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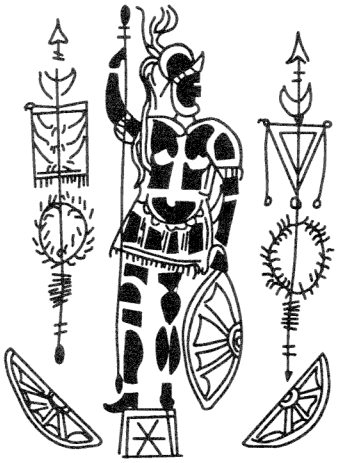
ARMA



NEWSLETTER OF THE ROMAN MILITARY EQUIPMENT CONFERENCE

VOL.5 NO.1 £2.25 JUNE 1993

CONTENTS

EDITORIAL

The entire staff of **ARMA** (hollow laughter) has been out in the field this summer (more details on p.2), which will explain, if not excuse, the fact that I have been largely incommunicado between March and July. Having acquired a tan, some military equipment, and three new Roman forts (I saw no point in being greedy), I return to **ARMA** girding my loins in preparation for a few minor changes which I have decided to institute from volume 6, 1994, onwards. The more astute amongst you will recall that I asked if anybody objected to my moving the publication times so that they no longer coincided with *JRMES*. The underwhelming response to that appeal for feedback leads me to believe I can go ahead and move publication to March and September next year and that that will offend nobody. Size and price seem to be about right at the moment (with apologies to readers who pay in US$ for the huge bank charge, but I got a little fed up with my bank telling me that if I paid in a $10 subscription cheque, I would only actually get 69p after they had extorted their fee), although I think we will forgo the luxury of full colour centre spreads of rusty fragments of '*lorica segmentata*' for the time being.

Those of you patiently awaiting your copies of volume 3 of *JRMES* should by now have heard that production difficulties (i.e. insufficient advance subscriptions to fund the printing costs) have delayed its appearance, but can rest assured that it will be along soon, with volume 4 hopefully following close on its heels at the end of this year (rather than the beginning of next); more details will be sent as they become available. The London catalogue is still poised and that too should be ready soon.

Enough of these idle ramblings and to business: this issue contains more finds from the Netherlands (without them, where would **ARMA** be!?), a couple of articles on the subject of body armour, and the first notice for the 1994 ROMEC (number IX, I think, but don't quote me on it... I have been known to get it wrong) which will be held at Leiden, in what appears to be a historical softplay complex for adults; never let it be said that a Roman Military Equipment Conference takes itself seriously!

ROMAN MILITARY EQUIPMENT CONFERENCE 1994

Preliminary Notice

The next conference will be held in Leiden, Netherlands, on 15 and 16 September 1994. If sufficient sponsorship can be attracted it is hoped to add a third day at the newly opened archaeological theme park Archeon, when the now traditional demonstrations and displays of equipment or skill can be held for participants as well as the general public in the Roman amphitheatre and the Roman tavern. Anyone with practical skills (making or using arms or armour of different periods of Roman history), dress displays or static exhibitions of equipment or products (books, replicas) who would like to be present is invited to contact me. We hope to be able to provide accommodation for all participants on this day, but the extent to which travel expenses can be met depends on the availability of external finance. Final selection will be in the hands of ROMEC and the board of Archeon directors.

The first two days will be devoted to lectures, one day concentrating on '*Equipment in context*' in which it is hoped to explore the importance of context in the survival and interpretation of military equipment. Contexts to consider are graves, temples, bogs and rivers in addition to the usual forts. The second day will, as usual, be open for varied topics.

A call for papers will be circulated in the new year, but if you are interested in any aspect of the conference, contact me in good time.

Carol van Driel-Murray
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2352 HL Leiderdorp
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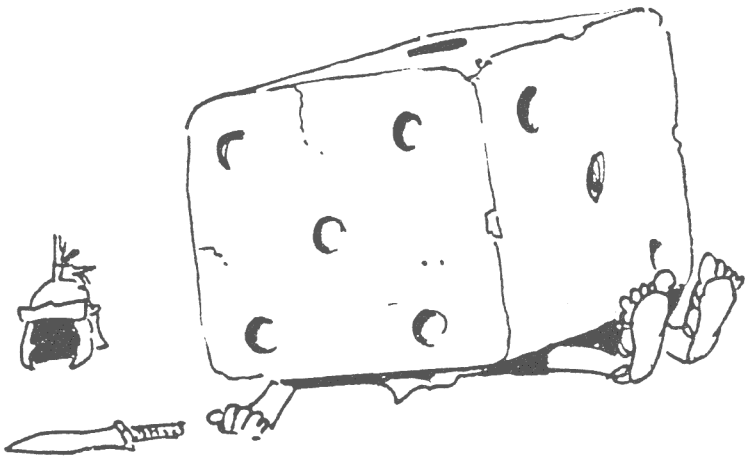


