

Oxford Handbooks Online

Arming Romans for Battle

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The Oxford Handbook of Warfare in the Classical World

Edited by Brian Campbell and Lawrence A. Tritle

Print Publication Date: Jan 2013

Subject: Classical Studies, Ancient Warfare, Ancient Technology,
Ancient Roman History

Online Publication Date: Jan
2013

DOI: 10.1093/oxfordhb/9780195304657.013.0021

[–] Abstract and Keywords

This chapter reports on the understanding on Roman armor, specifically discussing the development of Roman arms and armor. Archaeology offers actual examples of Roman arms and armor. Polybius describes a shield that was conventionally known as the scutum and which is possibly the same item as the beautifully preserved oblong shield discovered at Kasr al-Harit. The Roman soldier often utilized the shield's protruding boss (umbo) as a supplementary weapon. The pilum was designed to bend on impact. The pectorale was a well-established feature of Italian armor. Cavalry helmets are believed to have differed from infantry versions, again owing to the peculiarities of cavalry fighting. It is noted that the distinction between citizen legionaries and peregrine auxiliaries ended with Caracalla's universal granting of Roman citizenship.

Keywords: Roman armor, Roman arms, Polybius, scutum, pilum, pectoral, cavalry helmets, infantry, cavalry fighting, Roman citizenship

Our knowledge of Roman armor comes from drawing together three different strands of evidence. First, there is the documentary evidence, comprising not only passages from ancient literature, but also original documents preserved, for example, on the writing tablets from northern England. Second, there is the iconographic evidence, provided by ancient sculptures and reliefs depicting soldiers and scenes of warfare. And third, there is the archaeological evidence of actual weapons and pieces of armor surviving from antiquity.

Each of these strands has its own difficulties and challenges. For example, some of our documentary sources represent eyewitness testimony, such as the commentaries of Julius Caesar, a military man reporting on military events. On the other hand, some are the product of later research, such as the historical work of Livy, who is our main resource for much of the Second Punic War and the army of the middle Republic. Writing during the reign of the emperor Augustus, Livy drew on earlier sources, one of whom was the Greek writer Polybius, who is generally acknowledged to have been more military-minded, and whose often fragmentary work is consequently preferred for military details.

Sculpture is usually assumed to present an accurate picture of contemporary reality. It seems likely, for example, that the tombstones of soldiers erected along Rome's northern frontiers were crafted by local artisans whose depictions of the deceased were informed by daily contact with the military. But complications arise in the case of state-sponsored monuments like Trajan's Column, whose primary purpose was not to present a pattern book of Roman soldiers, but to make a political statement. While a general level of accuracy can be demonstrated, there has clearly been some stereotyping, and any attempts to identify individual units by minute differences in the representation of their equipment are misguided (figure 19.6).



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Figure 19.6 Figure from the Great Ludovisi battle sarcophagus, thought to date from the mid-fourth century A.D. His ornate panoply is suspiciously reminiscent of the armor worn by the officer on the so-called Altar of Domitius Ahenobarbus, nearly four centuries earlier. It is likely that the sculptor has employed artistic license here. Palazzo Altemps, Rome (Inv. 8564). Photo Credit: L. Tritle.

Archaeology provides us with actual examples of Roman arms and armor, but these are rarely closely dated, and the circumstances of their deposition in the ground are often obscure. The well-known Corbridge hoard illustrates a few of the difficulties. This collection of military odds and ends, contained in an iron-bound chest, was unearthed in 1964 from within the confines of the fort at Corbridge (England). Besides the well-known *lorica segmentata* armor, folded and wrapped (p. 420) in rags, the chest contained spearheads tied up in a bundle, along with other items including a broken *pilum* head, various tools and nails, a set of (illegible) writing tablets, a wooden tankard, and many small objects.

Archaeologists were unsure whether the chest had been buried beneath the floorboards of an upstanding building (ca. A.D. 85–100) or on vacant ground after the building's demolition, but the nature of the remains more closely matches the latter scenario. And, as the burial of unwanted material is most likely to occur during periods of abandonment and withdrawal, the hoard's deposition can probably be linked to the dismantling of the Hadrianic fort in ca. A.D. 139. But if the hoard's dating is reasonably secure, its purpose is less obvious. All the pieces could conceivably have originated in a workshop, but without direct knowledge of the individual perpetrator or his objectives, the careful packing and burial of such an indiscriminate collection of items cannot easily be explained.

(p. 421) These are just some of the difficulties encountered in the study of Roman arms and armor. Ideally, the three strands of evidence come together and complement one another; but, more often, we rely on isolated bits and pieces, and there are entire decades of Roman history when the sources fail us entirely, frustrating our hopes of discerning the development of Roman arms and armor with any degree of accuracy and authenticity.

The Roman Republic

Polybius famously describes the Roman legionary's armament, in a digression that he inserts into his narrative of the Second Punic War. "The Roman panoply is primarily the shield (*thyreos*)," he writes. "The width of its curved surface is two-and-a-half feet (0.77 m), the height four feet (1.23 m), and the thickness of the rim another palm

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(0.08 m). Made from double planking stuck together with bull's glue, the outer surface is covered with linen and then with calf skin. Around the upper and lower rim, it has an edging of iron, so that it is protected against the hacking strokes of swords (*machairai*) and against leaning it on the ground. It is also fitted with an iron boss, which largely fends off the blows of stones, pikes (*sarisai*) and flying missiles in general" (Polyb. 6.23.2–5).

