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A catalogue of military weapons and fittings

M.C. Bishop

Introduction

Any attempt to provide a brief catalogue of Roman military equipment is almost certainly doomed to failure, in whatever context the task is undertaken. So it is with a deep sense of unease on the part of the writer that this paper will nevertheless try to do just that and provide a summary overview of military equipment in the spirit of the general theme of the conference: military equipment in civil contexts. The reader might expect what follows to be shallow, over-generalizing, and almost certainly wrong on many counts, and there is little reason to doubt that this will indeed be the case. In order that this should not seem a totally futile exercise, however, a tentative overview of military equipment in civil contexts from a Romano-British perspective will be included.

Shafted weapons

Our study will begin with offensive weaponry, and shafted weapons first of all, so where better than the most distinctive weapon of all? Legionary soldiers from the Republic through to the High Empire were equipped with their characteristic heavy javelin, the *pilum*. Whatever its origins¹, by the early Principate it had become an armour-piercing weapon designed to penetrate an enemy's shield and any body armour he might be wearing². The bulk of the auxiliary infantry, on the other hand, carried a spear that could be used for thrusting or throwing: that it could indeed be used for throwing is suggested by the fact that auxiliary infantrymen are depicted on iconographic sources, such as tombstones, carrying two spears³, just as legionaries were said to carry two *pila*⁴. The *pilum* is manifested archaeologically by its distinctive iron shank and pyramidal head (Fig. 1a), although the latter is easily confused with some pile-shaped arrow and bolt heads (Fig. 1b). Finds associated with its manner of hafting are less common, and we still have no indisputable example of the ferrule or butt-spike which we know must have been used with this weapon⁵. Spearheads (Fig. 1c) and ferrules (Fig. 1d) are much harder to characterize as military in and of themselves, although the range of types found on military sites⁶ gives some indications of what might normally be found where some sort of military presence has occurred.

The spearhead in Figure 1c came from the vicus of the Antonine *castellum* at Inveresk, near Edinburgh. However, it was found in a military midden underlying the first civil phase⁷, serving to remind us that what might appear to be a civil context need not always be one.

Hand-held weapons

The Roman soldier's primary handheld weapon was always the sword, a short one in the case of Republican and early imperial infantryman⁸, and a long one (almost certainly of Celtic origin) for cavalrymen⁹. The High Empire saw infantrymen too adopting the longer sword. All troops from time to time seem to have been equipped with a secondary sidearm, a dagger which, like the short sword, appears to have had its origins on the Iberian peninsula¹⁰.

The iron blades of swords themselves are not common finds except in unusual – often ritual – circumstances, although parts of their handle assemblages are often found. However, scabbard fittings are relatively abundant, and the same relative frequency of finds holds true for items related to the dagger.

Projectiles

The Roman army had access to a wide variety of missiles, starting with javelins, or types of light spear specifically designed for throwing, rather than thrusting. Infantrymen had these and so too did the cavalry, and epigraphic evidence at least suggests that they were distributed amongst both auxiliaries and legionaries¹¹. Archaeologically, these are distinguished by virtue of their smaller heads (both in size and socket diameter) from thrusting weapons (Fig. 1e).

Greater range could be achieved by means of the bow¹², usually represented by arrowheads, trilobate and barbed for unarmoured targets (Fig. 1f), or of square-sectioned pile-type (Fig. 1b) to penetrate armour. Other evidence

¹ Connolly 1997, 44–49.

² Bishop/Coulston 1993, 48.

³ Espérandieu 1907–66, 6207, 6125 | Espérandieu 1931, 16.

⁴ Mentioned as part of the weaponry of the *hastati* by Polybius (VI,23) and shown on the tombstone of C. Castricius Victor (Robinson 1975, pl. 470) amongst others.

⁵ Shown on the generally-reliable Cancellaria relief A: Magi 1945, 26.

⁶ E.g. Unz/Deschler-Erb 1997, Taf. 16–19.

⁷ Bishop forthcoming.