" ALEA IACTA EST ... "

Neil '86

DESPERATE MEASURES: SOME NEW ROMAN MILITARY EQUIPMENT

M.C. Bishop

When **ARMA** was first established, your editor expressed the wish that it should carry reports, however brief, of newly discovered military equipment. Perhaps it was a little naive to expect excavators to communicate in their droves volunteering this information, but the almost complete absence of any such reports from Britain has led to desperate measures: your long-suffering editor decided that if nobody will tell him about their military equipment, he would go out and dig up some of his own.

In reality, excavations (carried out between March and July of 1993) in advance of the widening of the A1 to a motorway between Walshford and Dishforth in North Yorkshire, revealed a new Roman military complex at Roecliffe, just to the west of Boroughbridge (and slightly over a mile from Aldborough, *Isurium Brigantum*). A strip 20m broad and 500m long produced evidence of three distinct phases of Flavian military occupation and a range of finds that included '*lorica segmentata*' and cavalry harness fittings, a sword hilt-guard, spear butts, and a *pilum* head and part of its shank.

SOME VEGETIANA

By one of those curious universal paradoxes that dictates that buses always come along in protective gaggles, that much-neglected late Roman writer whose purview included military equipment, Flavius Vegetius Renatus, has suddenly started to attract a modicum of scholarly attention. Long used as a quarry for Roman military 'facts', English-speaking students have had to rely on the 1944 edition of John Clarke's 17th century translation of his *Epitoma Rei Militaris* (both of which had to be used with caution, the former completely ignoring Book 4 on siege warfare).

Now, we have two new works that go some way to redressing this situation. Leo F. Stelten's *Flavius Vegetius Renatus. Epitoma Rei Militaris* (Peter Lang, New York 1990: ISBN 0-8204-1403-4) costs £40 (if you can find it in stock in the UK!) and has a nice laminated board cover, but only a typescript text. It includes a brief introduction, a new edition of the text (the standard being Lang's, published by Teubner), and a parallel (sometimes eccentric) English translation. There is an idiosyncratic glossary, bibliography, and a useful index.

More recently, N.P. Milner's *Vegetius: Epitome of Military Science* (Liverpool University Press, Liverpool, 1993: ISBN 0-85323-228-8) costs a more pleasing £8.50 and features another brief introduction, an annotated translation, a bibliography, and a curious 'index of gods, people and places'

RECENT PUBLICATIONS

Balty, J.C. and van Rengen, W. *Apamea in Syria. The Winter Quarters of Legio II Parthica*, VUBPress, Brussels: 1993 ISBN 90-5487-008-7 no price

M.C. Bishop and J.C.N. Coulston: *Roman Military Equipment from the Punic Wars to the Fall of Rome*, Batsford, London: 1993 ISBN 0-7134-6637-5 £35.00

A. Hyland: *Training the Roman Cavalry from Arrian's* Ars Tactica, Alan Sutton, Stroud: 1993 ISBN 0-86299-984-7 £26.00

BIBLIOGRAPHY OF ROMAN MILITARY EQUIPMENT SINCE 1980

Papers (Part 9)

BRUNSTING & STEURES 1992: Brunsting, H. & Steures, D.C., 'The lone watchman. The find circumstances of the Augustan iron helmet from Nijmegen and the date of the Augustan legionary fortress', *Oudheidkundige Mededelingen uit het Rijksmuseum van Oudheden te Leiden* **72**, 101–12

CROOM 1992: Croom, A.T., 'Quinta's reconstructed wooden practice swords', *The Arbeia Journal* **1**, 51–3

GRIFFITHS 1992: Griffiths, W.B., 'The hand-thrown stone', *The Arbeia Journal* **1**, 1–11

UBL 1993a: Ubl, H.J., 'Zwei kleine Bronzefunde', *Mitteilungen des Museumvereines Lauriacum-Enns*, N.F. **31**, 5–18

UBL 1993b: Ubl, H.J., 'Ein spätrömischer Kammhelm', *Mitteilungen des Museumvereines Lauriacum-Enns*, N.F. **31**, 19–26