The Shield

The shield that Polybius describes here is conventionally known as the *scutum*, and is recognizably the same item as the beautifully preserved oblong shield discovered at Kasr al-Harit (Egypt) in 1900. An examination carried out by the German scholar Wolfgang Kimmig established its method of construction. At 1.28 m long and 0.64 m wide across the curving face, it fits Polybius's description fairly closely. But, rather than double planking, it was constructed from three layers of birch wood strips, the inner and outer of which were laid horizontally, sandwiching a vertical layer in between. Both faces were covered with lamb's wool felt. On the back, a horizontal hand grip spanned a centrally placed oval cut-out for the owner's hand, and this was covered on the front by a wooden "barleycorn" boss (so-called from its elongated oval shape), fixed at the midpoint of a vertical wooden spine.

If the shield had ever been edged in metal, none survived. But Polybius's comment about leaning the shield on the ground finds an echo, a century later, in the words of Caesar, who describes how his exhausted men, in the battle against the Nervians in 57 B.C., "renewed the fight after resting against their shields" (Caes. *B Gall.* 2.27).



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Figure 19.7 One of the column pedestal reliefs from Mainz, thought to have originated from the Flavian-era legionary headquarters there. The sculpture's military provenance guarantees a degree of authenticity. Both figures wear the "Imperial Italic" helmet and carry the curved body shield known as the *scutum*. The left-hand figure carries the distinctive legionary *pilum*, with its short, slender iron shank, while the right-hand figure is armed with the short Hispanicus sword. Landesmuseum Mainz. Photo Credit: D. B. Campbell.

The Kasr al-Harit shield cannot be closely dated, but Polybius's description finds further corroboration from a pair of well-known sculptures. The first of (p. 422) these is the frieze from the victory monument erected at Delphi (Greece) by Lucius Aemilius Paullus, following his defeat of the Macedonian King Perseus at Pydna in 168 B.C. (cf. *Plut.Aem.* 28.4). Though fragmentary and badly weathered, the figures of Roman soldiers clearly carry the long curved *scutum* with central handgrip. The second is the so-called "Altar of Domitius Ahenobarbus," now in the Louvre (Paris, France), which is thought to have originated from the shrine erected near the Circus Flaminius by Gnaeus Domitius Ahenobarbus, consul in 122 B.C. (cf. *Plin. HN* 36.26). The detail is much finer and, in keeping with its theme of census-taking prior to military enlistment, the figures of four legionaries can be picked out, all of them carrying the *scutum* (cf. figure 19.7).

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The Roman soldier often used the shield's protruding boss (*umbo*) as a supplementary weapon. In his account of the Roman assault on the Carthaginian infantry line during the Battle of Zama in 202 B.C., Livy records that, "battering them with their shoulders and shield bosses (*umbones*), and moving forward into the cleared space, the Romans advanced a considerable distance, as if they were meeting no resistance" (Livy 30.34).

(p. 423) Polybius, in common with other authors writing in Greek, uses the word *thyreos* to represent the long body-shield. The word is probably related to *thyra*, the Greek word for a door. The similarity between the two words led Livy to commit one of his best-known blunders, when he claimed that, in 191 B.C., with the Romans and Aetolians battling underground for possession of a Roman siege mine, "things became more sluggish since they blocked the tunnel wherever they desired, sometimes by stretching rugs across, sometimes by hastily thrusting up *doors*" (Livy 38.7). However, Polybius's version of the same event makes it plain that the stalemate was caused "because both parties threw up *shields* and wicker screens in front of them" (Polyb. 21.28.11).

At some stage, the Romans designed a leather cover for the *scutum*, tailored to fit snugly with a drawstring around the rim. First and foremost, it afforded some protection from knocks and scrapes on the march; this would have been desirable as many shields seem to have been highly decorated, a practice frowned upon by Scipio Aemilianus while preparing his army for the siege of Numantia (Frontin. *Str.* 4.1.5; also Plut. *Mar.* 201D; Polyaeus, *Strat.* 8.16.4). As a secondary benefit, the leather cover perhaps incorporated carrying straps, for the *scutum* was fairly heavy (a replica made by Peter Connolly weighed ca. 10 kg) and, when it was not being used in battle, it must have been awkward to carry around by its horizontal hand grip. Clearly, it was usual to uncover the *scutum* for battle, as on one occasion in 57 B.C., when Caesar's men were unexpectedly attacked while still entrenching their camp, "there was no time to fasten on their insignia or even to put on their helmets (*galeae*) and remove the covers (*tegimenta*) from their shields" (Caes. *B Gall.* 2.21).

The earliest archaeological example of such a *tegimentum* is the leather fragment from the legionary base at Oberaden (Germany), founded in 11 B.C. and occupied for only a few years. Roughly the top third of the cover survives, confirming that the Late Republican *scutum* still had parallel sides and a curved top (and, presumably, bottom) edge like the Kasr al-Harit shield.

There seems to have been a move toward replacing the barleycorn boss and the vertical wooden spine that went along with it, as finds from Alise-Sainte-Reine (France), scene of Caesar's famous siege of Alesia in 52 B.C., include iron bosses of circular and "butterfly" shape (cf. Sievers 1995: 139). The distinctive oblong shield can be seen on the western relief of the so-called "Cenotaph of the Julii," erected in Saint-Remy de Provence (France) in 30–25 B.C., perhaps for a veteran of Caesar's Gallic campaigns; unfortunately, the style of boss cannot be discerned. However, the metopes on the mausoleum of Munatius Plancus, thought to date from the 20s B.C., show representations of various weaponry, amongst which several *scuta* can be seen; an exterior view shows a circular *umbo*, while interior views show a central circular hole with horizontal hand grip.

