserved as traces in the oxidised metal. The current state of these finds is not known to me. **Literature:** von Groller 1901: 85-95, Taf. XV, XVI.

- Carpow, Scotland (+II): A camp built in Scotland under one of the Severi produced a folded piece of copper-alloy scale armour with the linen backing and leather edging intact. Fortunately, it was published almost immediately. On display at the McManus Art Gallery and Museum, Dundee, Scotland as of spring 2022

<https://www.flickr.com/photos/195061143@N04/albums/72177720298078215> **Literature:** Wild 1981 and Coulston 1999

- Baumgarten an der March, Austria (+II or +III): This site in *barbaricum* produced both loose scales and a section of armour with its linen backing and lacing attached to a pair of breast-plates with turning pins. Stylistic considerations suggest a date in the second or third century CE, while a C-14 test of the organic components produced a 95% confidence interval of 120-260 CE. It has been very thoroughly published in a recent Diplomarbeit. **Literature:** Schramm 2012, Grömer 2014: 169, 170

- Straubing, Germany (+II or +III): This fort on the Danube, which the excavator identified as the base of *Cohors I Canathenorum* and believed had been destroyed around 230 CE, yielded a large chunk of copper-alloy scale armour with traces of textile backing and a rough cord running along the rows. The excavator only devoted 50 words and half a plate to it. **Literature:** Walke 1968: 52, 151, Taf. 103

- Dura-Europos (+III): The sack of this city by the Sasanids (c. 255/256 CE?) preserved several pieces of scale armour for horses and men. These were excavated between 1929 and 1938 but only fully published in 2004. Generally speaking, the scales seem to have been assembled into rows with staples of copper alloy wire, then stitched to a backing of one or two layers of heavy linen or hemp cloth with coarse thread. The edge of each piece of armour was wrapped in a strip of "leather" which was sewed in place with a thong of "rawhide." Since these fragments continue to decay, a technical analysis of the fabrics and hide products would be valuable. **Literature:** James 2004: 110-139, catalogue #416, 432, 438, 439 (fragments copper alloy scale *lorica*), 441, 442 (hide lamellar cuisses), 443-445 (copper alloy scale *cuisse*), 449, 450 (iron horse trapper, copper alloy

horse trapper), 452 (fragment from another horse trapper?, see also Yale 1933.713), Rostovtzeff et al. 1936 (*non vidi*)

- Karanis, Egypt (+III or +III): House 193, room A at this site from the Fayum contained the front half of a hide scale armour when it was excavated in 1925. It was not published for 90 years but remains in relatively good condition. The findspot seems to date c. 250-350 CE. **Literature:** Ferrara 2014

Suggestions of other published and unpublished finds with remains of backing, facing, or lacing would be greatly appreciated.

Scale armour before and after the Roman period was often of hide, processed in archaeologically-invisible ways such as drying and painting. Texts from the Late Bronze Age imply that the vast majority of scale armour was either hide or half hide and half bronze; hide or half-hide lamellar armour was common in central Asia and Japan within the last thousand years. The assumption that most Roman scale armour was made of metal is mainly based upon surviving ferrous and copper-alloy scales and literary descriptions of shining armour, so evidence for hide scales (aside from the famous pieces from Dura-Europos and Keranis) would also be of interest.

- Dr. Sean Manning

Version History

1.0, April 2017: Submitted to the A.R.M.E.S. newsletter

1.1, February 2019: Added the find from Gordion and made a few formatting changes

1.2, March 2019: Updated the note on Dura-Europos, added some finds from Černenko 2006 and information about the Scythian armour in the Ashmolean Museum.

1.3, November 2019: Added the finds from Derveni and Keranis, added page numbers in Agre (still to add: more finds from Černenko 2006 which could double the length of this list)

1.4, April 2022: Added some more links on the Carlisle armour and two broad works by Bishop, Travis, and Travis.

1.5, November 2023: Added Groh and the new book by Wijnhoven (have not yet mined either)

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