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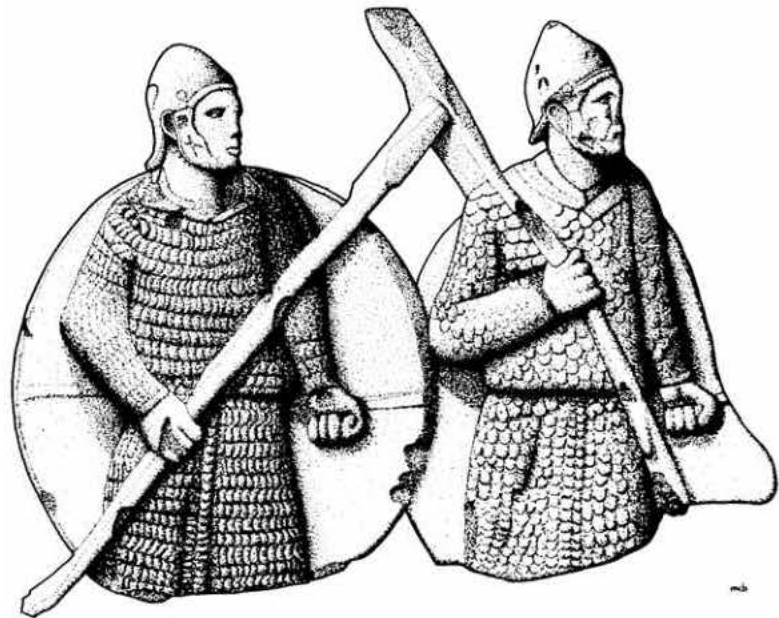
M.C. BISHOP

ILLUSTRATED BY GIUSEPPE RAVA

ROMAN MAIL AND SCALE ARMOUR

INTRODUCTION

Roman plate armour may well be one of the most easily recognizable cultural identifiers of any of the peoples in the ancient world, but it can plausibly be argued that it was less significant militarily than both mail and scale armour. For the sculptors of Trajan's Column in Rome, however, mail was the armour of the auxiliary infantry and cavalry, while scale belonged to exotic troops and foes. By contrast, the artists who produced the sculpted panels or metopes of the Tropaeum Traiani monument at Adamclisi (Romania) – probably military personnel, unlike the metropolitan sculptors – used mail and scale for all Roman troops and ignored segmental body armour. Given that both monuments supposedly depict the same conflict, the Emperor Trajan's (r. AD 98–117) two Dacian Wars of AD 101–02 and AD 105–06, there is clearly a problem in taking one of them at face value. Fortunately, provincial sculpture provides a more plausible representation of the types of armour in use, which can be verified from the archaeological record.



Dacian soldiers on the Vatican Chiaramonti relief showing mail (left) and scale (right) body armour. (Drawing © M.C. Bishop)

Origins

Neither mail nor scale is Roman in origin. Mail originated with the pre-Roman Iron Age peoples of northern Europe (often identified with the vague term ‘Celts’) and was perhaps a natural development from the new-found mastery of ferrous technology in the 1st millennium BC. Early examples of mail found at Tiefenau (Switzerland) and Ciumești (Romania) were in fact made entirely from ferrous wire with butted ends, but this raises the question (ultimately unanswerable) of whether this was intended for actual use in combat or whether, since the former was found in a watery context, it was ritual in purpose.

Terminology

For the purposes of this volume, the tautological ‘chain mail’ will be avoided in favour of just ‘mail’, following the reasoning of Kelly and Schwabe (1931: 48). The modern English word ‘mail’ derives from the French *maille*, which in turn comes from the Latin *macula*, meaning a mesh, although this was not the term used by the Romans for mail armour. It is notable that Polybios used the Greek adjective *ἀλυσιδανός* (‘chain-like’; see p. 16), so it is conceivable that this lies at the root of the English penchant for ‘chain mail’.