⁸ Thus Josephus (Bell. Iud. III,5,5), supported by the iconographic evidence, e.g. Espérandieu 1907–66, 5822.

⁹ Josephus (Bell. Iud. loc. cit.); Espérandieu 1907–66, 6435.

¹⁰ Filloy Nieva/Gil Zubillaga 1997.

¹¹ Bishop/Coulston 1993, 69 and 126.

¹² On archery in the Roman army see Coulston 1985.

of archery is provided by bow components, normally made of bone or antler (Fig. 1g). Sling shot of lead, stone, and baked clay are also common, but seldom as widespread as evidence for the use of artillery by the army¹³. Torsion artillery provided the Roman army with its furthest reach and greatest remote destructive power. Whether it be the occasional finds of components of the weapons themselves, or the frequent discovery of the missiles, either stone shot or bolt heads (Fig. 1h), the Romans took artillery to the limits of their empire and even beyond, since knowledge of it made defectors valuable to both the Dacians and the Parthians. Artillery was, of course, used for defending cities as much for attacking them, but the presence of at least one component in a ritual context, in the sacred spring at Bath, must give pause for thought, whilst stone shot re-used as foundation material for a civil building at Corbridge sheds new light on the phrase “army surplus”¹⁴.

Armour

Some Roman soldiers wore large amounts of armour, others none whatsoever. A heavily-armed legionary at the beginning of the 2nd century AD might be equipped with a helmet, a cuirass of mail, scale, or segmental armour, an articulated armguard, and possibly even a greave¹⁵. Equal use was made of iron and copper alloy (both bronze and brass).

Segmental armour (so-called *lorica segmentata*) is probably the most readily identifiable find from the 1st century AD (Fig. 1i), yet is less prominent in the archaeological record in later periods (Fig. 1j). We may legitimately question whether this is as a result of a change in the pattern of its use, or whether evolution in its design made it less likely that its components be found. In the early principate, it is certainly more often excavated than mail or even scale. That being said, these types of armour are known from finds, just less often than segmental armour. Increasing numbers of laminated armguards are now being identified in military contexts, although because of the interchange between gladiatorial and military equipment over a long period, it is only its presence within military bases¹⁶ that provides any certainty over its origin. Helmets, on the other hand, are unmistakably military¹⁷ and confusion with gladiatorial equipment unlikely. As ever, smaller components (particularly the more vulnerable ones) are more likely to be found than major elements (Fig. 1k). As for the parallel and complementary technologies of iron and copper alloy, we find that preferences for a particular metal are both temporally and regionally driven, rather than functional, and that this is reflected as much in equipment from civil sites as it is from military areas.

Shields

A shield was indispensable to the Roman way of hand-to-hand combat. Legionaries were equipped with curved

body shields¹⁸ made of three layers of plywood, auxiliaries with flat shields in a variety of shapes. These wooden components are seldom found, but archaeology frequently produces fragments of copper-alloy shield binding (Fig. 1l), iron shield-strengthening bars and, occasionally, shield bosses. Other organic fittings sometimes found include leather shield covers (which were detachable and used to protect a shield when not in use) and – even rarer – leather shield facings, which could not be removed. Shield bosses were attached – and boards occasionally decorated – with studs.

Belts

Besides their weaponry, the belt was the most immediately recognizable component of a soldier's equipment¹⁹. Apart from the leather belt itself, examples of which are, so far as I know, completely unknown, there were a variety of fittings that can be found, including the buckle, belt plates, and dagger and sword frogs (Fig. 1m). Sculpture depicts a variety of ways in which belts could be used, but the main distinction in the 1st century AD lay between two belts (worn either one above the other or crossed) or a single one. The use of the so-called apron by infantry can also be seen in both the archaeological and iconographic records²⁰; it is here that we first encounter the bugbear of the finds specialist, the stud. Fortunately, apron studs are extremely distinctive, being of a fairly consistent size and form, and marked by raised concentric rings on the underside of their heads (Fig. 1n). Their terminals are also readily recognizable although, as with belts, the leather itself seldom survives.

