

# The Roman Soldier's Equipment in the 1<sup>st</sup>–3<sup>rd</sup> Centuries AD

---

EMILIAN DRĂGAN\*

**A**S ROME consolidated the territorial gains of the Republican period, its army became more sedentary, but not to the exclusion of all strategic movement. While the 1<sup>st</sup> century AD gives the impression of a gradual evolution in equipment design, the period from the death of Hadrian to the accession of Severus seems to present a rapid revolution. From the death of Commodus to the accession of Diocletian, the internal stability of the Empire was disrupted by usurpation and civil war. A new confederation of German tribes pressed against the northern frontiers, and in the East the Arsacid Parthians were replaced by more effective Sassanid Persian dynasty. The Danube region provided not only the best soldiers, but also many of the 3<sup>rd</sup> century emperors that steered the Empire to recovery. With trans-Danube borrowings, the military equipment development in this area was dynamic and influential. The recruitment of *Illyriciani* into Praetorian and legionary units in Italy, during the reign of Severus, and the wide geographical deployment of Illyrian units brought new forms of equipment to other army groups. The strength of the Roman army was also given by its soldiers' equipment. This equipment was very good and well adapted to the tactics used by Roman soldiers. The military equipment of the soldiers in the Roman army in the Principality era time was provided by the state, its cost deducted from the soldier's pay. The government placed orders to civilian suppliers who had to respect the blueprints and provide a quality product.

The garment worn by the Roman soldier directly on his body was a coat named tunic. The military tunic was slightly longer than the civilian one, reaching halfway down the leg. Usually it was lifted and tied with a belt, coming down to the knee. The tunic was made of two identical pieces of cloth, wool or linen, with openings for the hands and head on the sides and near the shoulders. Some tunics had sleeves,

\* The author wishes to thank for the financial support provided from the program co-financed by THE SECTORAL OPERATIONAL PROGRAM FOR HUMAN RESOURCES DEVELOPMENT, Contract POSDRU 6/1.5/S/3 – “Doctoral Studies, a Major Factor in the Development of Socio-economic and Humanistic Studies.”

usually pretty short, although some sculptures depicting riders suggest that their tunics had long sleeves. It is possible that a soldier had several tunics for different occasions.<sup>1</sup> The color of the soldier's tunic was that of his unit, while there is the possibility that some units in certain periods might have worn different colors, either by choice or because the color was available locally. There is evidence showing that soldiers wore white tunics or red ones; this evidence is represented by tombstones and frescoes that still have color on them.<sup>2</sup> Over the tunic, depending on the weather, the soldier wore the *sagum*. The *sagum* was a mantle clasped on the right shoulder with a pin (brooch). Brooches fastening cloaks are usually represented as circular with decorative insets and, sometimes, attached pendants. A comparison may be made with the cooper-alloy disc-brooch finds. In cold weather another cloak, the *paenula*, which had a semicircular lower edge, was also used. It was worn over the head and shoulders and it had a sort of hood. The centurions worn as a distinctive sign the *paludamentum*, a strip of cloth of different color that hang on the left shoulder, and carried a stick. Diagonally over the shoulder they wore a belt called *balteus*. They also had a protective apron made out of leather strips with metal objects at the ends, which served a decorative rather than a practical purpose. Soldiers in the time of the Republic also wore a type of leggings named *ocrae*, made out of metal sheet. Later they were used just in parade dressing and made out of colored cloth or leather with metal ornaments. The exception were the highly decorated metal plates protecting the upper leg, completed by an articulated knee cover called *hippika gymnasia*. The trousers known as *bracae* were imported from the German garb by the troops stationed in Germany, on the Rhine. Documents show that the shorts were first adopted in the 1<sup>st</sup> century AD from the Batavians. This type of trousers became common with the troops fighting in a cold climate, far from Rome.<sup>3</sup>