The Romans termed all forms of body armour ‘*lorica*’, the origin of the word being explained by Varro, as well as the later broadening of its compass to include mail: ‘*Lorica*, because they made chest armour from strips (*lora*) of rawhide; later, the Gallic iron defence was included under this term, a tunic made of iron rings’ (Varro, *de Lingua Latina* 5.116). The English language has a number of words for the defence as a whole, the antiquated ‘hauberk’ (Frankish in origin as *halsaberg*, ultimately *hauberk* in Middle English) being favoured by some, while ‘shirt’ is perhaps more common. ‘Cuirass’ is equally dated but, since it – like *lorica* – reflected (rightly or wrongly) a perceived leather origin for body armour, is also regularly used.

It is now generally assumed that the noun *lorica* was qualified with an adjective, ‘*hamata*’ for mail and ‘*squamata*’ for scale, with the former (‘hooked’) derived from *hama* (hooks) and the latter (literally ‘scaly’) from *squamae* (scales, like those of a fish). This is certainly the impression left by the post-Roman etymologist Isidore of Seville, writing in the 6th/7th centuries AD: ‘On armour (*loricae*). Armour (*lorica*) is so called because it lacks leather straps (*lorum*); for it only comprises iron rings. Scale (*squama*) is iron armour with plates of iron or bronze joined in the manner of fish scales, and named from its shiny similarity to scales. Moreover the armour is both polished and covered by a goat-skin garment (*cilicium*)’ (Isidore, *Etym.* 18.13.1–2, *tr.* the author). Isidore’s last comment may be a misunderstanding of the padded garment (or ‘arming doublet’; see p. 57) worn under the armour or, alternatively, an indication that a garment was worn over a *lorica*, as Robinson (1975: Pls 243–44) suggested. Robinson’s supposed representational evidence for this, however, is at best debatable (see p. 57).

Nevertheless, no Roman-era writer actually used the terms ‘*lorica hamata*’ or ‘*lorica squamata*’, although they are found (at the same time as



Painted Hellenistic funerary stele from Saida depicting Salmamodes of Adada wearing mail armour. (PHAS/Universal Images Group via Getty Images)



Roman soldiers wearing both mail and scale armour on the Marcus Column, the mail being indicated by means of a series of drilled holes. (Photo © M.C. Bishop)

'lorica segmentata'; Bishop 2022: 10) in the 1596 work *de Militia Romana* by Just Lips (aka Iustus Lipsius) as *lorica hamata* and *lorica squamae* (*sic*), which constitutes the first serious discussion in the modern era of the terminology employed by the Romans for these types of armour:

Lorica hamata

'Loricae containing hooks.' Greek θώρακας ἀλυσιδωτούς [*thōrakas halusidōtous*], for which the term would be *lorica catenata*: but Latin speakers, like me, said this. I believe, because rings and chains are linked, they referred to the form of halved hooks: or because they also made chains from hooks? Sidonius is seen to say this:

'– and she wore no / Body armour woven from a ring held together with hooks' [*Carmina* 321–2]

Although you can translate it even for the former sense. *Lorica hamata* was changed by an old translator of the Bible, when the Greek is θώρακας ἀλυσιδωτούς: and hooks or chains are the rule here and there. In Virgil:

'The breastplate, intertwined with hooks of triple gold.' [*Aeneid* 3.259–60]

In Lucan: 'which twisted heavy *lorica catena* / He faces.' [*Pharsalia* 7.498–9]

In Statius: 'breastplate of several repeated thin chains.' [*Thebaid* 12.775] (Lipsius 1630: 129 – Liber III Dialog. vi, tr. author)

On the subject of scale, Just Lips wrote:

Lorica squamae

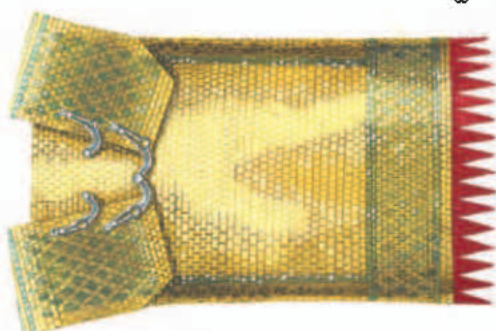
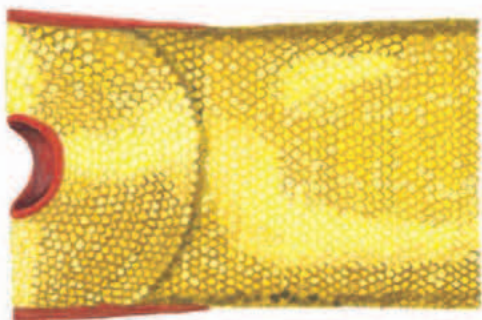
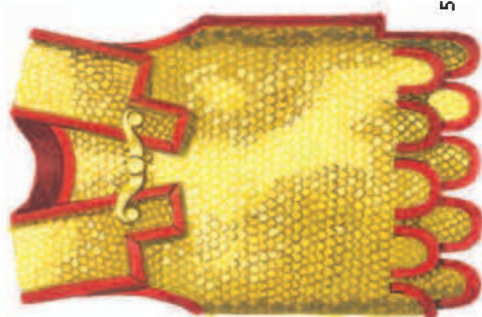
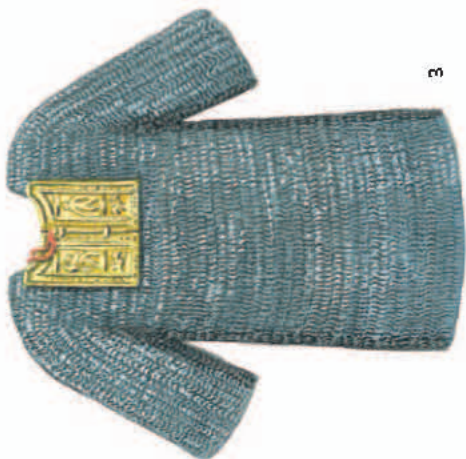
The Greeks call them φολιδωτούς [*pholidōtous*] or λεπιδωτούς [*lepidōtous*], from the scales of fish or serpents. Thus Plutarch

A

ANATOMY OF MAIL AND SCALE

This plate depicts eight types of mail and scale defence worn by Roman soldiers from the 2nd century BC through to the 4th century AD: (1) a mail shirt with shoulder doubling, edged throughout in leather, and fastened at the breast with a hinged pair of S-shaped hooks; (2) a one-piece mail shirt with short sleeves; (3) a one-piece mail shirt with a pair of embossed breast fastening plates; (4) a one-piece mail shirt with long sleeves; (5) a scale shirt with shoulder doubling fastened at the breast with a hinged pair of S-shaped hooks; (6) a scale shirt with a shoulder cape; (7) a scale shirt with a

pair of embossed breast fastening plates; and (8) hybrid armour, with fine scale attached to fine mail. Archaeological finds demonstrate how many variables there were in implementing both mail (ring size, wire diameter) and scale (size and number of scales, thickness and type of metal employed) armour, affecting both the weight and protection offered (all Roman armour having to compromise between these two factors). Thus, any answers to questions such as 'how heavy was a mail shirt?' and 'how many scales did *lorica squamata* contain?' can only ever be approximated for particular sets of armour, never for types as a whole.



