

# BONES AND EQUIPMENT OF HORSES AND MULES ON THE ANCIENT BATTLEFIELD OF KALKRIESE, NORTHERN GERMANY

SUSANNE WILBERS-ROST AND ACHIM ROST

## Abstract

Among nearly 6,000 objects of Roman military equipment discovered at the battlefield of Varus in Kalkriese, there are also numerous pieces of horse harnesses and carriage fittings. This paper analyses the find distribution and aims at reconstructing military actions and post-battle-processes.

Key words: Kalkriese, Varus Battle, Roman equine equipment, mule, battlefieldarchaeology, post-battle-processes.

## Introduction

For over 20 years we have been investigating an area at Kalkriese Hill, a part of the Wiehen Mountain north of Osnabrück and situated between the edge of the Northern German uplands and the lowlands. Archaeological finds and features indicate that we discovered the location of the Varus Battle, also known as “Battle of the Teutoburg Forest”<sup>1</sup>. Roman historians (Velleius Paterculus, Tacitus, Cassius Dio) inform us that the Roman governor, Varus, had a summer camp at the Weser in A.D. 9 and that he believed to stay in the territory of Germanic allies. In autumn he intended to return to the camps at the Rhine, when he was led into an ambush and his three legions were almost completely destroyed by Germans under the leadership of Arminius. For generations, people have been looking for the site of this battle in different parts of northern Germany and already in 1885 the famous historian Theodor Mommsen (Mommsen 1885) had suggested to locate the battle near Kalkriese because of the many Roman coins which farmers had collected during their fieldwork. However, he could not prevail with his ideas against other theories.

The situation only changed when further Roman silver coins and especially three lead sling shots were found by an amateur archaeologist by metal detecting in 1987 (Harnecker, Tolksdorf-Lienemann 2004, pp.1-2; Schlüter *et al.* 1992, p.307ff); they indicated that Roman troops must have passed this area<sup>2</sup>. Field

surveys started in Kalkriese in 1988 and already a year later Roman coins and some pieces of Roman military equipment had been found at numerous places, scattered between the Wiehen Mountain and the Great Bog situated 2 km north of the mountains (Fig. 1). Systematic excavations started in 1989 on a field called “Oberesch” (Wilbers-Rost 2007) which yielded a concentration of coins and military objects. Not only Roman military equipment was unearthed but also an artificial rampart. The rampart was not part of an enclosure as it runs parallel to a path along the hill. It had obviously been used by the Germans as an ambush to attack Roman troops whom they had probably expected at this place. With the rampart to the south, the wet area to the north, creeks in the east and the west of the field, the site was like an encirclement that allowed the Germans to control the movement of Roman troops by letting them pass or attacking them. Despite the well-equipped legions, the Varian troops would find it difficult to fight effectively in this situation, nor could they escape unharmed.

Further sites indicate that actions did not only take place at the Oberesch, but at different locations between the hill and the bog; meanwhile a battlearea of more than 30 km<sup>2</sup> has been identified, enabling us to reconstruct part of the events: the Romans must have been coming from the East where they had already been attacked at various places before they reached the Kalkriese Hill and the Oberesch.

## The site Oberesch. Features and finds

The rampart at the Oberesch site (Fig. 2) had a total length of about 400 m; it was bent several times and was almost zigzagging (Wilbers-Rost 2007, pp.30-84; 2009). It must have had a width of about 4 m and a height of nearly 2 m, and at least in one section there

<sup>1</sup> A more detailed discussion of the interpretation of finds and features in Kalkriese as relics of the battle of Varus can be found in different articles: Moosbauer 2009, p.98; Moosbauer, Wilbers-Rost 2009; Rost 2009a; Chantraine 2002 (numismatic aspects).

<sup>2</sup> In this region a small number of contemporary Germanic settlements are known, but there is no evidence that the Romans had ever settled there.