The Sword

"Along with the shield goes the sword (*machaira*)," continues Polybius. "This, which they call the 'Spanish,' he wears on the right thigh. It has an excellent point and a (p. 424) strong cutting edge on both sides, as its blade is firm and reliable" (Polyb. 6.23.6–7). Despite Polybius's use of the specialist term *machaira*, this is clearly the classic cut-and-thrust sword which is conventionally known as the *gladius Hispaniensis* ("Spanish sword"). The *machaira* was properly a curved blade, and Polybius either used the name for literary effect, or by mistake as the name of the only Spanish sword known to him (cf. Qesada 1994: 83).

This appears to be the case in a separate fragment from his work, preserved in the Byzantine source known as the *Suda*, an encyclopaedic compilation of extracts from earlier works. It claims that, "after the wars with Hannibal" (i.e., 218–201 B.C.), the Romans adopted the Celtiberian *machaira*, "for it has an effective point and a powerful cutting stroke with both hands" (*Suda* M302 = Polyb. fr. 179). This is surely an apt description, not of the hack-and-slash *machaira*, but of the straight-sided Celtiberian La Tène sword and the cut-and-thrust *gladius* which evolved from it.

This sword came to be the defining weapon of the Roman soldier. Writing of events in Greece in 200 B.C., Livy records that the Macedonian soldiers, "being accustomed to fight with the Greeks and Illyrians, had seen the

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wounds which were made by spears and arrows and, on rare occasions, by lances; but now they saw bodies mutilated by the Spanish sword (*gladius Hispaniensis*), arms lopped off at the shoulder, or heads separated from bodies with the neck cut right through, or entrails lying open, and other repulsive wounds, and there was general panic as they began to see what sort of weapon and what sort of men they had to fight" (Livy 31.34).

Polybius mentions the fact that "they call it the 'Spanish,'" and indeed it seems that the classic cut-and-thrust sword of the Middle and Late Republic was known as a *Hispanicus* ("Spanish"). The naming of objects after their place of origin was not unusual; wool, for example, was often named after the region of production, as Pliny explains: "there are many different colours of wool but no specific names, so they are named by reference to their place of origin" (Plin. *HN* 8.191).

Two early examples of the *Hispanicus* come from Šmihel (Slovenia), where they were found alongside more than a hundred other items of weaponry, all of them thought to have been deposited, perhaps ritually, at some point in the early second century B.C. Their length, at ca. 65 cm, is fairly typical for this type of sword, as is their slightly "waisted" shape (meaning that, from a width of 5 cm at the hilt, the blades narrow to 4 cm in the middle and broaden again to full width, before tapering into a long point).

Best known is the example discovered in 1986 on the island of Delos (Greece), where it is thought to have been lost in the destruction of 69 B.C. (the date is provided by Phlegon of Tralles, quoted by Photius, *FGH* IIIB, 257). It was still in its scabbard, and remains of a charred wooden pommel were recognizable. With a blade length of ca. 60 cm, it compares well with the earlier Šmihel swords. Another fine example was found in a tomb at Fontillet, near Berry-Bouy (France), where the ceramic assemblage suggested a date of ca. 20 B.C. The blade measured ca. 65 cm and, like the Delos sword, it was still in its scabbard.

(p. 425) All of these swords were sheathed in the same type of scabbard: two thin sheets of wood were covered with leather facing and framed with iron guttering; twin metal clasps near the opening were intended to support four suspension rings, two on each side (the Fontillet sword had all four surviving). Thus, instead of hanging vertically from one suspension point, the scabbard could be adjusted to the optimum angle for drawing and sheathing the sword comfortably.

The Pilum

After describing the sword and shield of the mid-Republican legionary, Polybius continues: "in addition to these, they have two javelins (*hyssoi*), a bronze helmet, and greaves" (Polyb. 6.23.8). He gives a fulsome description of the Roman javelin, more familiarly known by its Latin name, the *pilum*. "Of the javelins, some are heavy and some are light. Of the heavier ones, some are rounded and a palm in diameter (7.7 cm), some are squared off. The light ones, at any rate, resemble hunting spears of the same size, and are carried along with the ones mentioned before. The length of the haft of all of these is around three cubits (1.39 m). A barbed iron point, of similar length to the haft, is fitted to each" (Polyb. 6.23.9–10).

Only the metal parts of *pila* survive, of which the earliest known examples are thought to be those discovered in the ruins of the temple at Talamonaccio (Italy), which had perhaps been dedicated after the battle of Telamon (225 B.C.). *Pila* of similar design were included in the hoard of equipment from Šmihel. In all examples, a slim iron shank (less than 1cm thick) ended in a wide, flat tang (ca. 8 cm long and 4 cm wide) with two rivet holes, one above the other, for attachment to the wooden haft. They may be divided into two groups, following the variations which Polybius noted in the design of the shank: some are short and stubby, with a square-sectioned shank (ca. 20 cm long) and a triangular barbed tip (ca. 5 cm long), while others are long and slim, with a round-sectioned shank (ca. 45 cm long) and a narrower barbed tip (ca. 4 cm long), often verging on the pyramidal.

In order to construct the *pilum*, the shank's flat tang was slotted into a wooden block attached to the end of the haft, and riveted in place. Many tangs were equipped with turned edges, like flanges, clearly designed to wrap around the sides of the wooden block in order to strengthen the fastening point. Some still have the rivets in situ, measuring up to 4 cm in length.

Polybius describes the method of fastening in rather cryptic terms: "they make the fastening and its employment safe by inserting it right up to the middle of the wooden part and piercing it with closely-spaced pins, so that, during use, before the fastening loosens the iron will break, even though its thickness at the bottom, and the junction with

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the wooden part, are one-and-a-half dactyls (2.9 cm), such great care do they take with the fastening” (Polyb. 6.23.11). Indeed, there are many examples of *pila* whose shanks have sheared through, as if to prove Polybius’s point.