Interest in decorated belt plates appears to have declined in the 2nd and 3rd centuries, only to revive with the arrival of the Tetrarchy. Under the Dominate, it is often said that the wearing of military belts was adopted by civil servants²¹, so that the discovery of “military” belt fittings in a civil context need not have had a military origin. Nevertheless, we cannot discount the fact that truly military belts may have been distinguishable in some way which we do not as yet understand. Thus it would probably be premature to exclude late belt fittings from our catalogue, simply because we do not always know what was, and what was not, military.

¹³ On artillery in general see Baatz 1994.

¹⁴ Bath: Cunliffe 1988, 8–9, fig. 4, pl. V; Corbridge: Forster/Knowles 1909, 335.

¹⁵ The Adamclisi Tropaeum Traiani metopes provide a contrast with the popular image conveyed by Trajan's Column (Bishop/Coulston 1993, 22).

¹⁶ Coulston 1998, 7.

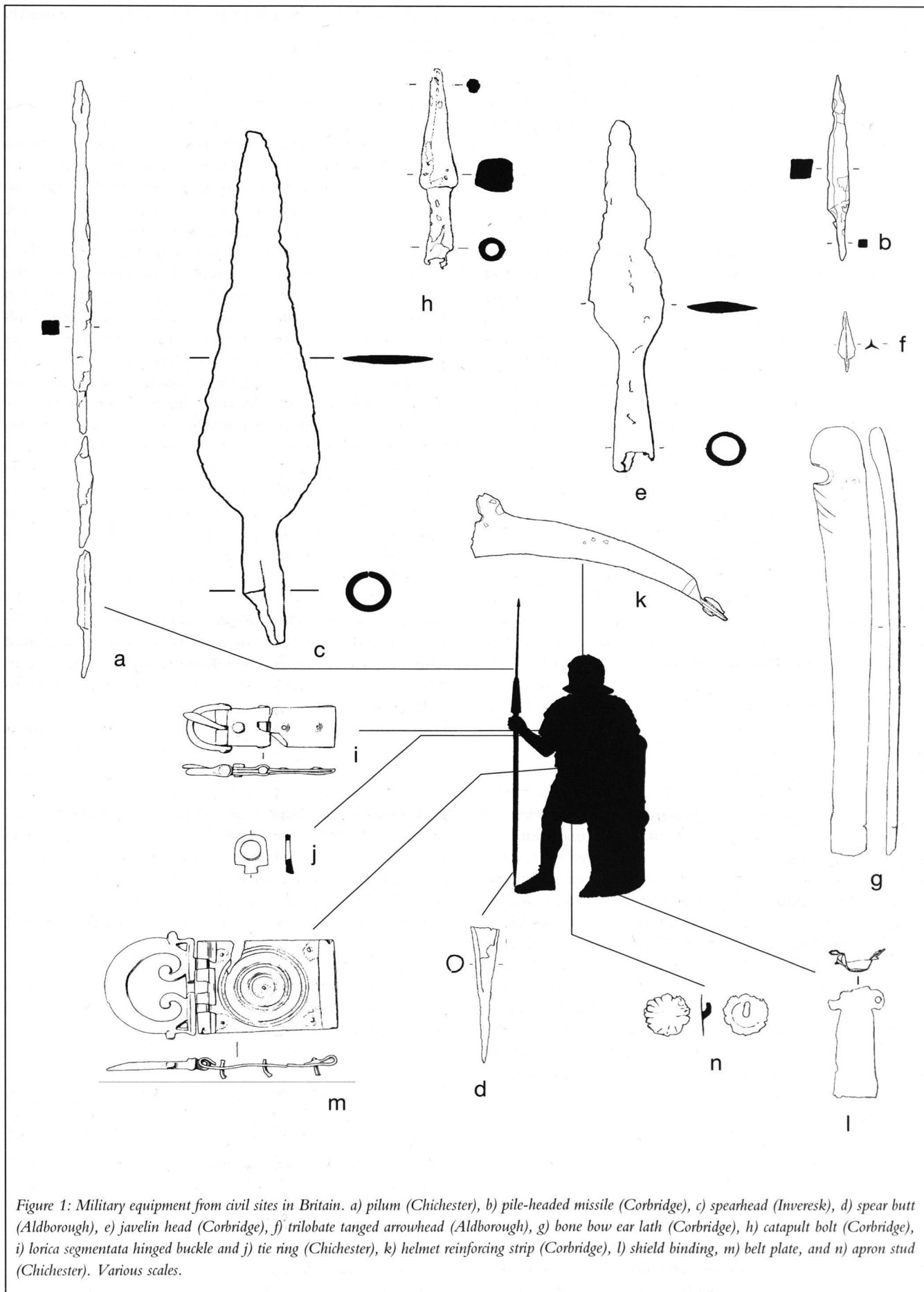
¹⁷ Although Junkelmann (2000, 54–56) has suggested that the provocator type closely resembled the military Imperial/Weisenau helmets.