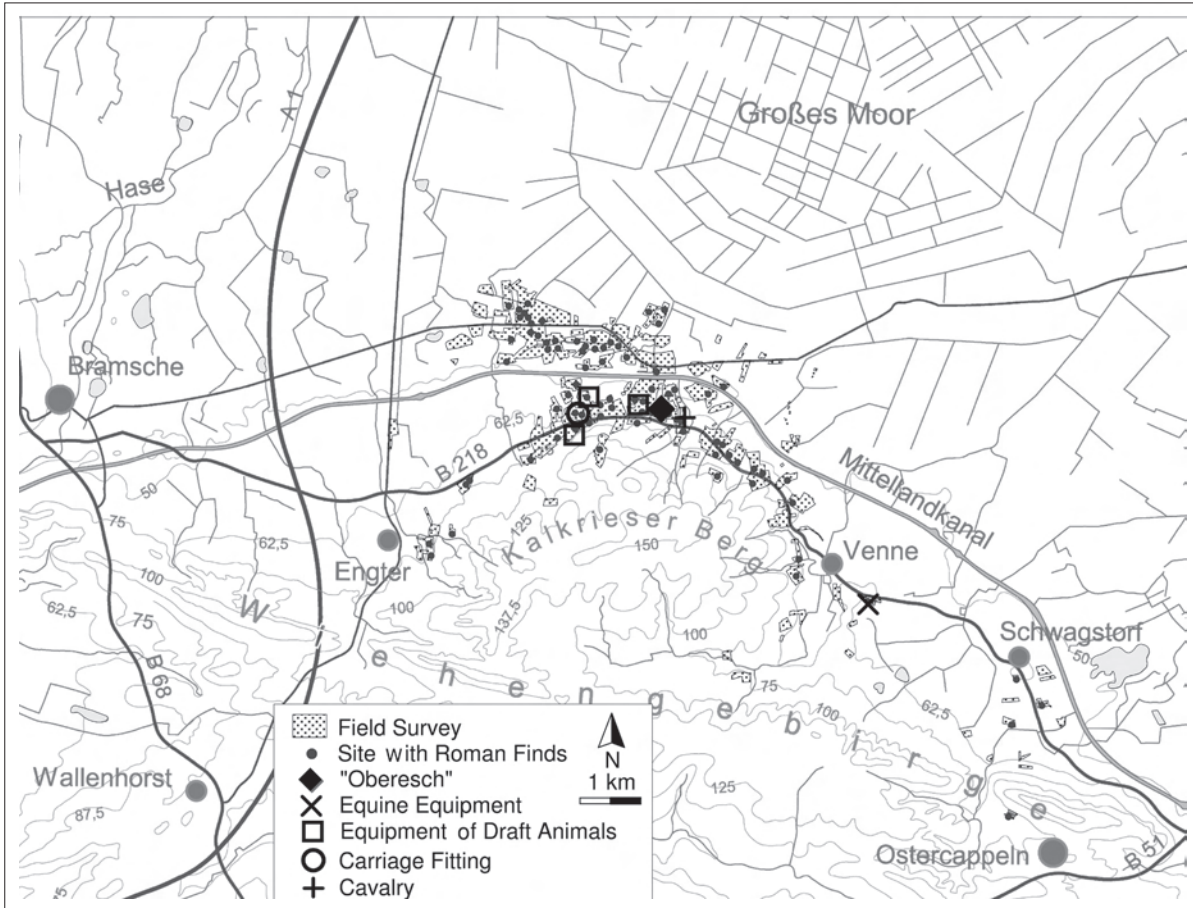


Fig. 1. Study area of Kalkriese.

IV  
THE HORSE  
IN WARFARE

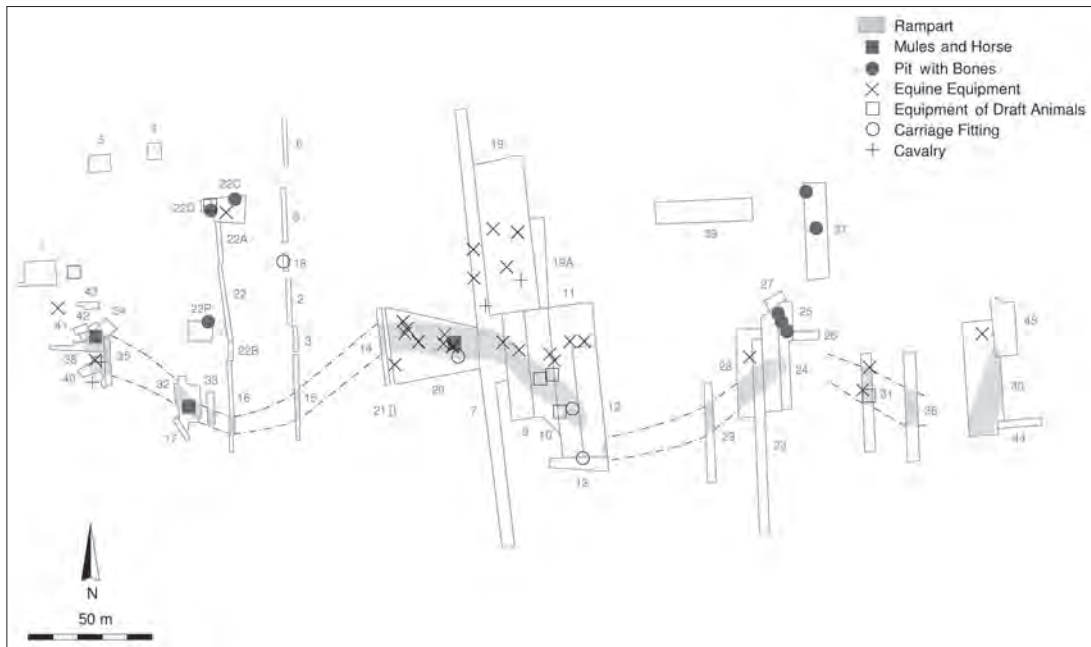


Fig. 2. Site "Oberesch" with excavated sections.

was a palisade to protect the Germans on the wall. Behind the wall a drainage ditch prevented the rampart from being damaged by strong rain. A number of small passages allowed the Germans to leave the shelter of the fortification in order to fight, but they could also retreat fast. It was constructed efficiently, making use of the local topography and of material they found in the immediate vicinity: sometimes turf and sand, sometimes even limestone where turf was rare. Probably the wall was not very substantial. Some parts must have collapsed during the fight or shortly afterwards which resulted in special preservation patterns for Roman equipment and bones.