The Roman military footwear of this period was very distinctive and is well-known from the literary, representational and archaeological evidence. Usually known as *caliga*, each boot was made from three main pieces of tanned ox or cow hide, the upper part, the sole, and an insole. The *caligae* were the footwear of all Romans, civilian or military. They consisted of small strips coming from the sole and covering the foot like a sandal. All three layers were clenched with hobnails, frequently arranged in patterns, at least some of which were designed to facilitate comfortable walking and anticipated modern age research into the optimum design of training shoe soles. Superior officers wore footwear called *calcei*, which resembled a short boot with the top hanging on the outside.<sup>4</sup>

The head of the Roman soldier was protected by a helmet. Helmets varied in type and shape, were usually made of bronze, occasionally of iron. The model of the helmets was the republican button helmet of the Montefortino variety, and their simplified Manheim and Coolus variations. After Augustus's age (27 BC-14 AD), the Haquernau type developed from the Caesarian helmet, as well as the Weisenau type, with a prolonged tip and ear and cheek covers. Earlier helmets belong to the Montefortino and Coolus varieties, and the Galis Imperial one resembles the

Weisenau type. The Niederbier type evolved later and it can be classified alongside the Italic Imperial one.<sup>5</sup> The Imperial-Gallic helmet was usually, but not exclusively, made of iron, the bowl having to be beaten out over a former. It was characterized by a pair of stylized eyebrows on the front of the helmet bowl. Imperial-Italic helmets, on the other hand, lacked the quality of finish displayed by their Imperial-Gallic counterparts, although they had many of the same design tendencies. Many helmets, both iron and copper-alloy, were tinned or silvered.<sup>6</sup> Most Imperial helmets had a tip prolonged by a calotte, cheek covers and a crest (*crista*) that sometimes had a panache of different shape and form, which indicated rank. For example, a transverse *crista* indicated a centurion. The cheek covers were made of bronze and had a sharp protuberance to protect the chin and another one to protect the cheekbone. Its endings were attached to an U-shaped bronze plate. In the center of the protuberance protecting the chin there was a rivet (with a flat and round edge) that tied to the inner side of the cheek cover a metal plate holding a ring. This served to tie the cheek covers under the chin. Another hole, in the middle of the lower side, came from the rivet holding a second ring that was used to fasten them around the jaw.<sup>7</sup> Riders also wore a mask, attached to the helmet. The exact function of these masks is not known; it is assumed that they were used in ceremonies or at parades, but some researchers say they were also used in battle. They were made for the mainly auxiliary cavalry units, but also for the mounted units in a legion; associated with the rest of the equipment, they were worn on the occasion of parades or riding events (the male or female character of the masks distinguishing the teams in the competition). During the 1<sup>st</sup> century AD, the first evidence of what is usually called “sports” or “parade” armor is encountered. This is thought to have been used by Roman auxiliary cavalry in the exercise of the *Hippika Gymnasia*.<sup>8</sup> There were 2 types of masks: the first was formed of the mask and the helmet tip (bronze or iron) and the second was made of 3 parts, including a visor. Masks with female figures had as a decoration a ribbon and leaves that covered the spot where the mask met the tip. The hair was either tied in knots or free flowing. The hair was adorned with cords or tiaras. The mask was not a simple bronze ornament, but the actual front of the helmet. For the upper joint of the 2 parts there was a hinge system that pivoted, allowing the mask to be lowered or raised.<sup>9</sup> Helmet finds from the 3<sup>rd</sup> century do not show the evolution of 1<sup>st</sup> to 2<sup>nd</sup> century ‘Imperial’ infantry forms, and there is a typological gap in the artifact record. Other iron and copper-alloy helmets assignable to the 3<sup>rd</sup> century have been attributed to cavalry use. The bowl generally extended down to the base of the neck and had a low, angled neck guard, a horizontal or upwardly angled pointed peak, and crossed reinforcing bars.<sup>10</sup>

The armor was worn over the tunic and there were 3 types of it: *lorica hamata*, *lorica squamata* and *lorica segmentata*. Often the *lorica* was accompanied by a pectoral pin (brooch) that looked like a lire with heads decorated with snakes. The pin (brooch) was used since the Republic and was preferred by the infantry. The *lorica hamata* was made of small metallic rings sewn on a leather tunic. The *lorica squa-*