Reports (Part 7)

BIRLEY *et al* 1993: Birley, E., Birley, R., and Birley, A., *Vindolanda Research Reports II. The Early Wooden Forts. Reports on the Auxiliaries, the Writing Tablets, Inscriptions, Brands and Graffiti*, Hexham

BIRLEY 1993: Birley, R. (ed.), *Vindolanda Research Reports II. The Early Wooden Forts. Preliminary Reports on the Leather, Textiles, Environmental Evidence and Dendrochronology*, Hexham 1993

CASEY *et al* 1993: Casey, P.J., Davies, J.L., and Evans, J., *Excavations at Segontium (Caernarfon) Roman Fort, 1975–1979*, CBA Research Report 90, London

FRERE & TOMLIN 1991: Frere, S.S. and Tomlin, R.S.O., *The Roman Inscriptions of Britain Volume II. Instrumentum Domesticum*, Fascicule 3, Stroud

VELSERBROEK B6, MILITARY EQUIPMENT FROM A RITUAL SITE (2)

A.V.A.J. Bosman

In 1992, excavations continued by the IPP (University of Amsterdam) at the site of Velserbroek B6 (25 kilometres to the west of Amsterdam, the Netherlands: Bosman 1992).

Nearly all of the sand ridge east of the modern ditch, known as 'de Lange Sloot' was excavated and several excavation trenches were dug to the west of this ditch. Both to the north and to the south of the sand ridge ditches were found; finds such as a Terra Sigillata sherd date these ditches in the Roman period. To the west cart tracks were found originating from different directions. All of them point to the end of the sand ridge. In the west between the cart tracks some ditches of a field system were discovered. Most of the finds, and especially all of the metal finds appeared to be concentrated on the sand ridge between the ditches. Just as in the first season of excavations in 1991 a number of military artefacts were discovered. All of the metal was found by using a metal detector.

Of the metal finds, 33 may be interpreted as military artefacts. Four of these are fragments of weapons:

1. (Fig.1) Find number 793. An iron spear point. The point is damaged. No wood within the spearshaft has survived. The spear point was found in a peat layer below the Roman sand layer and is to be dated in the Middle Iron Age (400–200 BC). In the same layer some pottery fragments of the Middle Iron Age Santpoort I pottery style group were found.
   Lit: Vouga 1923, Pl.13,8.
   Length: 106mm; width: 27mm; diameter of the socket: 9mm.
2. (Fig.2) Find number 208. An iron spear point. The edge of the socket is damaged. A part of the wooden spearshaft was preserved in the round socket (*Fraxinus exc.*, determination P. van Rijn IPP).
   Length: 118mm; width (max.): 21mm.
3. (Fig.3) Find number 337. An iron spear point. The edge of the round socket is damaged. The spear point was found near the southern ditch.
   Length: 125mm; width: 19mm.
4. (Fig.4) Find number 206. A bronze nail. This type of nail may have been used to fit the suspender loops to a dagger sheath. The nails may have contained an inlay of niello (e.g. the reconstruction in Peterson 1992, 26).
   Lit: Gerhartl-Witteveen/Hubrecht 1990, fig.9–10; Deschler-Erb 1991, 15 (note 47 with parallels), 57, fig.6; Junkelmann 1986, Taf.38b, 53 and 56a; Deimel 1987, Taf.94,39.
   Length: 9mm; diameter: 7.5mm.
5. (Fig.5) Find number 209. A bronze nail. This naul is identical to No.4 and was found near it. They may have belonged to the same dagger sheath.
   Length: 9mm; diameter: 7.5mm.

Only one fragment of body armour was found:

6. (Fig.6) Find number 285. A bronze *lorica squamata* plate. This thin plate is bent. Not all of the holes have been preserved completely due to wear. It is noteworthy that the plate has eight holes, instead of the usual six; the extra two are at the top of the plate. This plate may have been part of the top row of plates of the body armour.
   Lit: Deschler-Erb 1991, 21 and 58–9, nr.21 (this plate is almost as long as the Velserbroek one, but wider. The date of the finds in the same context: 200–300, but Deschler-Erb decides on dates presented in literature: 15 BC–AD 300; on page 21 he assumes a first-century date); Robinson 1975, fig.160 and 437; *Westdeutsche Zeitschrift* 18, 1899, Taf.7, nr.10.
   Length: 26.5mm; width: 9.5mm.