Polybius envisaged a *pilum* whose iron point was of similar length to the three-cubit wooden haft (1.39 m); but the longest of the *pila* from Camp III at (p. 426) Renieblas (Spain), for example, has only a 55 cm shank, 6 cm tip and 9 cm tang, falling short of Polybius’s ideal by some way. At the other extreme are the short, stubby *pila*, examples of which were also found in the ruins of a farmstead at Ephyra (Greece), destroyed by the Romans in 167 B.C.; in Renieblas III, thought to date from the 150s B.C.; and at the hillfort of Entremont (France), thought to have been attacked in 123–122 B.C. Peter Connolly’s reconstructions of a short-shanked (“Talamonaccio type”) and long-shanked (“Renieblas type”) *pilum* weighed 1.3 kg and 1.7 kg respectively (Connolly 2000: 45).

The *pilum* so far described was perhaps Polybius’s heavy version. Connolly has suggested that these could have been “a short range weapon to be used from a rampart or tower from which they would be thrown downward” (Connolly 1997: 44); equally, they were sturdy enough to be used as thrusting spears, whose unique design could be guaranteed to do lethal damage even after punching through a shield.

Archaeological finds from the necropolis at Montefortino (Italy), as well as from Renieblas III and Šmihel, demonstrate an alternative design, with a long, socketed shank thinning to a point at one end. In this version, the wooden haft was inserted into the socket and held in place by a single rivet. This was perhaps Polybius’s lightweight *pilum*; Peter Connolly’s reconstruction weighed only 0.9 kg (Connolly 2000: 45).

The simplicity of the tip means that it is not always possible to determine whether a particular specimen has been preserved to its original length. As with the tanged variety, there is some variation in size, with complete specimens from Montefortino measuring only ca. 42–51 cm, from socket to pyramidal point. Nevertheless, one example from Renieblas III measures 94 cm, while another from Šmihel, although now only 74 cm, was originally recorded as ca. 93 cm in length.

It is commonly believed that the *pilum* was designed to bend on impact, in the same way as the smaller javelin (*grosphos*) issued to light skirmishers (the *hasta velitaris* of Livy 38.20). Polybius describes this much lighter weapon: “the wooden shaft is generally two cubits (0.93 m) in length and a dactyl (1.9 cm) in thickness, and the sharp point measures a span (23 cm), beaten out and sharpened to such thinness that it was immediately forced to bend on first impact, and the enemy could not throw it back” (Polyb. 6.22.4).

Caesar seems to describe a similar situation, in his battle with the Helvetians in 58 B.C.: “The soldiers on higher ground threw their *pila* and easily broke up the enemy battle line. Once broken, they drew their swords and charged into them. The Gauls were severely hindered in the battle, because many of their shields had been pierced and pinned together by the single volley of *pila*, and as the iron part had bent they could neither pull it out nor fight properly with their left hand encumbered” (Caes. *B Gall.* 1.25).

Tests, however, have demonstrated the difficulty in achieving this bending effect (Connolly 2001/2: 6–7). Certainly, the *pilum*’s long, slim point was capable of inflicting its own peculiar type of damage, as illustrated by a skirmish between Romans and Gauls near Gordium (Turkey) in 189 B.C.: “the front ranks of the legions hurled their *pila* at the Gauls who were positioned as guards at the gate; (p. 427) they were not wounded, but they were perplexed when their shields were pierced right through and many of them became pinned together” (Livy 38.22).

The seven-times consul Gaius Marius was credited with an innovation in the design of the *pilum* in 102 B.C.: “for previously, the insertion of the wood into the iron was held by two iron pins, but then Marius left one as it was, and removing the other he inserted in its place an easily broken, wooden nail; he contrived that, when the javelin (*hyssos*) struck the enemy’s shield, it should not remain upright, but because the wooden nail broke, the haft (*dory*) should swing around the iron one and drag, being held fast by the twisting of the point” (Plut. *Mar.* 25.2).

The general logic of Marius’s innovation is clear. Where, previously, Polybius had been at pains to strengthen the junction between the metal and the wood, so that the weakest point was the thin iron shank itself, it seems that Marius deliberately weakened the junction, so that a spent *pilum* became a hindrance to the enemy, rather than additional ammunition. Plutarch’s “twisting of the point” perhaps refers to the barbed tip; having penetrated a shield, it would be difficult to extricate it again, particularly when the long shaft was simultaneously collapsing upon

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itself like a jack-knife.

The archaeology shows that the *pilum* tangs were no longer designed with flanges to secure the fastening, so that, if one of the two rivets were to fail, the wooden haft would indeed swing around the iron shank, disabling the weapon completely. However, fine examples from Valencia and Caminreal (Spain), perhaps from the time of the Sertorian War (82–72 B.C.), have two iron rivets still in situ, and examples from Alesia and Oberaden have an iron collar to strengthen the critical fastening point. It seems that, if Plutarch has correctly described Marius's innovation, it was short-lived (cf. Connolly 1997: 41).

In battle, the legionaries must have thrown their *pila* before drawing their swords. Livy describes this sequence during fighting in Spain in 207 B.C., explaining that “the Romans hurled their *pila*. The Spaniards crouched down in the face of the enemy missiles, and then rose to hurl theirs. These the Romans received, in their usual close formation, with shields locked tightly together; then, advancing step by step, they proceeded to fight with their gladii” (Livy 28.2).

Body Armor

In his definition of armor, the Roman scholar Marcus Terentius Varro explained that it was named “*lorica*, because they used to make chest-protectors (*pectorales*) from straps (*lori*) of untanned leather, but afterward, the iron *Gallica*, an iron tunic made out of rings, was included in the same word” (Varro, *Ling.* 5.116).