*mata* was made of bronze plates tied together with copper wire. In the chest area this type of *lorica* had two bronze ornaments, symmetrically placed. This *lorica* was used by the infantry, by auxiliary riders, but also by *signiferi* and centurions. The use of long plates similar to blades led to the name “lamellar armor.” The *lorica segmentata* was a Roman invention, taken maybe from early Principality gladiators. It consisted of metal strips, 5-6 cm wide, some placed horizontally to protect the body, some placed vertically to protect the shoulders, while the chest area was protected by two rectangular plates. The strips were articulated by hinges, hooks, buckles and belts and later by rivets. Because of its particular design, it absorbed the shock of a blow and it was difficult to penetrate.<sup>11</sup> The *lorica segmentata* was especially strong in shoulder defense, probably for the same reasons that mail shirts had shoulder doubling. However, it has been pointed out that plate armor has one major advantage over mail, that being the fact that when hit it would absorb the force of a blow, whereas mail, unless extremely well padded, would be driven into the flesh of wearer. The use of a padded undergarment with a *lorica segmentata* would have further protected the shoulders from bruising. Some ancient writers have suggested that plate armor was easier to manufacture than mail. Whilst the processes involved in making mail would be tedious to the lone craftsman, increased manpower would greatly facilitate production. The *lorica segmentata* changed in the Antonine period. Antonine modifications were once thought to be merely simplifications of earlier versions of the cuirass, with many of the extraneous fittings done away with and with a modified fastening mechanism.<sup>12</sup> This *lorica* was worn only by legionnaires. The latest discoveries that show the use of this *lorica* are dated to the mid 3<sup>rd</sup> century AD.<sup>13</sup>

The weapon most widely used by the Romans was the *gladius*. This resembled a sword, very similar to the modern bayonet, and was taken by the Romans in the 2<sup>nd</sup> century BC from the Iberians. It is made out of a handle with a rectangular guard and a protuberance at the other end. The handle was cylindrical with horizontal markings and was made of bronze, ivory or bone. The blade was wide with 2 sharp edges. The *gladius*'s sheath, named *vagina*, was made of 2 pieces of wood plated with brass or bronze. It was richly decorated and had 2 metal reinforcements on each side. Evidence shows 2 types of *gladius*. The Menz type with a 60 cm blade and prolonged tip is mentioned until the mid-1<sup>st</sup> century AD. The second is the Pompeii type, with a shorter tip and rarely exceeding 50 cm in length. The chape is smaller and the sheath's decoration not as rich. It was held on the right hip, had a good tip for thrusting and a sharp edge on both sides.<sup>14</sup> Pompeii-type sheaths usually lacked guttering, having decorated locket plates and chapes attached to the leather-covered wood body. The locket is usually tinned or silvered and decorated with a combination of punched-out shapes and incised details, the former presumably designed to contrast the color of the underlying sheath with the white metal. An ornate palmette was fixed just above the chape, and the bottom of the locket and chape plates were similarly adorned with palmettes at the side.<sup>15</sup>

The *spatha* is probably derived from Celtic weapons and appears in the 1<sup>st</sup>-2<sup>nd</sup> centuries AD, being used at first by the cavalry and then by the infantry, where it will slowly replace the *gladius*. It had a longer blade than the *gladius* and the sheath was held on the left side by metal or bone hooks. Their chapes are more complex in the second half of the 3<sup>rd</sup> century AD. Around the middle of the 2<sup>nd</sup> century AD, a new *spatha* appears from the Germanic world. Because of the rings placed at the end of the handle it is called *Ringknaufschwerter*.<sup>16</sup> The emperor and the superior officers had a sword called *parazonium*, that gave its wearer a certain prestige; it had a wide blade, a barely visible guard and the handle had its ends decorated with heads of predatory birds.<sup>17</sup>