One fragment of a shield was discovered:

7. (Fig.7) Find number 166. A fragment of a U-shaped bronze shield edge. This thin fragment is bent.
   Length: 76mm; width: 7mm.

Only five apron fittings from the *cingulum* were found:

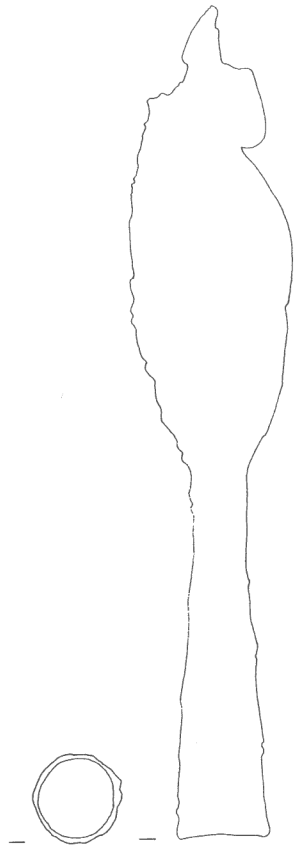
8. (Fig.8) Find number 251. A silvered bronze pendant. The point is broken off.
   Length: 25mm; 18.5mm; height: 1mm.
9. (Fig.9) Find number 265. A bronze apron fitting. On the reverse around the nail a concentric ridge with a diameter of 9.5mm appeared.
   Length: 4mm; diameter: 13mm.
10. (Fig.10) Find number 274. A bronze apron fitting. As 9.
    Length: 4.5mm; diameter: 18mm.
11. (Fig.11) Find number 299. A silvered bronze apron fitting. As 9.
    Length: 5.5mm; diameter: 18mm.

Five fragments of horse gear were excavated:

12. (Fig.12) Find number 234. Fragment of a bronze junction loop. The loop is broken off below the upper attachment. The nail has not survived. Above the attachment there are three horizontal lines; and on the D-shaped loop two vertical lines which extend to the sides, above the horizontal lines. The junction loop may have been silvered.
    Lit: Because the loop is broken the type is difficult to determine. Comparable are Bishop 1988 type 1d and 1j.
    Length: 27mm; width: 9mm; height: 15.5mm.
13. (Fig.13) Find number 321. Iron ring. The ring may have been part of a junction. It is heavily corroded.
    Length: 9mm; diameter: 35mm.
14. (Fig.14) Find number 300. A bronze strap-end. The top attachment is bent forward. On the reverse the nail still has its rivet. The second nail in the middle of the fitting is damaged, and here the rivet has not survived. Between the nails there is a vegetal motif, and below the nail, in the middle, there is a square with an X, and below that a knob.
    Lit: Bishop 1988, type 2b (Hofheim, Ritterling 1913, Taf.13,2 and 12; Risstissen, Ulbert 1959, Taf.62,9).
    Length: 64mm; width: 13mm; height (max): 10mm.
15. (Fig.15) Find number 703. A *Weissmetall* strap-end. The fitting consists of a large rectangular top part, which has a hole for a nail. Below the rectangular part there is a knob.
    Lit: Bishop 1988, type 8h (Augsburg-Oberhausen, Hübener 1973, Taf.9,21).
    Length: 42mm; width: 10mm; height: 5mm.
16. (Fig.16) Find number 424. Fragment of a *Weissmetall* strap-end.
    Length: 11.5mm; diameter: 7.5mm.

Other belt fittings:

17. (Fig.17) Find number 414. A silvered bronze fitting. It is heavily corroded.
    Length: 10mm; diameter: 18.5mm.
18. (Fig.18) Find number 496. A hollow bronze fitting. It has a hole in the middle and a decoration around the edge.
    Length: 4mm; diameter: 21mm.
19. (Fig.19) Find number 673. A thin silvered bronze



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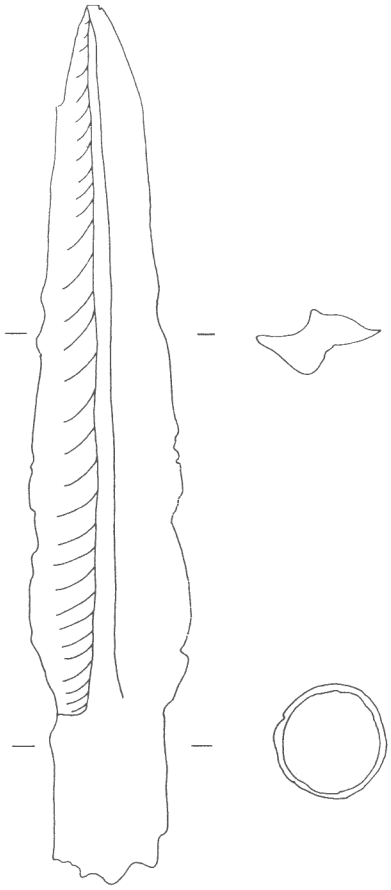