It is this chest-protector (*pectorale*) that Polybius describes, when he writes: “in addition, the multitude wear a bronze plate measuring a span (23 cm) in all directions, which they place in front of their chest and call a heart-protector, to complete their equipment” (Polyb. 6.23.14). A circular embossed copper-alloy plate, 17 cm in diameter and decorated with concentric circles emanating from a central boss, was (p. 428) discovered at Numantia (Spain), the scene of prolonged Roman warfare in the second century. This was probably the type of object that Polybius envisaged. The method of suspension perhaps involved Varro's leather straps, which could have been attached to the small rectangular plate, found riveted to the rim of the Numantia disk.

The *pectorale* was, in fact, a well-established feature of Italian armor. A colossal bronze statue of Jupiter on the Capitol had allegedly been made, after the defeat of the Samnites in 293 B.C., “from their chest-protectors, greaves and helmets” (Plin. *HN* 34.43). When they were not melted down or dedicated to the gods, they will have been passed down from fathers to sons and re-used for generations.

Polybius also claims that “those men who are valued at more than 10,000 drachmas put on a cuirass made of chain, instead of a heart-protector along with the others” (Polyb. 6.23.15). He is clearly referring to Varro's “iron tunic made out of rings,” which we nowadays call chain-mail. The Roman armor scholar H. Russell Robinson noted that Varro's alternative term, *Gallica*, indicated a Celtic origin for this type of armor (Robinson 1975: 164).

The manufacture of mail was relatively straightforward, as it simply involved interlinking rows of iron or copper-alloy rings. However, alternating punched rings with butted or riveted rings, and ensuring that each one was linked to its four neighbors, was a time-consuming and, accordingly, expensive process. Archaeological finds are rare, no doubt owing to the fact that a damaged cuirass could easily be repaired.

The previously mentioned sculptures depict Roman soldiers wearing thigh-length, sleeveless mail cuirasses, belted at the waist, no doubt in order to transfer some of the weight from the wearer's shoulders to his hips (Connolly estimated this to be ca. 15 kg). Centurions whose units had disgraced themselves during fighting with Hannibal in 209 B.C. were forced to stand “with swords unsheathed and belts removed” (Livy 27.13), a punishment designed to create maximum discomfort and embarrassment.

In combat, the shoulders were particularly vulnerable to hack-and-slash attacks, so a feature known as “shoulder doubling” was employed. The sculptures depict two versions of this. One took the form of a small mail cape, draped over the wearer's shoulders and fastened by a clasp at the front; the other resembled a U-shaped mail yoke, which probably attached along the wearer's upper back and wrapped around his neck before crossing each shoulder like a broad strap and fastening onto the cuirass at the front.

The “Altar of Domitius Ahenobarbus” also depicts an officer wearing the so-called “muscle cuirass” familiar from

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later sculpture. Although no examples from this period survive, earlier Hellenistic cuirasses illustrate the general form, and the Greek writer Pausanias, writing during the reign of Antoninus Pius, describes one which he saw in a painting at Delphi: "in my day, this kind of cuirass (*thorax*) is rare, but they wore them in ancient times. There were two bronze pieces, one fitting the chest and the parts around the stomach, and the other protecting the back; they were called 'hollows' (*guala*): one went in front and the other behind, and then they were fastened together with buckles" (Paus. 10.26.2). Pausanias calls it a "hollow cuirass" (*gualothorax*), though elsewhere it is called a "stiff cuirass" (p. 429) (e.g., Ap. Rhod. *Argon.* 3.1226: *thorax stadios*), to contrast with the flexibility of chain-mail.

The Helmet

Whether they could afford a chest-protector or not, every soldier would strive to own a helmet of some kind, for head trauma was usually more debilitating than a body wound. The classic western Mediterranean helmet of the period is nowadays known as the "Montefortino" type, after the dozen examples found in the necropolis there (near Ancona, Italy). Beaten in bronze, the elegant rounded conical dome of these helmets rises from a thick lower rim to a central crest knob; the short, angled neck guard is typically decorated with a cable pattern and the crest knob with incised waves or scales. Two rivet holes on either side of the rim were designed for the attachment of cheek-pieces.

Few Montefortino helmets survive with cheek-pieces intact, but a fine example from Italy (now in Castel San Angelo, Rome) demonstrates how these items were hinged to the helmet's rim. Each cheek-piece was fitted, on the inside of its lower edge, with a stud for a chin strap which passed around the wearer's neck to a pair of D-shaped rings riveted beneath the rear of the helmet rim (Robinson 1975: 14–15, for the method of securing the helmet).

The solid crest knob was pierced by a hole, presumably to take a crest pin, though no examples are known. Polybius explains that, "in addition to all of this (viz., the panoply), they wear a crown of feathers and three upright red or black feathers, a cubit (46 cm) in height, whose fixture on top, together with all the other equipment, makes a man appear twice as tall, and fine and striking in his enemy's eyes" (Polyb. 6.23.12–13). The "crown of feathers" is most likely to have been a plume.

It seems that the manufacture of armaments, though carried out by individual artisans, was a highly organized activity, and helmet manufacture was no different. When Scipio Africanus was preparing to invade Africa in 205 B.C., he requisitioned equipment from various Italian communities: "the Arretines promised 3000 shields (*scuta*), just as many helmets (*galeae*), and a total of 40,000 *pila*, *gaesa* and *hastae* in equal numbers" (Livy 28.45). (The *gaesum* and the *hasta* were different types of spears.) One Italian helmet, now in Munich, was stamped with its maker's mark: Q COSSI Q (probably indicating that the armorer was "Quintus Cossus, son of Quintus").