The Roman items left on the battlefield indicate the presence of both fighting troops and a large baggage train (Harnecker 2008). We found a large variety of weapons, for example lance heads, catapult bolts, pieces of *pila*, shield fittings, plates, buckles and fittings of laminated armour and ring mail shirts. Furthermore, there are tools and medical instruments, pieces of carriages and horses harnesses, as well as fragments of luxurious objects like glass vessels. Most pieces are very small, like the hundreds of nails or fragments of shield fittings. Only a very small number of the 5,000 objects from the Oberesch are complete. Many show signs of destruction, and a lot of long fittings were folded several times, probably for easier transportation. The Germans who plundered the battlefield after the fighting had ceased were mainly interested in the raw material - especially metal such as silver, bronze and iron - and it did not matter if the objects still functioned<sup>3</sup>. Tons of metal must have been left on the battlefield, but the bodies and the baggage train were despoiled by the victors and most of the objects were taken away: the Germans could either use them or recycle the metal. This explains why we do not find any complete armour but only those small pieces and fragments which got lost during looting. Such processes of despoiling must also be brought into account for the discussion of fragments of horse's harnesses and chariots.

### Skeletal remains

Because of the sandy soil we did not expect many bones. Nevertheless, quite a number of human and animal bones were excavated on the Oberesch during the last years (Großkopf 2007; Uerpmann *et al.* 2007). Single bones and some teeth were distributed across the field, but bones were also preserved in rather unusual

<sup>3</sup> Even the most famous among the finds from the Oberesch, the iron face mask of a Roman helmet (Harnecker 2008, Kat.-Nr. 92), was destroyed. Originally it had been plated with silverfoil which the German plunderers cut and picked up.

features: eight bone pits containing both human bones and the bones of mules and horses. The skeletons were not complete and most of the bones were only small fragments in a very bad condition, indicating that they must have been exposed on the surface for several years before their deposition. Some bones show signs of sword strokes and all human bones are from men<sup>4</sup>. These relics are the bones of Roman soldiers and animals of their baggage train (Großkopf 2007, p.173ff). We suppose that those pits are a kind of mass graves for the Varian legions, probably the result of the burial ceremony by the Roman general Germanicus who, according to ancient written sources (Tacitus *annales* 1.61-62), is said to have visited the battle site six years later where he buried the remains of the dead.

The best conditions for the preservation of bones existed directly near the rampart where they were covered after its collapse and where even larger parts of skeletons of equides were unearthed. One skeleton of a mule was nearly complete with only very few bones missing (Fig. 3; Uerpmann *et al.* 2007, p. 131ff; Wilbers-Rost 2007, p.98ff). A small bronze bell and rings of an iron bit were preserved in their original position. Analyses have shown that the mule died from a broken neck. This feature provides a snapshot of the action: the mule was soon covered by material of the wall before looters retrieved the metal objects and before wild animals tore away parts of the carcass.

Bones of horses are quite rare on the Oberesch, but at the western end of the rampart large parts of a small horse might indicate a Germanic one (Fig. 4; Uerpmann *et al.* 2007, p.140ff; Wilbers-Rost 2007, p.99ff). Its skeleton was not as well preserved as the one of the mule. Zoologists assume that it had been laying on the surface for at least some days, since we found a part of the breast in a distance, i.e. wild animals like boars or wolves had torn a few parts away before the carcass was covered.

Another feature containing the bones of a mule found in front of the wall is quite spectacular; skull, shoulder and a part of the spine were found in combination with many pieces of its harness: a large bronze bell, an iron chain, various pendants, glass beads and bronze fittings (Fig. 5; Harnecker 2008, Taf. 45; Uerpmann *et al.* 2007, p.128ff; Wilbers-Rost 2007, p.95ff). These finds, which were still in their original position, may help reconstruct the harness of a Roman army mule, probably of a draft animal. The bell seems to have been used to repair the pole of a shaft of a carriage; we suppose that the mule had lost the carriage by an accident and had probably strangled itself with the bit and the chain. In a

<sup>4</sup> There was only one fragment of a woman's pelvis (Großkopf 2007, p.174).