¹⁸ Shown on Trajan's Column, the Tropaeum Traiani, as well as on tombstones, but indisputable archaeological finds are rare (Bishop/Coulston 1993, 82; 149).

¹⁹ Bishop/Coulston 1993, 196.

²⁰ Bishop 1992.

²¹ Bishop/Coulston 1993, 178.



Swords, when not worn on the belt, were carried by means of a baldric and these, it would appear, were occasionally decorated with studs²² in the early imperial period, but later – coinciding with a change in infantry use of the short to the long swords and the adoption of left-sided suspension – adorned with often very elaborate fittings.

Dress fittings

Whilst a soldier's clothing was mostly organic in nature, a range of fixtures and fittings were associated with it. Most prominently – and one of the classes of artefact that has often been considered peripheral to military equipment studies – we have brooches²³. Attempts to identify variants favoured by the military have often been met with scepticism, and it has to be said seem doomed to failure, given the ubiquity of other more easily categorized items of military equipment. Tombstones show brooches in military use, fastening cloaks, both in the early principate and under the dominate²⁴. They are peculiar to the type of cloak known as a *sagum*, normally fringed and rectangular in shape, since the *paenula* – a cape rather than a cloak and in widespread use during the first two centuries AD – did not require brooches to secure it. However, the *paenula* did apparently use fasteners of a different kind²⁵ and these can be identified with at least some of a range of fairly common artefacts (the type often known as button-and-loop or dress fasteners, which were by no means exclusively military).

Horse harness

Items of horse harness and saddlery are now quite well understood for a range of periods²⁶, but the bulk of the diagnostic finds have come from military sites. Whether it be components of the saddle itself, functional elements like bits, ring or *phalera* junctions and their associated fittings, or decorative elements, our understanding of how a horse was equipped is satisfactory. We certainly know enough to be able to recognize that studs are included amongst horse harness and these, like apron studs, are distinctive in both their form and decoration. What is still open to debate is the extent to which horse riding was practised outside the military sphere. Since it appears largely to have been an aristocratic pastime outwith the army, and because the aristocracy were inevitably closely linked with the command structure of the army, it may be that a false dichotomy has been created here.

Draft harness

Whilst horse harness may have been universally military in character, it could be argued that draft harness in use by the army²⁷ may have been indistinguishable from civilian. As such, it would be virtually invisible amongst the finds from a civil site. This is one of those areas where

the definition of what is or is not military are extremely grey²⁸.

Discussion

Each artefact illustrated in the course of this paper comes from one of the many civil sites in Roman Britain. The sources for such a mini-corpus include settlements that overlie military sites, civil sites that incorporate military bases, *vici* and *canabae* outside military bases, and civil settlements (such as towns of various sizes and even villas) with no obvious military structural components. On the other hand, nearly all of the pieces of sculpture cited in this paper come from military sites, both legionary bases and *castella*. This helps make the point – if it needs to be made – that the two spheres can seem indistinguishable. In Britain, for historiographical reasons that stretch back at least as far as Haverfield, there has long been a perception of a separation between what were termed the military and civil zones²⁹. This, combined with what might politely be termed a focused attitude towards the centralization of military units (in other words, one unit on one base), rendered it unnecessary to look for the army in non-military contexts. What little equipment was recognized and commented upon could be dismissed as evidence for civilian production of weaponry or possibly the mementos of retired soldiers. In 1989, unhappy with this rather simplistic picture, the present writer examined the evidence for 2nd and 3rd-century military equipment from the towns of Roman Britain, suggesting various reasons for its presence. At the time, a series of questions were posed:

“does this material denote military garrisoning of towns in the 2nd and 3rd centuries, or does it indicate the use of a militia or levy raised from the townsfolk? Is the material manufactured in the towns? If so, for whom? Does it show any similarities with equipment from contemporary military sites? Could it have got into the archaeological record when town defences were being constructed, possibly by the army? Finally, is it related to the manning of artillery by specialist troops?”³⁰.

Openmindedly (or at least I thought so at the time), I concluded:

“there would seem to be a strong case to be made for the presence of troops in the towns of Roman Britain, even if we cannot be sure how many of them there were and what they were doing there”³¹.

²² Shown on the tombstone of C. Castricius Victor (Robinson 1975, pl. 470).

²³ For brooches in military contexts in Northern Britain see Snape 1993, 5–6.

²⁴ Annaeus Dacier: Espérandieu 1907–66, 6125.

²⁵ Bishop 1983, 34 with fig. 2.

²⁶ E.g. Bishop 1988.

²⁷ See now Mackensen 2001.

²⁸ Cf. Allason-Jones 1999.

²⁹ Bishop 1999, 112–113.

³⁰ Bishop 1991, 25.

³¹ Ibid. 26.

Regardless of the circumstances in each particular case, it seems clear that the military were thoroughly integrated into some elements of civilian life, and not just in the 2nd and 3rd centuries AD. Even as early as the Trajanic period in Britain, the sub-literary evidence now confirms the level of dispersal of military detachments of varying sizes on often menial tasks, sometimes at a considerable distance from their nominal bases³². We can only ask where all these troops were being accommodated, if not amongst the communities to which they had been sent? It should go without saying that a soldier would have been just as much of a familiar site elsewhere in the empire as our evidence suggests he would have been in Britain.

So how many reasons can there have been for military equipment appearing on a civil site? It is clear that the answer to such an enquiry could be quite complex. For example, early military equipment from Chichester, on the south coast of England, probably derives from the legionary base there which dates to the early years of the conquest. However, the military site was replaced by a town, so that base cannot be the source of later military equipment. That must lie within the town itself, whether it be through local manufacture, garrisoning of detachments by billeting, or whatever. Similarly, Corbridge started out as a series of forts of various sizes with attached *vici*, but mutated into a town containing a defined military zone akin to the sort of arrangement found at Dura-Europos³³ or Umm el-Jimal³⁴ in the east. The situation is even more involved in London, with its newly-identified Neronian-period fort constructed in the demolished ruins of the town³⁵. As the town grew, the nature of the military presence seems to have changed to reflect the aggrandizement of the town under the Flavians and the assumption of administrative roles by soldiers attached to the staff of the governor³⁶. By the end of the 1st century, a fort was constructed on the periphery of the town, only to be abandoned by the end of the 2nd century. Throughout the Roman period, however, finds of military equipment could be interpreted as attesting to a continuous military presence, although as I have just suggested, this was not always physically manifested quite so clearly as the famed inscription from Southwark³⁷.

Beyond the multi-phasic nature of sites we also have to contend with depositional mechanisms that are often (at best) seen through a glass darkly: one person's ritual deposition is another's accidental loss.

Can we always tell whether a site has been sacked by rampaging barbarians or instead subject to deliberate clearance prior to demolition? Moreover, whose equipment is being left behind anyway: that of the soldiers who lived there, the ones who sacked the site, or those who came along afterwards to tidy up the mess? Once again there are questions to which there are no definitive answers.