During the Late Republic, a modified version of the Montefortino helmet appeared, characterized by the flatter neck guard and hollow crest knob of the example from Buggenum (Netherlands). And finally, a new, simpler and lighter design of helmet was developed, which Robinson perfectly encapsulated as "a jockey's cap worn back to front." The example from Coolus (France), which gives this style of helmet its name, has a low bowl without crest knob and a small sloping neck guard; it seems to have been secured by a chin-strap, threaded through a single hole on either side of the rim. (It is sometimes also known as the Mannheim type, after a beautifully decorated German example.)

(p. 430) In its developed form, the Coolus-style helmet is best typified by the example from Schaan (Liechtenstein), with its bronze hemispherical bowl, flat projecting neck guard, bicuspid cheek-pieces and heavy reinforcing brow guard, now introduced for the first time. A similar example from Haltern has a Montefortino-style crest knob, demonstrating how the different traditions of helmet manufacture continued to influence craftsmen.

The Principate

There are rather more sculptural representations of soldiers of the imperial period than of their Republican forebears. Many of these are tombstones, and although most depict the deceased in his everyday wear, there are several that attempt to show his arms and armor. The iconic image of the imperial legionary comes, of course, from Trajan's Column in Rome, whose spiral frieze depicts events from that emperor's Dacian Wars (A.D. 101–102, 105–106). However, the somewhat standardized representations there can be set against those on the so-called

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Tropaium Traiani (Adamklissi, Romania), whose metopes depict more individualized figures from the same period (figure 19.8).

The archaeological record becomes richer, too, thanks to the continuing excavation of forts and fortresses across the Roman world. Besides weapons and fittings from armor and shields, in many cases the finds include items of leatherwork.

As regards literary evidence, the role previously performed by Polybius in describing the Roman legionary's armament is taken by Josephus, in a digression that he inserts into his narrative of the Judaeen War. "The infantrymen are armed with cuirasses and helmets," he writes, "and wear swords (*machairai*) on both sides" (Joseph *BJ* 3.93).

Body Armor

Josephus does not describe the cuirass, but archaeology has revealed that a new type of body armor consisting of strips of sheet metal appeared during the reign of Augustus. Nowadays known as *lorica segmentata*, its Roman name is unknown. Several examples of the iron shoulder plates and girth hoops are now known, most notably from the Corbridge hoard, which enabled Robinson to determine the true method of constructing the cuirass. However, the copper alloy buckles, tie loops and characteristic lobate hinges survive as isolated finds from across the empire, perhaps because they were prone to failure and were frequently discarded.



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Figure 19.8 One of the metopes from the Trajanic-era monument known as the Tropaium Traiani, at Adamklissi. The cavalryman is depicted bareheaded, but wears the standard hip-length chain-mail shirt. On his feet, he wears the characteristic openwork leather boots known as *caligae*. His flat, hexagonal shield can be seen behind the horse's head, and he carries the long *contus* in his right hand; his sword is slung on the left side. Adamklissi Museum, Romania. Photo Credit: D. B. Campbell.

The *lorica segmentata* is, of course, prominently displayed on Trajan's Column, but in an apparently oversimplified form. It is also depicted on state sponsored (p. 431) monuments of the Antonine period at Rome, but the trend in tombstone sculpture toward depicting deceased soldiers without armor makes it difficult to gauge how pervasive this style of armor was.

At the same time, the armor that Varro called *Gallica* continued in use. Nowadays usually named *lorica hamata*, it is doubtful whether the Romans ever called it this. Isidore of Seville referred to it simply as *lorica*: "the cuirass

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(*lorica*) is so named because it lacks leather straps, for it is woven only out of iron rings" (Etym.18.13.1). It was this type of armor, "where the slender chains combine in solid rows to form the flexible cuirass," that the Flavian poet Statius attributed to King Creon, in his epic about Thebes (Stat. *Theb.*12.775).

It has been suggested that the rings themselves were called *hami* ("hooks"). However, in the chain-mail cuirass, the shoulder-doubling was typically held in place with hooks of serpentine form, linked to a centrally-placed fastener on the wearer's chest. It is perhaps these hooks that the first century poet Vergil mentions, when he describes the legendary armor of Neoptolemus, the son of Achilles, as "a (p. 432) cuirass (*lorica*) fastened together with hooks (*hami*) and triple-threaded with gold" (Verg. *Aen* 3.467; cf. 5.259–260).

At any rate, the resulting mesh was remarkably effective in stopping weapons, although arrows might penetrate between the rings, and a man would still suffer from the impact of a blow. For this reason, it seems that a quilted undergarment (thought to be called the *subarmalis*) could be worn. But it was not only the mail-armored man who benefited, for the shoulder plates of the *lorica segmentata* weigh heavily on the shoulders, so such a garment would help in this instance, too.

Unusually, a complete mail shirt was recovered from the excavation of a barrack block in the fort at South Shields, where it had been preserved between layers of burnt daub during the destruction of the building.

A third sort of cuirass was constructed out of scales, sewn in rows onto a cloth undergarment in such a way that each row overlapped the row beneath. The modern name, *lorica squamata*, has been manufactured from Isidore's explanation, that "scale (*squama*) is an iron cuirass made from iron or bronze plates (*lamminae*) linked together like fish scales, and named from the brilliance and likeness of the scales" (Etym.18.13.2). Plates of different metals could be used for effect, and several different sizes and shapes have been found.