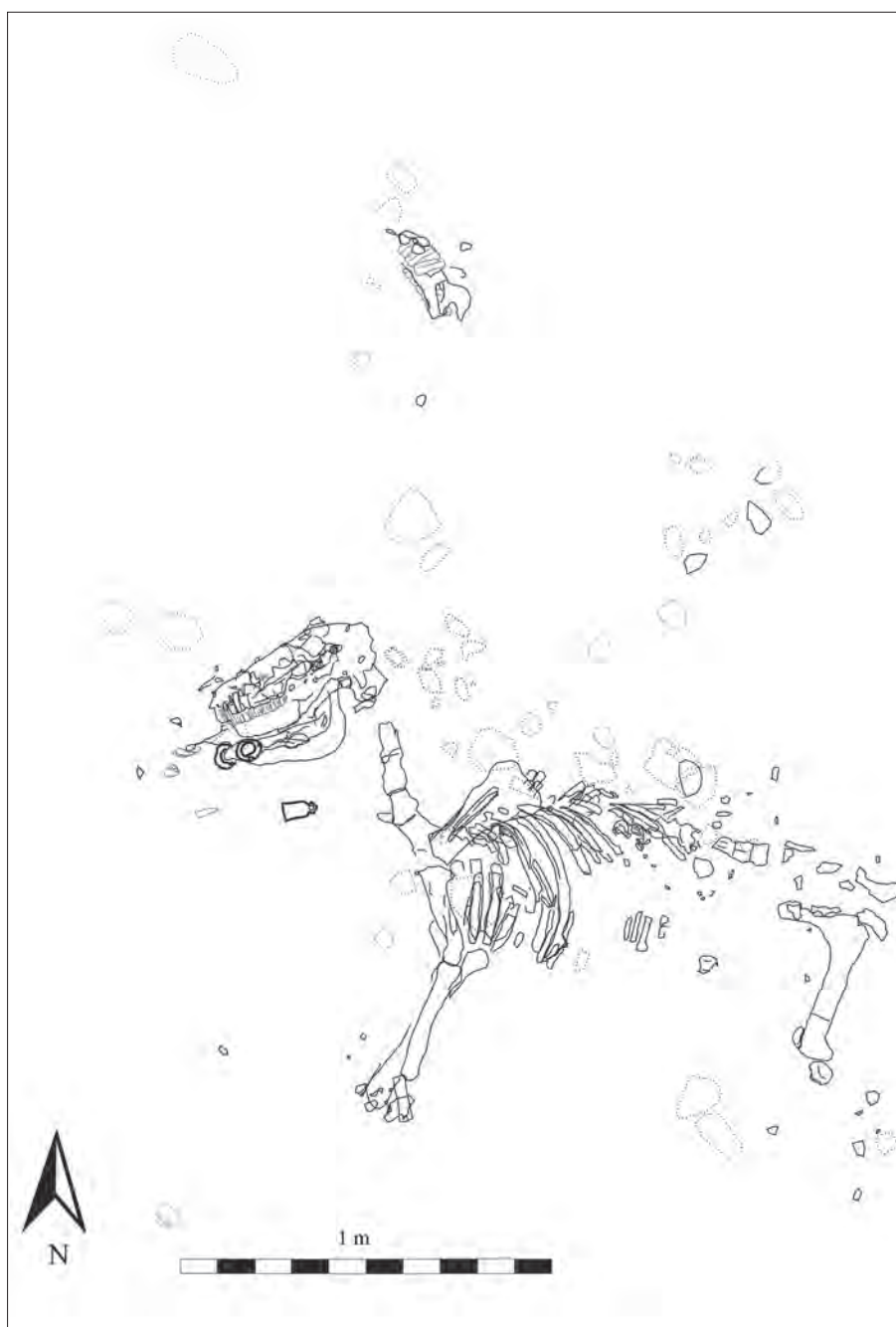


Fig. 3. Skeleton of a mule and teeth of a second one.

nearby passageway through the rampart another snaffle and a few bones of another mule were found - maybe the remains of the second mule which had pulled the carriage. Features like these allow an insight into the dramatic events of the battle.

#### Equipment of horses, mules and carriages

The mule's lavish equipment is quite astonishing, since we usually connect such pendants, fittings and beads with horses as riding animals rather than with mules from the baggage train. In the case of isolated finds of

equine equipment, it is therefore difficult to attribute them precisely to either horses or mules. From the Oberesch we know about 50 objects which belonged to horses and mules, cavalymen and carriages<sup>5</sup>.

While yoke (Plate II.3) and carriage fittings (Harnecker 2008, Kat.-Nr. 311-314) indicate the presence of carriages and draft animals, we may not decide clearly whether the other snaffles and pendants (Plate II.5)

<sup>5</sup> The analysis of the Roman objects from Kalkriese has not been finished yet, and the list of finds mentioned in this paper is not quite complete. For example, there might be some more pieces of horse harnesses among the iron rings found on the Oberesch (Harnecker 2008, Kat.-Nr. 636-690).