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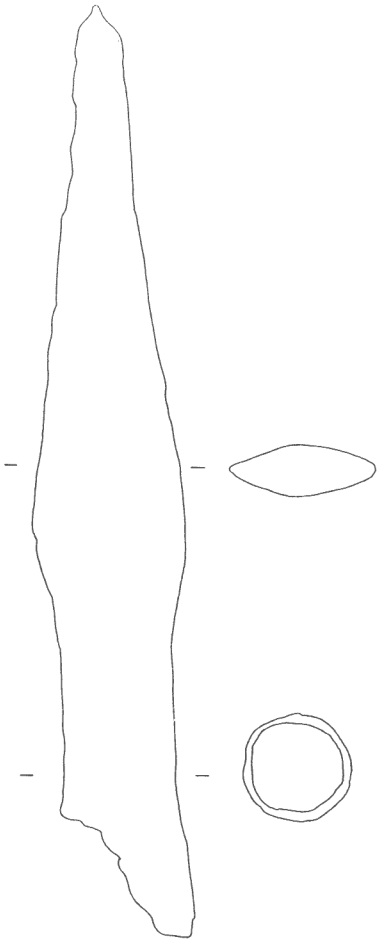

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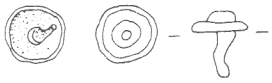

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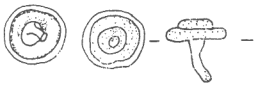

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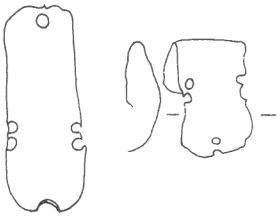

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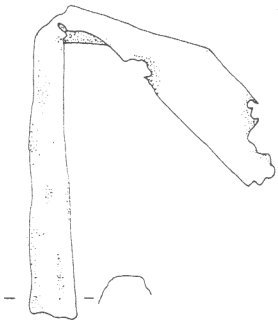

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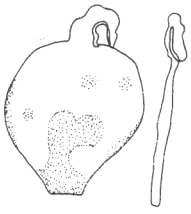

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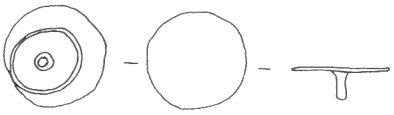

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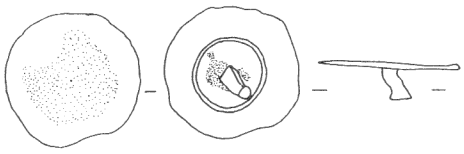
Figures 1–9: military equipment from Velserbroek B6.



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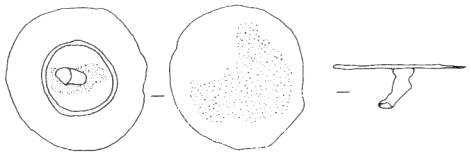

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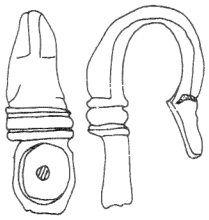

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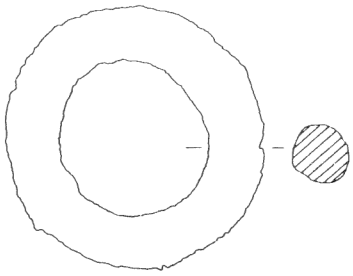

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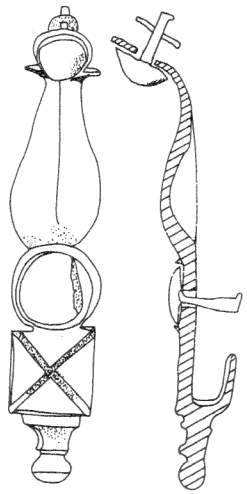

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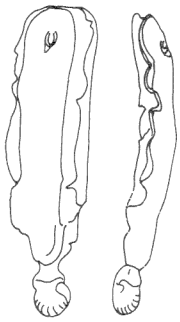