It was perhaps this type of cuirass that the Flavian poet Silius Italicus imagined in his epic on the Punic Wars, when he described Flaminius's armor as having "twisted hooks (*hami*) woven with rough iron scales (*squamae*) and heightened by a scattering of gold" (Sil. *Pun.* 5. 140–1).

The Helmet

Along with the cuirass, Josephus's soldier wore a helmet. The bronze helmet of Coolus design had been further modified by deepening the neck guard, while the reinforcing brow guard had become a standard feature. An example from Drusenheim, near Haguenau (Alsace), is typical, with its wide, flaring neck guard, marked with the names of previous owners, one of whom specifies that he belonged to (>centuria) *RVFINI LEG IIII* ("Rufinus's century in the Fourth Legion"). The crest knob was retained, often drilled for the insertion of a plume, but the Drusenheim example also had feather tubes soldered to the sides of the helmet just above the wearer's temples.

By the time of the Jewish War, a new helmet design had evolved, usually made of iron. Robinson believed that he could discern two developmental strands, which he classified as "Imperial-Gallic" and "Imperial-Italic," reflecting their supposed geographical origins. In fact, both types of helmet continued the tradition of hemispherical bowl, reinforcing brow guard, and deep, flaring neck guard, but omitted the crest knob. Both now included ear recesses cut out of the rim, often reinforced with bronze ear guards, and the back of the head was further reinforced by horizontal ribbing. Robinson's "Imperial-Gallic" helmets were further characterized by the application of decorative "eyebrows," embossed on the front above the brow guard.

(p. 433) A fine example of Robinson's "Imperial-Gallic" series, recovered from the Rhine at Weisenau (Mainz, Germany), was decorated with applied brass bosses, three along the neck guard and three arranged on either cheek guard. A brass crest plate, incorporating a horizontal front-to-back tube, was riveted to the top, so that a crest-holder could be inserted, while a hook fixed at the front of the helmet no doubt ensured the stability of the crest itself. A looped brass carrying handle was attached to the outside of the neck guard. Similar features occur in Robinson's "Imperial-Italic" series of helmets, one of which, found at Hebron (Israel), had iron cross-bracing riveted to the skull.

The Sword

Josephus continues his description of the Imperial infantryman by observing that "the sword on his left is much

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longer than the other one; for the one on his right is not more than a span (23 cm) in length” (Joseph *BJ* 3.94). This short sword is clearly the soldier’s dagger (*pugio*), for this weapon’s characteristically waisted blade was normally 25–30 cm long.

At the same time, the *gladius Hispaniensis* (or “*Hispanicus*”) continued in use, although the correspondence of Claudius Terentianus, preserved on papyrus, shows that the weapon could simply be called a “fighting sword” (*gladius pugnatorius*). The earlier waisted blade (the “Mainz” type, in Gunter Ulbert’s scheme) appears to have given way to a parallel-sided blade (Ulbert’s “Pompeii” type) of similar length.

It seems that, in Josephus’s description, he may have confused the sword and the dagger. Contemporary sculptures, for example the Rhineland tombstones with their full-figure representations of the deceased, show that the common soldiers wore their sword on the right side, while centurions and officers wore theirs on the left.

The Pilum and Shield

Josephus writes that “the infantrymen who are selected to accompany the general carry a lance (*lonche*) and a shield (*aspis*), but the remaining legion carry a javelin (*xyston*) and an oblong shield (*thyreos*)” (Joseph *BJ* 3.95).

The archaeological and sculptural evidence (e.g., the Tropaeum Traiani) indicates that legionaries continued to use the *pilum*, so it seems that Josephus has simply utilized the word *xyston* for this distinctive weapon. The Greek word *lonche* is, however, equivalent to the Latin *lancea*, and we know of specialist legionary troops designated as *lancarii* (“lance-men”); one tombstone depicts the deceased with a long quiver containing five of these throwing weapons.

Similarly, legionaries continued to use the curved body shield (*scutum*), rendered in

Greek as *thyreos*. It remained concave, but where the Republican (p. 434) version was curved at the top and bottom, it seems that, in the imperial period, a rectangular version came into use (e.g., Trajan’s Column, and the Tropaeum Traiani). It was edged with lengths of brass binding, a frequent find on archaeological sites, and the handgrip was covered by a hemispherical brass *umbo*. A fine example, set in a decorated rectangular plate and etched with the name of the Eighth Augusta Legion, was dredged from the Tyne at South Shields (England).

The general’s selected bodyguard may have used a different sort of shield, for Josephus’s chosen word, *aspis*, normally describes a round shield. On Trajan’s Column, the standard-bearers and musicians are depicted carrying a small, circular shield (*clipeus*), and a leather segment of a circular cover (*tegimentum*) from Castleford (England) would have fitted a shield of ca. 50 cm diameter.

The Cavalry Sword, Spear, and Shield

Josephus writes that “amongst the cavalrymen, the long sword (*machaira*) is worn on the right and the long spear (*kontos*) in the hand, and the shield (*thyreos*) sideways along the flank of the horse, and hung in a quiver at the side are three or more javelins (*akontes*), with broad points and no smaller than spears” (Joseph. *BJ*. 3.96).

Few infantry swords had blades longer than 50 cm (the length of the “Pompeii” style sword from Newstead, Scotland), but longer swords occur in the archaeological record, with parallel-sided blades measuring ca. 70–90 cm. These have been identified as examples of the “broadsword” (*spatha*). Writing of events in A.D. 50, Tacitus contrasted the “swords and javelins (*gladii ac pila*) of the legionaries” with the “broadswords and spears (*spathae et hastae*) of the auxiliaries” (Tac. *Ann.* 12.35). However, it seems likely that auxiliary infantrymen wielded the same short sword as their legionary counterparts, and that it was mainly horsemen who benefited from the longer reach of the *spatha*. Indeed, in his description of the Roman cavalryman, Arrian claims that “the long and broad *spatha* is suspended from his shoulders” (Arr. *Tact.* 4.8); suspension was by a baldric, examples of which can be seen in sculpture (see figure 19.8).

