

Footwear

The standard military footwear of the republican and early imperial Roman army was the *caliga*, some kind of nailed sandal:



(a *caliga* from COH XXVI CRV)

However, from the Trajanic period on (at the latest), the *caligae* were gradually replaced by closed shoes or boots, the *calcei*. This transformation of footwear seems to have taken place especially in the 2nd century AD, although the use of sandals never completely broke off.

The type of footwear chosen for the ‘Trans Alpes’ project was a closed boot of which (slightly different) specimen had been found at several places in the northwestern provinces, including the Saalburg, Weiblingen, Walheim (G) and Vindolanda (GB).



A total number of 11 pairs were made by Marquita Volken from ‘Gentle Craft’ (a private archaeological shoe museum at Lausanne in Switzerland). Interestingly, the reproduction of so many shoes within a limited space of time showed how they could easily be mass-produced with a minimal waste of leather.

The uppers of this kind of boot (also called the “Ramshaw-boot” by Carol van Driel-Murray) are made of a single piece of leather (including the laces) sewn together at the front. The laces are led in a criss-cross pattern through a number of four eyelets on each side before they get tied together. Although civilian use of the “Ramshaw” is possible, the strong nailing pattern suggests a military use. Roughly 100 hobnails were used for each shoe, giving it a strong grip on muddy terrain.

Only two other types of shoes were used during ‘Trans Alpes’. One of the archers (Johannes Felix) marched in a pair of boots based on findings from the Saalburg:



These boots (made in Britain) were made of rather thin leather and, despite a regular treatment with neatsfoot oil, got so deformed after a day of heavy rainfall that marching with them became impossible. This was the only case during ‘Trans Alpes’ that the boots turned out to be weaker than the man.

A pair of un-nailed *carbatinae* was worn by Sebastian Namyslo when he marched together with the rest of the group (this happened rarely due to a complicated sports accident six weeks before the march). The *carbatinae* were relatively comfortable on a smooth surface (where shoes with hobnails would have been dangerous), but walking became difficult on slippery ground and it was painful on gravel.

All other participants of the march were equipped with the same type of boot, although different hobnail patterns had been chosen in order to test them simultaneously.



Walking on paved roads with nailed footwear was unpleasant. It was especially painful when some of the nails were gradually pushed upwards, even if these nails could later be beaten down with a hammer and an anvil. Soft terrain (mud, sand, grass) was much better.

At two places was it possible to test the Roman boots on Roman roads:
at Klais near Mittenwald (G) and at Franzensfeste in South Tyrol (I).



(the "Gleisstrecke" at Klais)



(Roman road near Franzensfeste)

Walking on these roads was thought to be extremely hazardous because the already worn down hobnails would let the men slip on the rock. Luckily, these fears turned out to be unfounded. A careful walker could always find enough grip, while two persons with sports sandals or sneakers almost had an ugly accident.



(at Franzensfeste)

The situation changed completely on the remnants of a paved Roman road in (or rather under) the city of Trent, where the smooth rock was extremely slippery for hobnailed boots.



Maybe the smoothness of the paved city road has been preserved during more than one and a half millennia under dust and debris, while the roads carved into the rock had suffered from a lot of erosion and were therefore rough enough for walking.

Some of the participants had clearly underestimated certain orthopaedic difficulties and were by and by forced to resort to modern boots or sandals. Others were much more successful and marched on with their *calcei* until Trent was reached. Dominik Bauer even called his boots “the most comfortable piece of footwear I have ever worn”, and although this was an exaggeration, it is clear that the results gathered in this field were very complex.

The boots themselves were very robust. The worst possible case, a snapped shoelace, did never happen, and all other structural problems could be repaired. As already mentioned, nails could occasionally come up but were then beaten down. One of the boots lost its form after contact with a lot of water (although it stayed watertight), but it was possible to re-knead it. The deformation did not completely disappear but was no longer problematic.



The same boot started to “teeth” after two weeks on the road (days of rest not included). The problem got worse despite a lot of hammering and it could only be solved by replacing several of the front nails altogether.



Abrasion of the nails was to a large extent influenced by the weight of the owner and his equipment, but the way of walking seems to have been even more important. The shoes of those who tried to walk rather carefully needed much less maintenance, while the hobnails of aggressive walkers suffered from a high level of abrasion. After a day of walking on debris and gravel, often several nails were missing on a single boot. Some just fell out while others were finally so thin only their shaft remained. In this case it was very difficult to pull out the remnants and place a new nail in the same hole. Therefore, new nails were sometimes placed between the remaining shafts of two others:



A few impressions...



(boots after more than 500 km)



(feet after more than 30 km on one day)



(boots + socks after 4 weeks)