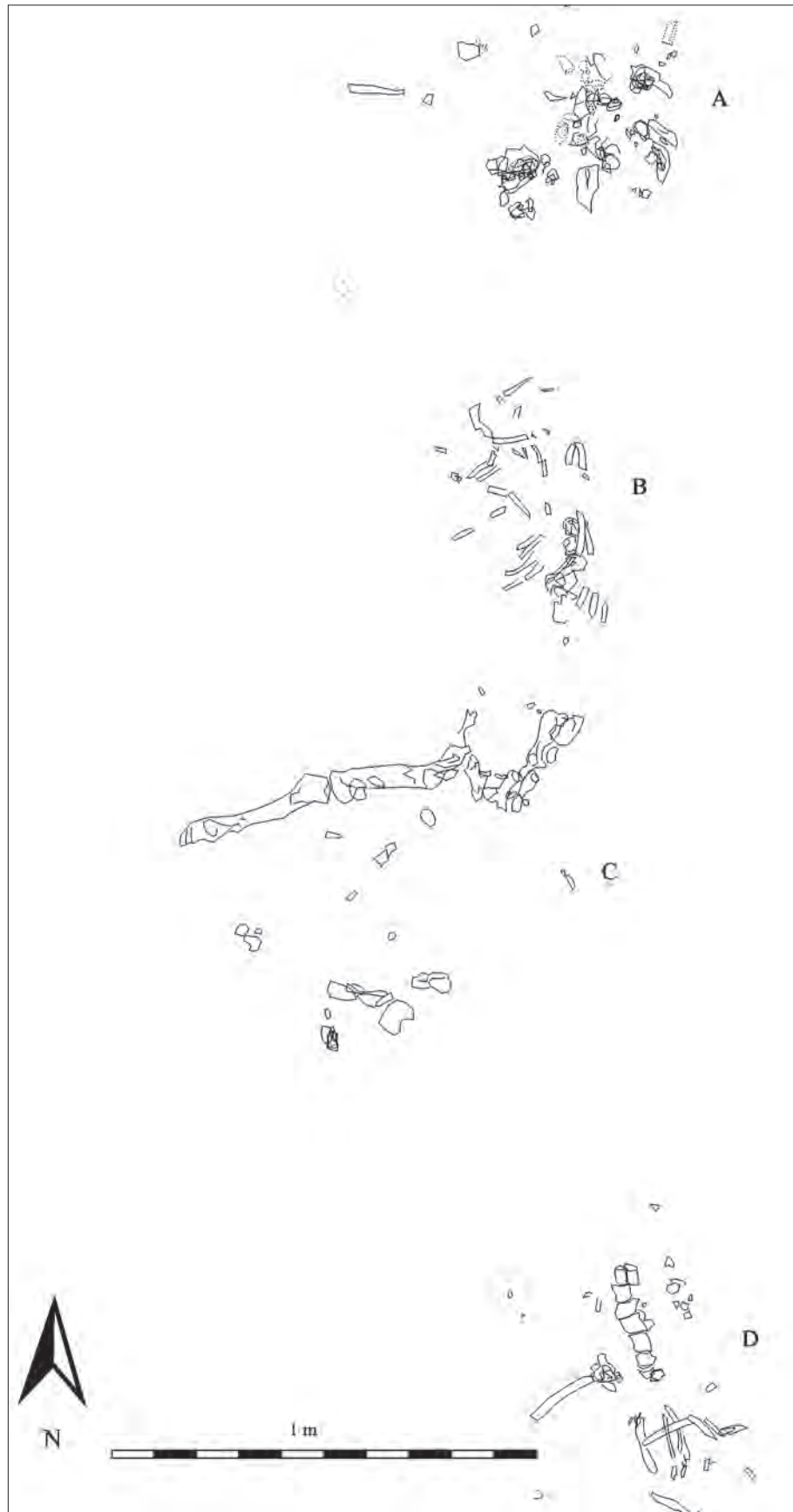


Fig. 4. Skeleton of a horse. D: parts of spine and chest.



Fig. 5. Bones and teeth of a mule with metal parts of the equipment.

belonged to riding, draft or pack animals. The bar of a curb bit and a Roman spur show that Roman riders must have taken part in the fighting on the Oberesch, while the only find of a Germanic spur could be attributed to either a Germanic rider or an auxiliary soldier on the Roman side.

A rather unusual bit, probably of a riding horse, is a so-called "Steigergebiss" (Plate II.4) – nowadays these bits are still in use for dressage to prevent young horses, especially stallions, from climbing. It must have been Roman; another bit of this kind was found at the Roman legionary fortress of Haltern (Harnecker 1997, Kat.-Nr. 732 Taf. 68).

#### Find distribution

The distribution of horse and mule harnesses from the Oberesch (Fig. 2) is not conspicuous: the finds are scattered all over the field without any find concentration. What is remarkable is the number of fragments from the equipment of draft animals from the baggage train<sup>6</sup>, though there are only four iron parts of the carriages themselves: two small iron pieces from the frame, one of the shaft and a hook perhaps from the carriage (Harnecker 2008, Kat.-Nr. 311-314). There is no fragment of a wheel, though each wheel usually had iron tires,

<sup>6</sup> Besides five yoke fittings and the fragment of a chain some of the snaffles and pendants will have belonged to the equipment of draft animals as the above mentioned mule with large metal equipment has demonstrated. The features with a combination of equine bones and equipment covered by the wall were left out in this overview because of their special preservation.

shells, band-rings and a linchpin (Harnecker 1997, p.4).

For the analysis of find distribution we also have to look beyond the Oberesch, which, despite the enormous concentration of finds, was only a small part of a much larger battle-area. The zone where we discovered Roman military equipment stretches over more than 10 km from east to west through the narrow passage between hill and bog. The battle which took place in this area was not a static warfare but a battle in a defile, i.e. the Roman army was marching from east to west in a long row when it was attacked by the Germans from the side numerous times at different places. Although horse and mule harnesses are more or less concentrated at the Oberesch, there are finds elsewhere (Fig. 1), such as a pendant used as decoration of a horse found in the very east<sup>7</sup>. There is also one spur fragment in a short distance east of the Oberesch and three yoke fittings and perhaps one linchpin in the west. This means that harnesses and equipment of horses have nearly a similar distribution to other fragments of Roman military equipment in Kalkriese with nearly 90 percent of the items having been discovered at the Oberesch.