S. 20022

An *adlocutio* (an address by the emperor) scene on a relief panel on the Arch of Constantine, generally held to come from a monument of Marcus Aurelius whose figure has been modified to depict the emperor Constantine (r. AD 306–37). This scene shows both mail and scale armour, the former in a highly stylized form as a grid of incised lines and drilled holes. (Photo © M.C. Bishop)



writes that Lucullus, on the very day in which he fought against Tigranes, had to be clothed in *θώρακα σιδηροῦν φολιδωτὸν* [*thōraka sidēroun pholidōton*: *Lucullus* 28]: armour of iron scales. And Dio Cassius, emperor Macrinus took from the Praetorians *τοὺς θώρακας τοὺς λεπιδωτοὺς* [*tous thorakas tous lepidotous*: *Roman History* 79.37], scale breastplates: and from these examples, he has clearly distinguished himself. I am stating that these consisted of both hooks and solid plates. From Silius, on the arming of the consul Flaminius:

‘Then he put on his breastplate; its twisted links were embossed with plates wrought of hard steel mingled with gold.’ [*Punica* 5.140–41] (Lipsius 1630: 129 – Liber III Dialog. vi, tr. author)

In this Just Lips was anticipating discussions that would be had many years later on the subject of hybrid mail and scale armour (see p. 34).

Under the Dominate, the term *cataphracta*/*catafracta* seems to have been used synonymously with *lorica*, doubtless because cataphracts (armoured cavalry) began to be adopted in the early 2nd century AD by the Roman Army and, by association, came to be synonymous with body armour. The term is found in Vegetius’ eclectic *De Re Militari* (e.g. *DRM* 1.16, 1.20, 2.14–16, 3.23). This term is undoubtedly ambiguous in its application and may reflect the epitomator’s use of multiple sources to compile his works (initially one book, later expended to four). This can be contrasted with the *Notitia Dignitatum*, in which workshops (*fabricae*) for both *loricae* (*ND Occ.* 9) and *clibanaria* (*ND Occ.* 9.31 and *Or.* 11; presumably where the accoutrements of the heavily armoured cavalry known as *clibanarii* were manufactured) are to be found.

MAIL ARMOUR

Mail was a ubiquitous form of body armour throughout the Roman period, but it is almost certainly under-represented in the archaeological record, to judge from the available representational sources. *Lorica segmentata*, beloved of the sculptors of the friezes on both Trajan's Column and the Marcus Column, the latter erected to commemorate the emperor Marcus Aurelius' (r. AD 161–80) Marcomannic Wars (AD 166–80), seems to have been much more vulnerable to attrition than mail, hence the former found its way into the ground much more readily than the latter and its copper-alloy fittings are easily identified.

Sculptural evidence plays an important role in understanding the adoption and development of mail in the Roman world, but interpreting it is not straightforward. As Robinson pointed out, there was a variety of ways of depicting mail, ranging from detailed carving of rings, through fairly crude drilling and chiselling, to simply adding detail in paint, often on a gesso base. The more detailed representations can be found on monumental sculpture, such as a Hellenistic frieze from the Sanctuary of Athena Polias at Pergamon (Turkey) and the Roman-era statue of a man from Vachères (France). Chiselling was used on the four marble panels that decorated the base of the so-called Altar of Domitius Ahenobarbus (also known as the Census Relief) in Rome and on Trajan's Column, while paint on gesso seems to have been favoured for Roman military tombstones such as the centurion M. Favonius Facilis from Colchester (England) and the legionary C. Valerius Crispus from Wiesbaden (Germany). At the beginning of the 2nd century AD, Roman cavalrymen are shown wearing mail on the Great Trajanic Frieze

A mail shirt represented among captured Galatian weapons on a frieze from the Sanctuary of Athena Polias at Pergamon celebrating the defeat of the Tolistobogii by Attalus I, king of Pergamon (r. 241–197 BC), at some point between c.238 and 227 BC. (Photo © J.C.N. Coulston)



(parts of which were incorporated into the later Arch of Constantine in Rome). By contrast, on Trajan's Column, mail appears as a light, stylized pattern, now largely eroded away from the monument itself but still visible in places on the 19th-century casts of the helical frieze. By the time of the Marcus Column, 80 years later, mail armour was indicated with a series of drilled holes. The panels from a monument of Marcus Aurelius that were incorporated into the Arch of Constantine depicted mail as a highly stylized grid combining a regular pattern of incised lines and drilled holes. On the Arch of Severus in the Forum Romanum, mail was portrayed with drilled holes, sometimes within circles. For the Dominate, a relief now in the Vatican Museo Chiaramonti, possibly from the Arch of Diocletian in Rome, depicted two soldiers of the Dominate, armed with spears and the large round shields typical of the period (Bishop 2020a: 25–27), one of whom is shown wearing a long-sleeved mail cuirass, the other scale (Coulston 1990: 142).