The dagger (*pugio*) started to be used around the same time as the *gladius* and it was also borrowed from the Iberians. It had a cylindrical or prismatic handle with a button and a barely sketched guard. The blade was 20-25 cm long and 6 cm wide; it was made in several ways. The dagger's sheath, richly decorated, is made out of wood or metal and ends in a small chape. The sheath was carried on the opposite side of the *gladius*, held by 4 freely moving rings that were placed on the sheath. The dagger was used by the legionnaires and auxiliaries and represented more of a prestige object, but it was also used in battle. Sometimes, Roman soldiers used to carry, when not in combat, a knife called *dunaculum*.<sup>18</sup>

The main defensive weapon of the Roman soldier was the shield, made of wood or thick leather stretched on wood. The main iron part, called *umbo*, had the role of fixing the other component parts. The diameter of an *umbo* was 10-12 cm. The shields were used by the infantry, cavalry and protected the soldier from shoulder to knee.<sup>19</sup> The auxiliary soldiers had simple shields, almost flat, varying in shape from oval to hexagonal. The curved rectangular shield seems to have been exclusive to praetorians and legionaries. The shield was made of several layers of wood glued together. It had metal frames on the edges; the *umbo* was semi spherical, with a circular edge on the round shields. Often shields were protected from harsh weather with a leather cover. The emblematic shield for the legionnaires was, from Augustus's time, the rectangular one resembling a semi-cylinder.<sup>20</sup> The exterior was painted with different symbols. Representational evidence suggests that legionary shield blazons comprised a thunderbolt (*fulmen*) and wings, while praetorian designs often included a scorpion.<sup>21</sup>

As an individual offensive weapon, the auxiliary troops used the spear, *hasta* or *lancea*, and the *pilum*. The spear is ubiquitous in any period and notoriously difficult to classify. Some factors, such as the length of the shaft, are not normally preserved in the archaeological record, so hypotheses tend to be dependent upon the analysis of head form and size, a process that is dubious, to say the least. The spear can be categorized as having two extremes of function: first it can be a thrusting weapon, used in hand-to-hand combat; or it can be missile, thrown at an enemy from a distance. However, there is a third category which covers all those spears that could be used for both purposes. One useful feature indicating function might be the diam-



eter of the shaft, rather than the shape of the head.<sup>22</sup> It is not sure if the category of *basta* included only those used by the auxiliary infantry and the *lancea* those used by the cavalry. It had an iron tip, *cupis*, a wooden shaft, and a metal lower part, *spiculum*. The tip had a length of 6-40 cm and a wide variety of shapes. The bottom end was 7-13 cm long and it had the role of fixing the weapon into the ground.<sup>23</sup> The blade of the tip could be shaped as a willow leaf and had a tube to mount it on the wooden part; it was made by twisting a metal sheet while hot and had a 0.3 cm hole to fix the wooden shaft. The tips had 4 equal edges and a rhombic shape.<sup>24</sup> Pliny the Elder wrote a treatise on throwing javelins from horseback and this, together with Lucullus's *lancea*, may have been symptomatic of an aristocratic interest in hunting and mounted combat.<sup>25</sup> From the reign of Trajan onwards there is firm evidence that some auxiliary cavalry were armed with a lance. Gravestones from Tipasa in Algeria show members of *ala I Ulpia contariorum* and *ala I Cannanefatium* wielding lances with both hands. Arrian mentioned Roman lancers in the eastern theatre during Hadrian's reign. Roman writers associated the *contus* with Sarmatians in particular, and it is likely that Danube contacts were responsible for the 2<sup>nd</sup> century Roman adoption of the lance. Double handed lances could not be used with shields.<sup>26</sup>