The sheer complexity of the stories outlined above suggests that there are no easy answers. The very fact that a rudimentary catalogue illustrating a wide range of military equipment (both functionally and temporally) can

be compiled purely from what may – in the broadest sense – be defined as the civil sites of one peripheral military province must give us pause for thought and inevitably lead to yet more questions, the answers to which can only be provided by patience and diligent study of the existing and new evidence.

So, is this catalogue any different from one that could be compiled from purely military sites? Only insofar as it is smaller in quantities, if only British civil sites are used as the sources. Does it present a unified picture leading to an obvious conclusion? Only that there is no unity in such a heterogeneous range of source circumstances other than a military connection. This is, indeed, the common thread: whether we are dealing with equipment from an undiscovered underlying *castra*, a ritual or economically-driven hoard, evidence of civil production of equipment, or just a veteran keeping old weapons from his army days, what we are seeing is a material manifestation of the degree of militarisation of Roman and Romano-provincial societies. Put simply: *militaria* equals militarisation.

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Zusammenfassung

Im Beitrag werden militärische Objekte aus zivilen Kontexten des römischen Britannien überblicksweise behandelt. Diese Zusammenstellung belegt eine grosse Vielfalt über eine beträchtliche Zeitspanne hinweg, welche sich, von der Fundmenge einmal abgesehen, durchaus mit Inventaren aus militärischen Kontexten vergleichen lässt. Die in der Forschung seit Jahren tradierte, stark vereinfachende Unterteilung in rein militärische und zivile Zonen ist daher sicher nicht mehr haltbar. Die Problematik, wie diese *Militaria* in die Zivilsiedlungen gelangten (in der Siedlung stationierte Truppeneinheiten, Werkstätten, Erinnerungsstücke von Veteranen usw.), wirft zahlreiche neue Fragen auf. Die Tatsache, dass unter den römischen Siedlungen Britanniens viele aus einer Militärbasis hervorgingen oder in engster Nachbarschaft davon lebten, erschwert die Interpretation zusätzlich. Zumindest können diese militärischen Ausrüstungsgegenstände als Belege für eine durchgehende militärische Präsenz gewertet werden, und dies durch die ganze römische Epoche hindurch. Der Autor kommt zum Schluss, dass *Militaria* – aus welchem Fundzusammenhang sie auch immer stammen – den Grad der Militarisierung eines Gebietes wiedergeben.

(Zusammenfassung D. Käch)

³² Bishop 1999, 116–117.

³³ Kennedy/Riley 1990, 111–114.

³⁴ De Vries 1986, 231–232.

³⁵ Burnham et al. 2001, 365.

³⁶ Bishop 1983, 43; 45.

³⁷ Mills/Whittaker 1991, 156.

Bibliography

Allason-Jones 1999

L. Allason-Jones, What is a military assemblage?. *Journal Roman Military Equipment Stud.* 10, 1999, 1–4

Baatz 1994

D. Baatz, Bauten und Katapulte des römischen Heeres (Stuttgart 1994)

Bishop 1983

M.C. Bishop, The Camomile Street soldier reconsidered. *Transact. London and Middlesex Arch. Soc.* 34, 1983, 31–48

Bishop 1988

M.C. Bishop, Cavalry equipment of the Roman army in the first century A.D. In: J.C. Coulston (ed.), *Military Equipment and the Identity of Roman Soldiers*. Proceedings of the Fourth Roman Military Equipment Conference. BAR Internat. Ser. 394 (Oxford 1988) 67–195

Bishop 1991

M.C. Bishop, Soldiers and military equipment in the towns of Roman Britain. In V.A. Maxfield/M.J. Dobson (eds.), *Roman Frontier Studies 1989* (Exeter 1991) 21–27

Bishop 1992

M.C. Bishop, The early imperial “apron”. *Journal Roman Military Equipment Stud.* 3, 1992, 81–104

Bishop 1999

M.C. Bishop, *Praesidium*: social, military, and logistical aspects of the Roman army’s provincial distribution during the early principate. In: A. Goldsworthy/I. Haynes (eds.), *The Roman Army as a Community*. *Journal Roman Arch. Supplementary Series* 34 (Portsmouth 1999) 111–118