### Methodological aspects and reconstruction of military events

At first this distribution pattern was very striking. On the basis of find concentrations one might conclude that the most intensive fighting must have taken place in this small area of the Oberesch. However, when we tried to interpret the find distribution from Kalkriese we recognised that the selection processes that produced the archaeological findings on battlefields are very special. In a funerary context grave goods do not necessarily reflect the social reality of the living because there have been different rules for funerals which worked selective; similarly, military equipment on a battlefield should not automatically be taken as an indicator for the intensity of the fighting. A variety of processes need to be taken into account; especially the clearing of a battlefield at the end of the battle, including looting, has a significant impact on the archaeological record (Rost 2008a; 2008b; 2009a). For our interpreting of find distribution it is necessary to regard not only the diverging intensity of fighting but also the parallel development of intensifying logistic problems that eventually led to a total military disaster. As a battle in a defile, the battle of Kalkriese was becoming more dramatic as it progressed. Even the distribution of horse equipment illustrates this phenomenon quite well. Written sources

<sup>7</sup> We have to thank our colleague, Dr. Joachim Harnecker, for the hint that a similar pendant was found in the Roman fortress at Haltern (Müller 2002, Taf. 51 Nr. 556).

(Tacitus *annales* 1.64.4) inform us that Roman troops were trained to rescue the wounded and to take care of the baggage train in dangerous situations. We can assume that they tried to act according to these rules as long as possible. This means, however, that even in the case of intensive fighting no significant amount of military equipment was left on the field as long as the wounded and their equipment were taken with the intact parts of the units. Hence it is not surprising that fewer Roman objects were found in the east.

The circumstances must have changed completely when the struggle against annihilation started and when the logistics - including medical service and transportation - had broken down. Such an event may result in a very different distribution of military relics. We are sure that the Oberesch can be interpreted as a place where the units were totally defeated. There, we found thousands of fragments of Roman equipment, among them most of the pieces of horse harnesses. Fragments of equipment which was originally fixed to the bodies of legionaries like armours, scabbards and belts imply that dead and wounded Roman legionaries were looted brutally at that site. Victoriously, the Germans stripped the bodies of their adversaries, and small metal fragments like hooks, buckles and fittings sometimes got lost in the process. In the case of a total breakdown of army structures like in Kalkriese<sup>8</sup>, the baggage train must have also been given up: without doubt some carriages of the baggage train were demolished in the battle, but many carriages may have been left by the defeated army, especially when the mules were injured or dead.

### Conclusions

The archaeological finds from the Oberesch indicate the multiplicity of processes following the fighting, like looting, body-stripping and scrapping of the Roman metal equipment by the Germans. The winners had no pressure of time: the booty had to be distributed among the Germanic tribes that were involved in the battle; transport of the booty, sometimes over long distances, had to be organised. We may therefore assume that the Germans did not destroy the carriages to recycle the metal, but that they used them to solve their own transport problems. Many carriages may have been removed from the site which may explain why only very few metal fragments of carriages were found<sup>9</sup>. Presum-

<sup>8</sup> West and especially northwest of the Oberesch Roman finds may be interpreted as indicators for flight or following skirmishes (Rost 2008a).

<sup>9</sup> Describing the course of the Varus battle, Cassius Dio (56.21.1) reports that the Romans burned parts of their baggage train themselves; if this report reflects true events the troops might have had less carriages with them on the

ably the Germans were able to take some of the pack animals which had survived in exchange for dead or wounded draft animals. Usually used by the Romans for the transportation of tents, elements of wooden palisades and further less valuable objects, the Germans could have freed the pack animals from this luggage which was probably not very interesting for the looters since it mainly consisted of organic materials<sup>10</sup>. The amount of equipment of draft animals from the Oberesch may have resulted from Germans changing the animals: when the plunderers tried to loosen the harness from dead or wounded mules, which can be quite a violent action, some of the fittings might have been broken and lost in the grass, where they remained undiscovered until today, comparable to the small fragments of the legionaries equipment.

Insofar, the rarity of carriage fittings and the higher amount of fragments of horses and mules equipment was less determined by the action than by processes after the battle. The distribution of horse or mules equipment and fragments of carriages is a good example to show that we can not easily deduct the intensity of fighting from the distribution of finds on a battlefield.

## Acknowledgements

For his help to improve our English manuscript we want to thank Dr Ralph Häussler, University of Osnabrück.

Translated by authors,  
English improved by Ralph Häussler

## References

### Published sources

CASSIUS DIO, *Historia romana*, 56.  
TACITUS, C., *annales* 1.  
VELLEIUS PATERCULUS, C., *Historia romana*, 2.

### Literature

CHANTRAINE, H., 2002. Varus oder Germanicus? Zu den Fundmünzen von Kalkriese. *Thetis*, 9, 2002, 81-93.

march through the narrow pass in Kalkriese. – The amount of equipment of riding horses and riders which entered into the archaeological record may have also been influenced by the alleged escape of the cavalry (Velleius Paterculus 2.119).