It is likely that all Roman sculpture was painted to some degree, but Robinson's interpretation of painted mail remains controversial with those who prefer to see plain sculpted representations of body armour as depicting leather, not mail. Some idea of what painted mail on Roman tombstones may have looked like can be obtained from the stele of Salmamodes of Adada, probably a Macedonian mercenary, found in Saida (Sidon, Lebanon) and now in the İstanbul Arkeoloji Müzeleri (Turkey). The entire gravestone and its inscription have been decorated in paint with no sculpted relief component, but the mail armour is represented in various shades of grey with vertically aligned dark-grey wavy lines.

Comparison of the sculpture from Vachères, which has sculpted detailing of the mail armour, with the tombstones of Roman auxiliary cavalrymen of the 1st century AD – such as that of C. Romanus Capito from Mainz-Zahlbach (Germany) – shows many similarities. Both wear long-sleeved tunics with characteristic turned-back cuffs and the form of their armour, with shoulder guards (sometimes known as 'shoulder doubling') and breast fastening hooks, is the same. This serves to confirm that the plain sculpted depictions of the body armour of cavalrymen were indeed intended to depict mail.

Other painted representations of mail survive as murals and even manuscript illustrations. Coifs (hoods) can be seen on an illustration in the *Vergilius Vaticanus* manuscript (*Cod. Vat. Lat. 3225*) and here black dots are used to hint at mail body armour being worn with wrist-length sleeves (Coulston 1990: 145). This black-dot convention is also to be found on a Late Roman mural depicting a soldier in the Via Latina catacomb in Rome and recalls the shorthand device of indicating mail on the Marcus Column with drilled holes.

B REPUBLICAN ROMANS AND CELTS IN COMBAT

Mail-clad legionary *principes* in combat with Gallic warriors of the Senones near the Adriatic coast in 283 BC. The Roman Army, under Curius Dentatus, were seeking revenge for the defeat of the army of Caecilius Metellus Dentatus in the battle of Arretium earlier that year (Dentatus himself was killed in the engagement). All of the legionaries wear thigh-length riveted mail with shoulder doubling and S-shaped breast fastening hooks while most of the Gauls wear no armour at all. Butted mail might have been worn by Gallic nobles, usually cavalrymen, perhaps as much a mark of status as it would

have been a practical form of defence, but most warriors went without. The Romans are wearing a *subarmalis* (padded garment) that is shorter than their mail lengthwise.

At this stage, in the early 3rd century BC, the Roman Army had not yet adopted the *pilum* (javelin) or *gladius* (sword), so fought with the *hasta* (thrusting spear), discarded examples of which can be seen lying around, and the *xiphos*-type short sword. They are already wearing the Montefortino form of helmet, complete with plumes, and by this time have adopted the sub-rectangular *scutum* that would go on to evolve into the classic Roman legionary shield.