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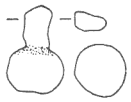

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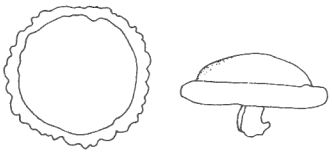

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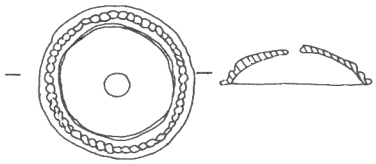

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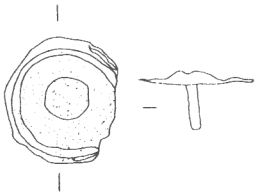

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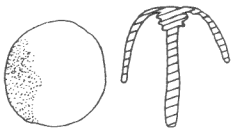

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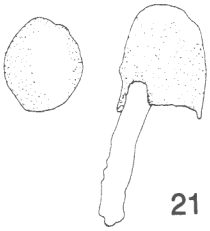

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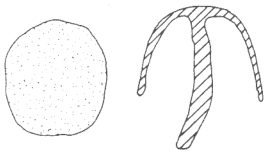

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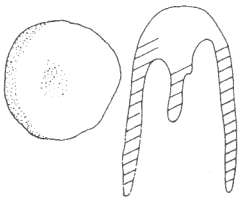

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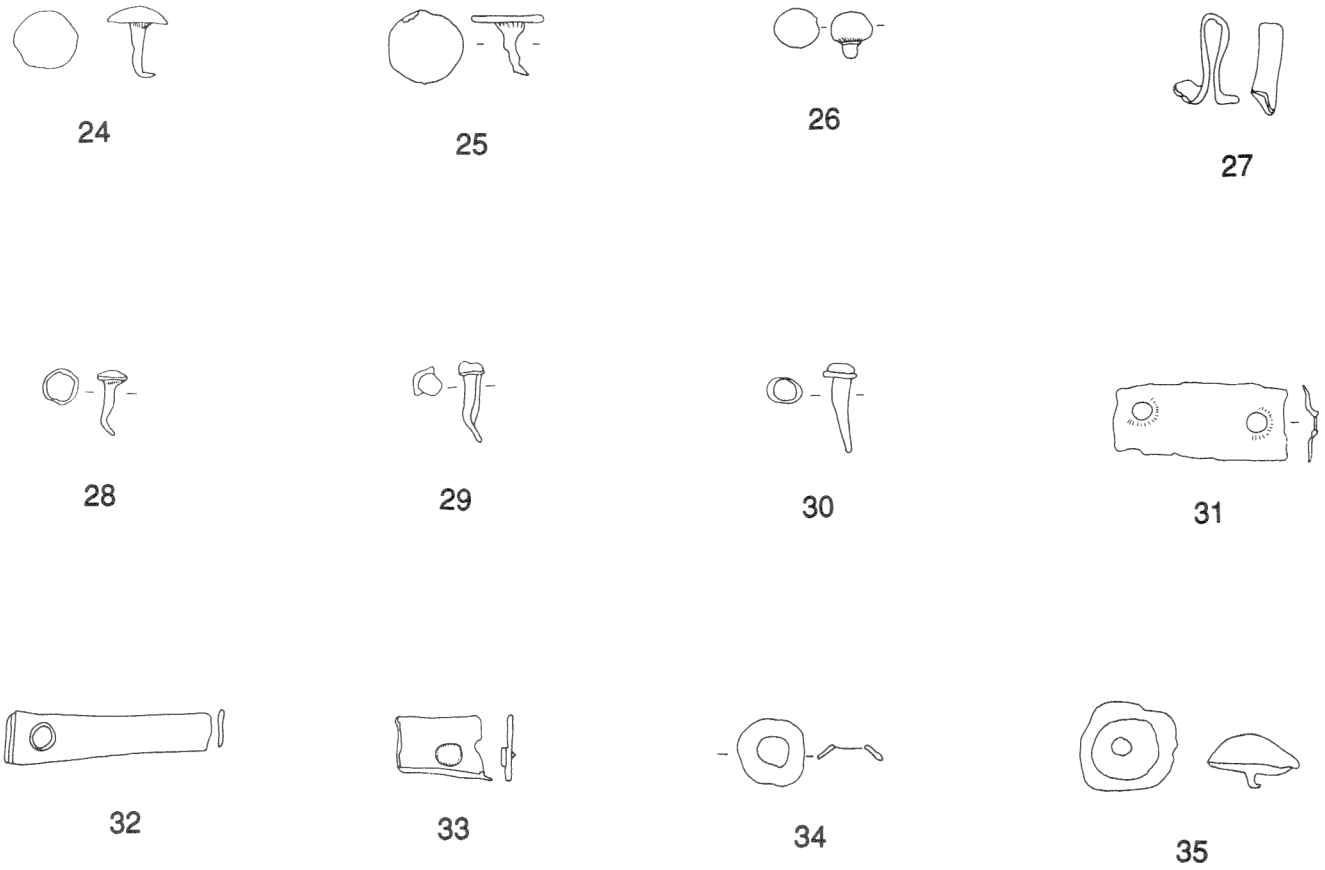
Figures 10–23: military equipment from Velserbroek B6.