<sup>10</sup> Mules used in the mountainous regions of southern Germany by the army still today are trained as pack animals as well as for draft (kind information by Oberfeldveterinär Dr Franz von Rennenkampff, Ausbildungszentrum für Gebirgstierwesen 230, Bad Reichenhall), and we may also expect this for mules of the Roman army.

- GROSSKOPF, B., 2007. Die menschlichen Überreste vom Oberesch in Kalkriese. In: WILBERS-ROST, S., UERPMANN, H.-P., UERPMANN, M., GROSSKOPF, B., TOLKSDORF-LIENEMANN, E. 2007. Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese. Archäologische Befunde und naturwissenschaftliche Begleituntersuchungen. *Römisch-Germanische Forschungen*, 65. Mainz: von Zabern, 157-178.
- HARNECKER, J., 1997. *Katalog der Eisenfunde von Haltern aus den Grabungen der Jahre 1949-1994. Bodenaltertümer Westfalen*, 35. Mainz: von Zabern.
- HARNECKER, J., 2008. *Kalkriese 4. Katalog der römischen Funde vom Oberesch. Die Schnitte 1-22. Römisch-Germanische Forschungen*, 66. Mainz: von Zabern.
- HARNECKER, J., TOLKSDORF-LIENEMANN, E., 2004. *Kalkriese 2. Sondierungen in der Kalkrieser-Niewedder Senke. Archäologie und Bodenkunde. Römisch-Germanische Forschungen*, 62. Mainz: von Zabern.
- MOMMSEN, Th., 1885. Die Örtlichkeit der Varusschlacht. *Sitzungsber. Preuß. Akad. Wiss. Berlin* (also printed in Th. Mommsen, 1906. *Gesammelte Schriften*, 4,1 (Berlin).
- MOOSBAUER, G., 2009. *Die Varusschlacht. Archäologie und Geschichte*. Beck'sche Reihe 2457. München: Beck.
- MOOSBAUER, G., WILBERS-ROST, S., 2009. Kalkriese und die Varusschlacht. Multidisziplinäre Forschungen zu einem militärischen Konflikt. In: *Varusschlacht im Osnabrücker Land GmbH, Museum und Park Kalkriese*, ed. 2000 *Jahre Varusschlacht. Konflikt*. Stuttgart: Theiss, 56-67.
- MÜLLER, M., 2002. *Die römischen Buntmetallfunde von Haltern. Bodenaltertümer Westfalen*, 37. Mainz: von Zabern.
- ROST, A., 2008a. Quellenkritische Überlegungen zur archäologischen Untersuchung von Schlachtfeldern am Beispiel von Kalkriese. In: M. REDDE, S. v. SCHNURBEIN, eds. *Alésia et la bataille du Teutoburg. Un parallèle critique des sources*. Francia Beih. 66, Ostfildern: Thorbecke, 303-313.
- ROST, A., 2008b. Plünderungsprozesse auf Schlachtfeldern – Neue Aspekte auch für Kriegsbeuteopfer? In: A. ABEGG-WIGG, A. RAU, eds. *Aktuelle Forschungen zu Kriegsbeuteopfern und Fürstengräbern im Barbaricum. Internationales Kolloquium unterstützt durch Carlsbergfondet. Schleswig 15.–18. Juni 2006*. Neumünster: Wachholtz, 355-362.
- ROST, A., 2009a. Alesia, Kalkriese, Little Big Horn. Das neue Forschungsgebiet der Schlachtfeldarchäologie. In: *Varusschlacht im Osnabrücker Land. Museum und Park Kalkriese*. Mainz: von Zabern, 110-117.
- ROST, A., 2009b (forthcoming). The battle between Romans and Germans in Kalkriese: interpreting the archaeological remains from an ancient battlefield. In: *Proceedings of the 20th Limes Conference*. Léon 2006.
- SCHLÜTER, W., BERGER, F., FRANZIUS, G., LIENEMANN, J., ROST, A., TOLKSDORF-LIENEMANN, E., WIEGELS, R., WILBERS-ROST, S., 1992. Archäologische Zeugnisse zur Varusschlacht. Die Untersuchungen in der Kalkrieser-Niewedder Senke bei Osnabrück. *Germania*, 70, 1992, 307-402.
- UERPMANN, H.-P., UERPMANN, M., LANGGUTH, K., PAULUS, S., 2007. Knochenfunde aus den Grabungen bis 2002 auf dem Oberesch in Kalkriese. In: S. WILBERS-ROST, H.-P. UERPMANN, M. UERPMANN, B. GROSSKOPF, E. TOLKSDORF-LIENEMANN, eds. *Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese. Archäologische Befunde und naturwissen-*



*schaftliche Begleituntersuchungen*. Römisch-Germanische Forschungen 65. Mainz: von Zabern, 108-156.

WILBERS-ROST, S., 2007. Die archäologischen Befunde. In: S. WILBERS-ROST, H.-P. UERPMANN, M. UERPMANN, B. GROSSKOPF, E. TOLKSDORF-LIENEMANN, eds., *Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese. Archäologische Befunde und naturwissenschaftliche Begleituntersuchungen*. Römisch-Germanische Forschungen 65. Mainz: von Zabern, 1-107.