ABOVE LEFT

Soldiers wearing mail (indicated with a series of black dots) in an illustration in the *Vergilius Vaticanus* manuscript. (Drawing © M.C. Bishop)



ABOVE RIGHT

Fresco from the Via Latina catacomb depicting a soldier wearing mail, once again indicated with a series of black dots. (Photo © J.C.N. Coulston)

The representational evidence is particularly important when discussing the issue of the length of mail body armour. Republican depictions tend to show infantry wearing mail that reached to the mid-thigh, with those for cavalry being slightly shorter. A similar length is to be found depicted on the Adamclisi metopes at the beginning of the 2nd century AD. This is also the length of mail to be found on the Vatican Chiaramonti relief of Dominate date, so long mail defences are to be found throughout the Roman period, and the mail shirt from Vimose (Denmark), one of the few near-complete sets to survive in the archaeological record (see p. 21), also conforms to this pattern. The glaring exception is to be found, perhaps unsurprisingly, on one of the most prominent assemblages of sculptural depictions of mail: Trajan's Column. Here, Roman auxiliary infantry and cavalry wear shorter mail cuirasses, even in some cases leaving the buttocks exposed, as part of the sculptors' desire to depict the human form beneath (a Hellenizing trait). Unsurprisingly, perhaps, they were followed in this by the sculptors who produced the helical frieze of the Marcus Column. Those few auxiliary tombstones that depict mail, such as those of the infantrymen Pintaius and Firmus, or that of the auxiliary cavalryman C. Romanus Capito, which belong firmly within the tradition of extremely accurate Rhineland

tombstones, would certainly seem to suggest there were shorter mail cuirasses during the early Principate, but that they fell somewhere between the extremes of Trajan's Column and the depictions of longer cuirasses. In this, they resemble the mail worn by cavalymen on Republican reliefs, so it seems likely that there were always two lengths of mail shirt in use, neither of which resembled the depictions on the helical friezes of Trajan's Column and its Antonine imitator. By contrast, the depictions on the helmet from Tell Oum Hauran near Nawa (Syria) suggest that combining mail with *pteryges* (strips terminating in tassels, probably on a padded garment over the tunic and under the armour) allowed the use of a waist-length shirt during the Antonine period and possibly later.

History

Writing in the 1st century BC, Diodorus Siculus described the arms and armour of the Gauls, including this observation: 'Some of them have iron cuirasses of mail (*άλυσιδωτός*), but others are satisfied with the armour which Nature has given them and go into battle naked' (Diodorus Siculus, *Bibliotheca historica* 5.30.3). Strabo, writing shortly afterwards, noted of the Lusitanians in Spain that 'Most of them wear linen cuirasses; a few wear cuirasses of mail (*άλυσιδωτός*) and helmets with three crests' (Strabo, *Geography* 3.3.6).

BELOW LEFT

Statue of a mail-clad Gallic warrior from Entremont dating to the 2nd century BC. The armour is depicted with short sleeves and reaching to the thighs. Shoulder doubling is depicted, as is a central fastening on the chest. (Photo © Michel Wal/Wikimedia CC-BY-SA 3.0)

BELOW RIGHT

A mail shirt depicted on the sculpture of a warrior, possibly a cavalryman in Roman service, from Vachères. (Photo © Carole Raddato CC-BY-SA 2.0)