There was not necessarily an official nomenclature of swords, however. A writing tablet written by a cavalry decurion at Carlisle (England) lists the names of cavalrymen “who did not have regulation swords (*gladia instituta*)” (Tomlin 1998: 55–63, no. 16). The writer uses the archaic term *gladium* (perhaps simply a spelling error for *gladius*) where we would have expected the word *spatha*.

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There was an even wider vocabulary of spears, but their defining features often elude us. Josephus's cavalryman carries the "long *kontos*" (or *contus*), perhaps intended to be used as a thrusting weapon. In infantry hands, the thrusting spear was often called the *hasta* (or, in Greek, *dory*). He also carries "three or more *akontes*," which are clearly intended as missiles. The elder Pliny is known to have (p. 435) written an entire book about "Throwing missiles from horseback" (*De iaculatione equestri*: Plin. *Epist.* 3.5.3), but such weapons were usually called "lances" (*lanceae*). The same writing tablet from Carlisle lists "all the names of lance-men who are missing lances (*lanciae*)," and further qualifies the weapon as a "fighting lance" (*lancia pugnatoria*) (Tomlin 1998: 55–63, no. 16).

Cavalrymen depicted on sculptures carry a flat, oval (or, occasionally, elongated hexagonal) shield with central hand grip. Like the legionary *scutum*, it had a protective cover secured by a drawstring. Such an oval goatskin *tegimentum* discovered at Valkenburg was designed for a shield of ca. 120 cm x 60 cm. It is quite likely that auxiliary infantrymen used the same shield, and even the legionaries on the Column of Marcus Aurelius are depicted carrying this type.

Cavalry Armor and Helmets

Josephus continues his description of the cavalry by noting that "they have helmets and cuirasses, just like all the infantrymen. The equipment of those selected to accompany the general differs in no way from that of the horsemen in the squadrons (*alae*)" (Joseph. *BJ* 3.97).

It is clear, particularly from the evidence of figural tombstones, that cavalrymen wore mail or scale shirts, no doubt to facilitate the maneuverability required when fighting on horseback. These were similar to the infantry cuirasses, with modifications to enable the wearer to sit in the saddle comfortably.

Cavalry helmets, on the other hand, are thought to differ from infantry versions, again owing to the peculiarities of cavalry fighting. The archaeological record offers various helmets that sport a deep back, a relatively narrow neck-guard, and cheek-pieces that completely cover the ears, an ideal defense when blows may be coming from all around the wearer; in place of the infantry helmet's brow-guard, they have a flat brow-band. Many are ostentatiously decorated, including copper-alloy sheathing for the helmet bowl, often sculpted to represent wavy hair. Such ornamentation is thought to reflect the higher rate of pay enjoyed by cavalrymen. This classic design, labelled "Auxiliary Cavalry Type A" by Robinson, is typified by the helmet discovered in 1981 at Weiler (near Arlon, Luxemburg), and can also be discerned on several cavalry tombstones.

Another design which is thought to have been exclusive to cavalry can be seen in the Niederbieber helmet (Robinson's "Type D"), with its crest like a cock's comb running from the apex down the back, and a similar one from Heddernheim (Robinson's "Type E"), with its pointed peak and thick, upright cross-bracing on the skull. Like "Type A," both have all-enclosing ear-guards; those of Niederbieber design lap down over the wearer's collar bone, while those of Heddernheim design wrap around the wearer's chin.

Finally, mention should be made of Robinson's so-called "Cavalry Sports" helmets. One of these, typified by the example from Guisborough (England), is simply (p. 436) a variation on the Weiler style; it lacks the ornamental hair, but elaborates the flat brow-band so that it projects upward at the front. Others, like the example from Vize (Turkey), are recognizable cavalry helmets (in this case, a Weiler helmet) with a face mask applied. It seems likely that these were used in action, and were not restricted to the parade ground.

Later Developments

It is often assumed that Roman armor fell out of use in the later period. However, although *lorica segmentata* currently seems to disappear in the mid-third century, mail and scale continued. At the same time, the old "Imperial" design of helmet was eventually replaced by a simpler construction known as the "ridge" helmet, in which the two sides of the bowl were manufactured individually and fastened together with a central ridge of metal; cheek- or neck-guards were attached separately.

In fact, there is thought to have been a general simplification of the soldier's panoply, with a concentration on the flat, oval shield and long broadsword, and the replacement of the *pilum* with more basic forms of javelin. These elements can already be observed at Dura Europos, whose destruction has been placed in ca. A.D. 256. No *lorica*

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segmentata fittings were found, but fragments of iron mail and hundreds of copper-alloy scales, in many cases still mounted on their fabric backing, have survived. Similarly, the surviving swords were of *spatha* type, with no sign of the *gladius Hispaniensis*, and out of more than a dozen shields, only one was a *scutum*, manufactured in triple ply (like the Kasr al-Harit shield) but rather short and squat, at 100 cm by 86 cm. The other shields, constructed from vertical planks of wood, were slightly dished ovals of around 110 cm by 90 cm; a thin layer of animal skin had been glued to both sides and, in three cases, elaborately painted.

The homogenizing tendency continued into the fourth century. It may be coincidental that the distinction between citizen legionaries and peregrine auxiliaries had ended with Caracalla's universal granting of Roman citizenship. Indeed, it is more likely that, in a changed world, practicalities required each soldier to be equipped for a variety of tactical situations.

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