WILBERS-ROST, S., 2009 (forthcoming). The site of the Varus Battle at Kalkriese. Recent results from archaeological research. In: *Proceedings of the 20th Limes Conference*, Léon 2006.

Received: 6 March 2009; Revised: 24 April 2009;

Accepted: 12 June 2009

Susanne Wilbers-Rost  
Varusschlacht im Osnabrücker Land GmbH -  
Museum und Park Kalkriese  
Venner Straße 69  
49565 Bramsche  
Germany  
E-mail: rost.wilbers@osnanet.de

Achim Rost  
University of Osnabrück  
Alte Geschichte – Archäologie der Römischen Provinzen  
Schlossstr. 8  
49069 Osnabrück  
Germany  
E-mail: rost.wilbers@osnanet.de

## ŽIRGŲ IR MULŲ APRANGOS REIKMENYS BEI KAULAI IŠ KALKRYZĖS MŪŠIO LAUKO ŠIAURĖS VOKIETIJOJE

**Susane Wilbers-Rost, Achim Rost**

### Santrauka

1987 m. pradėti Kalkryzės (Kalkriese), romėnų ir germanų mūšio vietos, šalia Osnabriuko (Osnabrück), archeologiniai tyrimai. Kompleksinių tyrimų rezultatas – šią vietą galima tapatinti su 9 m. po Kr. Varo mūšio (Teutoburgo (Teutoburg) miško mūšio) vieta (1, 2 pav.). Vietos apžiūra ir archeologiniai tyrimai leidžia teigti, kad tai ne mažo mūšio laukas, o didžiulis, daugiau kaip 30 km<sup>2</sup>, mūšio laukas, kuriame romėnai buvo puolami daugelyje vietų. Oberešo (Oberesch) vietovėje, mūšio lauko centre, germanai surentė įtvirtintą pasalą žygiuojantiems Romos legionams. Nors romėnai buvo pasirengę mūšiui, jie negalėjo sėkmingai kautis, nes juos varžė didžiulė legionų gurguolė, ne mažesne kliūtimi tapo kalva pietuose ir pelkė šiaurėje.

Daugiau kaip 6000 romėnų daiktų, rastų tyrinėjant mūšio vietą, patvirtina visišką Romos armijos sutriuškinimą.

Obereše rasti kaulų fragmentai teikia informacijos apie mūšio dalyvius: vyrus, mulus ir žirgus. Daugelis žmonių ir žirgų kaulų rasta tose pačiose duobėse. Šių kaulų būklė rodo, kad jie nebuvo užkasti iškart po mūšio, o tik po kelerių metų, galbūt 15 m. po Kr., Germaniko vadovaujamų Romos pulkų.

Be kaulų duobėse, Obereše rasta daugiau mulų ir žirgų kaulų. Jie gulėjo ant senojo paviršiaus, ant kai kurių buvo užvirtę netrukus po mūšio nugriuvę įtvirtinimai. Dėl to dauguma mulų ir žirgų skeletų gerai išsilaikė. Vieno mulo skeletas rastas beveik sveikas (pilnas), o kitas – greičiausiai tempęs vežimą – su didesne dalimi pakinktų (3–5 pav.; II: 3–5 iliustr.).

Kiti daiktai – žąslai, kabučiai, varpeliai ar pakinktai – leidžia nustatyti, kam buvo skirtas gyvulys – joti, nešuliams gabenti ar kinkyti. Dauguma daiktų rasta Obereše, kiti netoliese aplink. Norėdami geriau suvokti tiriamą mūšio lauką, modeliuojame, kaip radinių pasiskirstymą paveikė germanų plėšikavimas. Pavyzdžiui, mūšio lauke turėjo būti gurguolės vežimų liekanų, bet rasta tik keletas metalinių vežimų dalių fragmentų. Tai germanų plėšikavimo pasekmė, kurios įtaka svarbi visiems mūšio lauke likusiems romėnų daiktams. Nugalėtojais grobstė ginklus ir kitus romėnų daiktus, kartais naudodavo metalą kaip žaliavą. Romos legionų vežimai galėjo būti naudoti plėšikų grobiui išgabenti; jie juos naudojo ne tik pagal paskirtį, kas lėmė beveik visišką vežimų nebuvimą mūšio lauke.

Laukuose išlikusių mūšių vietų tyrimams retai kada taikomos modernios archeologinės technologijos. Kalkryzės romėnų ir germanų mūšio vieta, kur rasta tūkstančiai daiktų, suteikia puikią progą patobulinti panašių vietų tyrimų metodiką ir radinių interpretacijas. Iš visko sprendžiant, mūšio vieta mažiau nukentėjo nuo paties mūšio negu nuo plėšikavimų, vykusių jau po mūšio; dėl to ne tik pasikeitė mūšio lauke išlikusių daiktų sudėtis, bet kartu pakito mūšio lauko archeologinės medžiagos apsaugos ir sklaidos sąlygos. Šių svarstymų pagrindu straipsnyje aptariamos Kalkryzės mūšio vietos arklių kinkinio reikmenų ir aprangos liekanos.

Vertė Audronė Bliujiienė