Figures 24–35: military equipment from Velserbroek B6.

fitting. This may be interpreted as an apron fitting. It is decorated with concentric circles.
Length: 8mm; diameter: 16mm.

Four fittings are quite similar and could be interpreted as Germanic shield fittings. During the excavations in 1991 a similar object was found, although on this piece no silvering survived (Bosman 1992, Fig.9):

20. (Fig.20) Find number 135. A silvered bronze fitting. The bronze nail is soldered inside the hollow round head. The point of the shaft is blunt.
Length: 16mm; diameter: 14mm.
21. (Fig.21) Find number 148. A silvered bronze fitting. The relatively long bronze nail is soldered inside the hollow round head. The point appears to be blunt.
Length: 29mm; diameter: 12mm.
22. (Fig.22) Find number 221. A silvered bronze fitting. The bronze nail is soldered inside the hollow round head. Both the head and the nail are silvered. The point is blunt.
Length: 19mm; diameter: 14mm.
23. (Fig.23) Find number 455. A silvered bronze fitting. The nail has not survived.
Length: 25mm; diameter: 15mm.

There are a small number of 'scrap metal' finds, some of which may have been part of military equipment:

24. (Fig.24) Find number 305. A bronze nail with a round head and a blunt point. It is similar to the nails on strap-end No.13. The nail is bent.
Length: 9mm; diameter: 8mm.
25. (Fig.25) Find number 475. A bronze nail with a flat head and a blunt point.
Length: 8mm; diameter (max.): 10mm.
26. (Fig.26) Find number 437. A round *Weissmetall* nail head. The shaft is broken.
Length: 6mm; diameter: 6mm.
27. (Fig.27) Find number 224. A bronze split pin. Deimel 1987, Taf.93,12 shows a split pin with a ring.
Length: 11.5mm; width: 3.5mm.
28. (Fig.28) Find number 202. A small bronze nail.
Length: 8mm; diameter: 4mm.
29. (Fig.29) Find number 223. A small bronze nail.
Length: 10mm; diameter: 4mm.
30. (Fig.30) Find number 225. A small bronze nail.
Length: 12mm; diameter: 3.5mm.
31. (Fig.31) Find number 201. A rectangular bronze plate with two holes.
Length: 22mm; width: 10mm.
32. (Fig.32) Find number 260. A bronze plate with one hole. Above the hole two lines.
Length: 27.5mm; width (max.): 7mm.
33. (Fig.33) Find number 431. A rectangular bronze plate with a nail. On two sides the plate has been cut.
Length: 12.5mm; width: 8mm; height: 2mm.
34. (Fig.34) Find number 441. A bronze rivet.
Length: 0.5mm; diameter: 9mm.
35. (Fig.35) Find number 204. A silvered bronze fitting. It is heavily corroded.
Length: 7mm; diameter: 13mm.

One of the most remarkable finds is the *lorica squamata* plate. These plates do not appear among the military arte-

facts of Velsen 1 (AD 16–28), but they do occur at Velsen 2 (AD 40–50). No fragments of any other type of body armour occur in Velserbroek B6.

The apron fittings Nos.7–10 were found near to each other. They may have belonged to the same apron strap, in which case all of them may have been silvered. Silvering has survived only on Nos.7 and 10.

It has been suggested that silvered fittings such as Nos.18–21 are Germanic shield fittings. Of the finds from Velserbroek B6, only No.19 seems large enough to be used on a shield. The rest could only have been used on leather.

Of the nails Nos.23 and 27, 28 and 29, two similar pieces were found in 1991. These were not included in the first article (Bosman 1991).