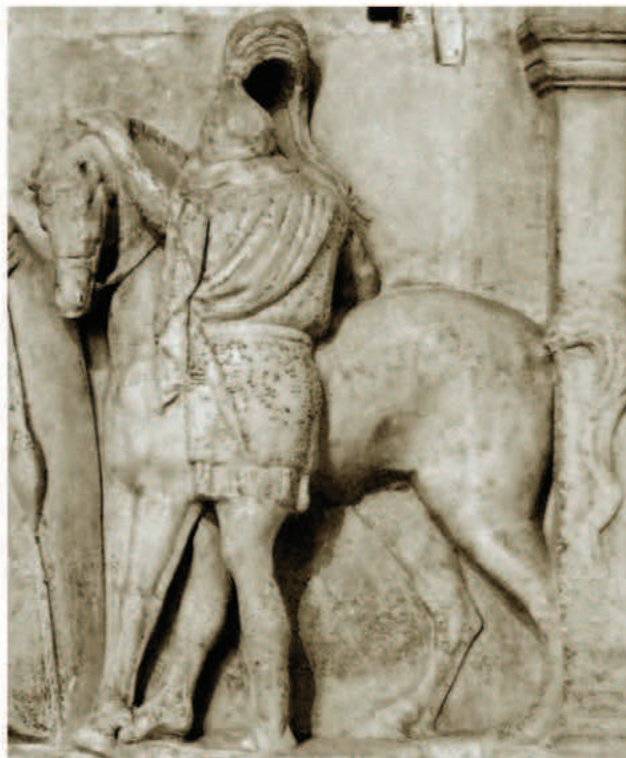


Mail shirts shown on the Aemilius Paullus Monument at Delphi, with a cavalryman (left) and a legionary infantryman (right), identifiable by their shoulder doubling and slits at the thigh. (Photos © J.C.N. Coulston)

A statue of a mail-clad warrior (with the mail indicated by holes drilled in the surface) comes from the Gallic *oppidum* of Entremont (France), founded in the first half of the 2nd century BC and captured by the Romans in 123 BC. The aforementioned statue from Vachères, ostensibly depicting a Gallic warrior in mail, is more problematic, and may in fact represent a cavalryman in Roman service.

The bulk of excavated examples of Iron Age mail – including examples from Ciumești, Cetățeni and Popești (all in Romania) – can be dated to the 2nd to 1st centuries BC at the earliest (Hansen 2003: 61). An example of mail from Tiefenau, a district of Bern (Switzerland), was found deposited (in water), together with Iron Age weaponry dated to the La Tène III period (2nd to 1st centuries BC). This armour was made entirely of butted rings, so it may well have been intended purely as a votive piece and never destined for serious use in battle (Müller 1986). An alternative explanation may be that the earliest forms of mail indeed employed only butted rings and the introduction of welded and riveted rings was the next stage in development.

A mail shirt from a burial at Folly Lane in St Albans (England) pre-dates the Roman invasion of Britain in AD 43 (Gilmour 1999). The method of construction, using riveted rings and solid (possibly welded) rings matches contemporary Roman finds from the Continent but is particularly noteworthy for the use of a clockwise method of winding the wire on the riveted rings (see p. 60). The possibility cannot be discounted that this is a continental import, like many other items in elite burials immediately before the Roman invasion of Britain.



The exact date of the first use of mail armour by the Romans is unknown, but it is not unreasonable to assume that, like much else, they adopted it from opponents they faced on the battlefield. They encountered various tribes that were generally identified as Gauls ('Galli') or Celts ('Celti' or 'Keltoi') from 390 BC onwards, when the Senones (a Cisalpine Gallic tribe) attacked northern Italy and, ultimately, Rome itself. They were finally defeated by the Romans in 283 BC, but this pre-dates the earliest recorded archaeological examples of mail just mentioned. This suggests that mail was not actually adopted by the Romans until well into the Punic Wars (264–146 BC), in which the Carthaginians were using Celtiberian allies against the Romans.

By the time of the depiction of the first battle of Pydna (AD 168) on the Aemilius Paullus Monument at Delphi (Greece), both Roman legionaries and what are presumably citizen cavalry were shown wearing thigh-length mail armour with shoulder guards (whereby an additional section was attached near the top of the back, incorporating shoulder pieces that were fastened to the breast). This is in fact the earliest representation of Roman mail in stone. The cavalrymen are shown with a triangular slit in both the side of the hem of the armour and the tunic beneath it, presumably to facilitate a comfortable seat upon their mount. Polybios confirms the use of mail at this time:

The common soldiers wear in addition a breastplate of brass a span square, which they place in front of the heart and call the heart-protector (*pectorale*), this completing their accoutrements; but those who are rated above ten thousand *drachmae* wear instead of this a coat of mail (*lorica*). The *principes* and *triarii* are armed in the same manner except that, instead of *pila*, the *triarii* carry thrusting spears (*hastae*). (Polybios, *Histories* 6.23.14–16)

Mail depicted on the so-called Altar of Domitianus Ahenobarbus with elliptical chisel marks on both legionary infantrymen (left) and a cavalryman (right). (Photo Jastrow/Wikimedia/Public Domain)

Polybios uses the word *ἀλυσιδωτός* (*alysidotós* or ‘chain-like’) for mail so that there can be no doubt what is intended.