As for the *pilum*, the wooden handle of the spear is 2 feet in length and 1 inch thick and the palm long tip is so thin and sharp that it bends after the first throw and the enemies can't throw it back; otherwise, it would be a useful weapon for the enemy too. The *pilum* was the emblematic weapon of the legions; it was formed of a metal tip, usually conical or pyramidal, continued by a long rod attached to the wooden part. It had a sharp 4-sided tip and a tubular handle that sometimes had a hole for fixing. The *pila* were made with hammer and anvil from a cylindrical metal bar. One end was given 4 edges to get the tip and the other was hammered into a semicircular sheet that was bended on the anvil and perforated.<sup>27</sup> It could be thrown as far as 30 m, even further. It was able to perforate a 3 cm-thick fir plank from 5m and a 1.5 cm oak one from the same distance. After it was thrown, it thrust through and often the rod became curved, making it useless for the enemy. This weapon was mostly used by the legionnaires. The word *pilum* evolved from the strict classic meaning, coming to name other pieces that are totally different. *Pilum muralis* was maybe a heavier *pilum* used by the besieged units. Most researchers consider that it is a bar with pyramid-shaped ends; tied together, several of these pieces formed a palisade around temporary camps. The word *pilum* becomes a generic, albeit improper name for projectiles launched from catapults, the name used being *pilum catapultarium*.<sup>28</sup>

The bow was composite, reinforced in the middle and at the ends with bone or deer antlers meant to give it strength. Reflexive bows were made by putting together and gluing wood of different kinds. A special glue was made for this purpose and tendons were also used in making bows. The handle was straight or lightly curved and the ends were curved. These parts were not supposed to bend but the shoulders were elastic. For fixing the string, the bow was curved by pushing it from the top

down, while it was held with the foot. The effort made by the archer to bend the string and the impulse given to the arrow was greater than in simpler bows.<sup>29</sup> The bow was mostly used by the Syrian auxiliary troops, which had it as a traditional weapon.

The classic military tool was the pickaxe or *dolabra*, with an axe blade and an opposing tine, used for breaking up ground when ditch digging, clearing scrub, or sometimes even fighting. When not in use, the axe blade was fitted with a copper-alloy sheath, probably as much to protect the blade as the careless soldier, and this was occasionally decorated with small pendants.<sup>30</sup>

Adding to this, the soldiers also wore leather strips with metal hobnails in front of the belt, military decorations, hobnails on the sole of the footwear, and crests on the officers' helmets; all these made the Roman soldier look impressive in front of his enemies. The scale and longevity of the unprecedented military success of the Romans was also given by the soldiers' equipment, and the image today's public has of the Roman army resembles the one it had at that time. □

## Notes

1. A. Goldsworthy, *Totul despre armata romană*, Bucharest, 2008, p. 118.
2. P. Matyszak, *Legionary. The Roman Soldier's Manual*, London, Thames & Hudson, 2009, p. 56.
3. F. B. Florescu, *Monumentul de la Adamklissi Tropaeum Traiani*, Bucharest, 1962, p. 576.
4. F. B. Florescu, *Monumentul de la Adamklissi Tropaeum Traiani*, Bucharest, 1962, p. 622.
5. A. Goldsworthy, *Totul despre armata romană*, Bucharest, 2008, p. 122.
6. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 103.
7. L. Petculescu, "Obnăzare de coifuri romane din Dacia," in *ActaMN*, 1982, XIX, p. 291–299.
8. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 104.
9. C. M. Vlădescu, "Masca de paradă de la Romula și încercarea de reconstituire a coifului de cavalerie medieval," in *SCIVA*, tome 32, April-June 198, p. 196.
10. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 174.
11. L. D. Amon, *Armamentul și echipamentul armatei romane din Dacia Sud Carpatică*, Craiova, Ed. Universitaria, 2004, p. 52.
12. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 98–141.
13. L. D. Amon, *Armamentul și echipamentul armatei romane din Dacia Sud Carpatică*, Craiova, Ed. Universitaria, 2004, p. 52.
14. P. Matyszak, *Legionary. The Roman Soldier's Manual*, London, Thames & Hudson, 2009, p. 63.

15. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 82.
16. L. D. Amon, *Armamentul și echipamentul armatei romane din Dacia Sud Carpatică*, Craiova, Ed. Universitaria, 2004, p. 45.
17. M. Speidel, *Riding for Caesar. The Roman Emperor's Horse Guards*, Cambridge, 1994, p. 102.
18. M. Bishop (ed.), *The Production and Distribution of Military Equipment, Proceedings of the Second Roman Military Equipment Research*, Seminar, BAR 275, Oxford, 1985, p. 168-173.
19. I. Glodariu, E. Iaroslavschi, *Civilizația fierului la daci*, Cluj-Napoca, Ed. Dacia, 1979, p. 133.
20. A. Goldsworthy, *Totul despre armata romană*, Bucharest, 2008, p. 130.
21. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p.93.
22. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 76.
23. A. Aricescu, *Armata în Dobrogea Romană*, Bucharest, 1977, p. 140.
24. M. S. Petrescu, "Piese de armament descoperite în castrul de la Tibiscum," in *ActaMN*, XXII-XXIII, 1985-1986, p. 521.
25. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 78.
26. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p. 130.
27. D. Tudor, "Castra Daciae Inferior; Săpăturile lui Gr. Tocilescule în castrul roman de la Răcari," in *Apulum* V, 1965, p. 613.
28. L. D. Amon, *Armamentul și echipamentul armatei romane din Dacia Sud Carpatică*, Craiova, Ed. Universitaria, 2004, p. 40.
29. M. Bishop, (ed.), *The Production and Distribution of Military Equipment, Proceedings of the Second Roman Military Equipment Research*, Seminar, BAR 275, Oxford, 1985, p. 224-234.
30. M.C. Bishop, J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome*, second edition, Oxbow Books, Oxford, 2006, p.117.

### Abstract

#### The Roman Soldier's Equipment in the 1<sup>st</sup>-3<sup>rd</sup> Centuries AD

The Roman soldier, during the Principality age, had the best military equipment of his time. Thanks to this equipment, the Roman army managed to guard for 3 centuries an empire that covered half the known world. In the 1<sup>st</sup> century AD the equipment evolved gradually, but around the mid 2<sup>nd</sup> century AD it had a fast evolution due to the Marcommanic wars. In the 3<sup>rd</sup> century AD it absorbed German and Parthian influences, following slow changes in battle tactics and with new units being brought into the Roman army. Basically, the Roman soldier's equipment included, besides the wool clothing and leather footwear, a helmet, armor, shield, spear and sword. From the simple, republican helmet that had a calotte and cheek covers, to the 3<sup>rd</sup> century helmet with a back cover and a frontal mask with many decorations on the calotte and cheek covers, the protection



was increased by adding two transverse bars on top after the Dacian wars. The armor worn at the beginning of the 1<sup>st</sup> century by the Roman soldiers was of 3 types: *lorica hamata*, *lorica squamata* and *lorica segmentata*. The main defensive weapon was the shield, made out of wood or thick leather stretched on wood. The main iron part, named umbo, had the role of keeping together the parts of the shield. Legionnaires used a rectangular shield, while auxiliaries had hexagonal and round shields. The *gladius* was the close combat weapon used by the Roman infantry, and the cavalry had the *spatha*. As an offensive weapon the Roman troops used the bow, the *hasta* or *lancea*, and the *pilum*. The Roman bow was a composite one, reinforced in the middle and at the ends with stag bone or horn. Adding to this, the soldiers also wore leather strips with metal hobnails in front of the belt, military decorations, hobnails on the sole of the footwear, and a crest on the officers' helmets; all these made the Roman soldier look impressive in front of his enemies.

### **Keywords**

Equipment, army, weapons, helmet, pilum

ANNEXES



*Fig. 1. Montefortino type helmet,  
discovered in Bologna, Italy*



*Fig. 2. Galis Imperial type helmet,  
discovered in Mainz, Germany.*



*Fig. 3. Cavalry mask,  
discovered in Ribchester, United Kindom.*



*Fig. 4. Lorica segmentata* (reconstruction)



*Fig. 5. Shield* (reconstruction)



*Fig. 6. gladius,*  
discovered in Nijmegen, the Netherlands.



*Fig. 7. pilum*  
(reconstruction)