Bishop forthcoming

M.C. Bishop, Excavations at Inveresk Gate, Inveresk (East Lothian) (forthcoming)

Bishop/Coulston 1993

M.C. Bishop/J.C.N. Coulston, *Roman Military Equipment from the Punic Wars to the Fall of Rome* (London 1993)

Burnham et al. 2001

B.C. Burnham/L.J.F. Keppie/A. Fitzpatrick/R.S.O. Tomlin/M.W.C. Hassall, Roman Britain in 2000. *Britannia* 32, 2001, 311–400

Connolly 1997

P. Connolly, Pilum, gladius and pugio in the Late Republic. *Journal Roman Military Equipment Stud.* 8, 1997, 41–57

Coulston 1985

J. Coulston, Roman Archery Equipment. In: M.C. Bishop (ed.), *The Production and Distribution of Roman Military Equipment*. Proceedings of the Second Roman Military Equipment Research Seminar. BAR 275 (Oxford 1985) 220–236

Coulston 1998

J.C.N. Coulston, Gladiators and soldiers: personnel and equipment in *ludus* and *castra*. *Journal Roman Military Equipment Stud.* 9, 1998, 1–17

Cunliffe 1988

B.W. Cunliffe, The Temple of Sulis Minerva at Bath II: Finds from the Sacred Spring. Oxford University Committee for Archaeology Monograph 16 (Oxford 1988)

De Vries 1986

B. De Vries, Umm el-Jimal in the first three centuries AD. In: P. Freeman and D. Kennedy (eds.), *The Defence of the Roman and Byzantine East*. Proceedings of a Colloquium held at the University of Sheffield in April 1986. BAR Internat. Ser. 297 (Oxford 1986) 227–241

Espérandieu 1907–66

E. Espérandieu, *Recueil général des bas-reliefs, statues et bustes de la Gaule romaine* (Paris 1907–66)

Espérandieu 1931

E. Espérandieu, *Recueil général des bas-reliefs, statues et bustes de la Germanie romaine* (Paris 1931)

Filloo Nieva/Gil Zubillaga 1997

I. Filloo Nieva/E. Gil Zubillaga, Las armas de las necropolis cel-tibéricas de Carasta y La Hoya (Alava, España). Tipología de su puñales y prototipos del pugio. *Journal Roman Military Equipment Stud.* 8, 1997, 137–150

Forster/Knowles 1909

R.H. Forster/W.H. Knowles, Corstopitum: report on the excavations in 1908. *Arch. Aeliana ser.* 3,5, 1909, 305–424

Junkelmann 2000

M. Junkelmann, Das Spiel mit dem Tod. So Kämpften Roms Gladiatoren (Mainz 2000)

Kennedy/Riley 1990

D. Kennedy/D. Riley, Rome’s Desert Frontier from the Air (London 1990)

Mackensen 2001

M. Mackensen, Militärische oder zivile Verwendung frühkaiserzeitlicher Pferdegeschirranhänger aus der Provinz Africa Proconsularis und den Nordwestprovinzen. *Germania* 79, 2001, 325–346

Magi 1945

F. Magi, I rilievi flavi del Palazzo della Cancelleria (Rome 1945)

Mills/Whittaker 1991

J. Mills/K. Whittaker, Southwark. *Current Arch.* 124, 1991, 155–162

Robinson 1975

H.R. Robinson, *The Armour of Imperial Rome* (London 1975)

Snape 1993

M.E. Snape, Roman Brooches from North Britain. A Classification and a Catalogue of Brooches from Sites on the Stanegate. BAR British Ser. 235 (Oxford 1993)

Unz/Deschler-Erb 1997

C. Unz/E. Deschler-Erb, Katalog der Militaria aus Vindonissa. Militärische Funde, Pferdegeschirr und Jochteile bis 1976. Veröff. GPV 14 (Brugg 1997)