The same form of mail armour is depicted on the so-called Altar of Domitianus Ahenobarbus as a series of vertically aligned, elliptical chisel marks. This monument is usually dated to the late 2nd or early 1st century BC on stylistic grounds. Indeed, this form of the mail cuirass continued in use well into the second half of the 1st century AD, with a number of examples depicted on tombstones, including that of C. Valerius Crispus from Wiesbaden, which probably dates to the early Flavian period (c.AD 70–85). The tombstone of C. Castricius Victor from Budapest (Hungary), which is unlikely to be much later, appears to show a one-piece mail shirt in use by the deceased, however. By the time the Adamclisi metopes were produced at the beginning of the 2nd century AD, one-piece mail cuirasses were the norm. They are also depicted on the helical frieze of Trajan’s Column, although for reasons already outlined, this is perhaps less reliable than the Romanian monument.

Around the middle of the 2nd century AD, a new type of mail shirt emerged, fastened with two central, rectangular breastplates (with a cut-out for the neck of the wearer). These comparatively small pieces of plate armour featured embossed decoration and continued in use into the 3rd century AD (Bishop 2022: 32–34). When it comes to the period of the Dominate, fragments of ferrous mail from a folded cuirass were found on the site of



Detail on the cast of the pedestal of Trajan's Column in the Victoria and Albert Museum in London, illustrating how captured Dacian mail is shown in much greater detail than on the helical frieze above it, probably because it was far easier to see. (Photo © M.C. Bishop)

what is thought to have been a funeral pyre for the Emperor Galerius (r. AD 305–11), or more likely his proxy wax effigy, at the site of his palace at Gamzigrad (Serbia). The rings had been stamped with an external diameter of 13mm, internal of 6mm, and were made from ferrous sheet 2–3mm thick, giving them a rectangular cross-section. As ever, solid rings alternated with open, riveted rings (Vujović 2017).

Description

Roman mail had two principal components: a solid ring and a riveted ring (Wijnhoven 2022). These were usually made from a ferrous metal (wrought iron or steel), although occasionally a copper alloy (normally an *orichalcum* brass) was employed. Riveted rings were formed from wire, while solid rings could be formed from wire or stamped from sheet metal. Riveted rings had their overlapping terminals flattened and then pierced, once it was formed into a circle, and a rivet was then inserted through the gaps once aligned. Before the rivet was inserted, however, the rings were joined quincunx-fashion, so that each riveted ring joined four solid rings, and each welded ring was attached to four solid rings (a so-called four-in-one weave). This system saw alternating horizontal rows of solid rings and riveted rings (Wijnhoven et al. 2021: 108–09). More complex variations were introduced in the medieval period, but this simple form was the one employed throughout the Roman period.

The form of the defence constructed from this combination of rings was essentially a tube, with openings for the torso, neck and arms – much like a modern T-shirt or some forms of Roman-period tunic (Wijnhoven 2015b: 93) – as well as (sometimes) triangular gaps at the lower edge (for comfort) and, for some variants, to accommodate the insertion of fastening breastplates.

One detail that was depicted on Trajan's Column (and mimicked on other representational media, such as the Marcus Column and a small, unprovenanced, copper-alloy figurine now in the British Museum in London), namely a serrated (or 'dagged') lower hem, has never been found on any archaeological examples, nor is it shown on earlier figured tombstones. This detail may have come about through confusion on the part of the sculptors

A section of (slightly rusty) reconstructed, four-in-one stamped and riveted mail demonstrating two different orientations of a 'weave', with riveted rings oriented horizontally (left) and vertically (right). (Photo © M.C. Bishop)