Several coins were found, most of which can be dated in the period in which the Velsen fortresses were occupied. The exception is a denarius of Traianus (AD 102). Among the fibulae there are several examples which date from the second or third century AD.

We may conclude that Velserbroek B6 was an important religious site. In the western part of the excavated area some ditches in a field system were found. It is possible that a larger settlement area lay joining on to the religious area.

In 1993, and possibly 1994, the excavations will continue.

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ROMAN SCALE ARMOUR

John Clemetson

At present I am building up a catalogue of scale armour found in the province of Britannia which in due course I hope to compare with other provinces. So far I have about 46 types from 25 sites. The scales come in many shapes, sizes and hole patterns but four examples from Corbridge, Great Chesters and Caerleon (Fig.1) seem to belong to an entirely different and separate type of scale. The sizes vary but they are all small and have in common six holes in vertical pairs across the top, the pointed bottom and straight sides. The lower half of each scale is slightly domed and they are made of copper alloy.

It appears at present no record can be traced of where or when the Corbridge scales (Fig.1.1 and 2) were found. Excavations on the site began in 1906. However for the first Corbridge scale (Fig.1.1)[1] much information is available from an investiagtion by the Ancient Monuments Laboratory in 1953.[2] The analysis showed 2% tin and 13% zinc so the metal is brass. There was no trace of backing material but the original thread was found to be yarn or twine of bast fibre, probably flax but nettle fibre could not be ruled out. Because of corrosion, it was possible to deduce that viewed from the front, the scales in the horizontal rows overlapped the scale on the left by about a third. Vertically the scales overlapped so that the point rested halfway down the left hand edge of the scale below on the right. The scales' average length is 0.56 inches (14.2mm), width 0.39 inches (9.9mm) and thickness 0.01 inches (0.25mm). The angle at the bottom averages 110°. The lower half is slightly domed. The holes are 0.06 inches (1.5mm) approximately. The wire clips securing the outer pairs of holes to adjacent scales averaged 0.5 inches (12.7mm) in length before bending and were cut 0.03 inches (0.76mm) wide from sheet 0.02 inches (0.5mm) thick. It was estimated 14,000 scales would be required to

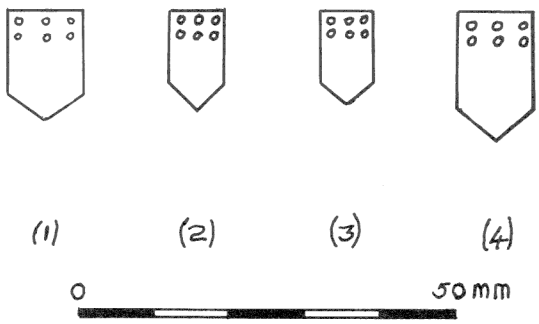

Fig.1 Scales from (1 and 2) Corbridge, (3) Great Chesters, and (4) Caerleon (Scale 1/1).

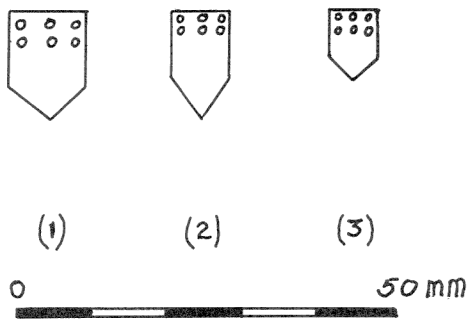

Fig.2 Scales from (1) Vindobona, (2) Carnuntum, and (3) Dura (Scale 1/1).

make a shirt and they would weigh 7¼ lbs (3.2kg). The report throws light on the method of manufacture. There was no evidence of annealing and the uniform thickness of the metal suggests the original sheet had been subject to some rolling process.

The second scale from Corbridge (Fig.1.2)[3] is one of twenty-five. It is 13.6mm long, 7.3mm wide and 0.25mm thick, otherwise they are similar to the scales previously described.

There are 276 scales from Great Chesters (Fig.1.3).[4] They are 12mm long, 7mm wide and approximately 0.25mm thick. The holes have a diameter of 1.3mm and the angle at the bottom varies between 90° and 110°. The wire clips are 1.0mm wide and 0.3mm thick. The scales were found in 1894 and the excavation reports are of no help in dating the find.[5] They were described at the time as 'small and beautifully worked plates of brass'[6] and most are domed on the lower half.

Three scales were found in the civilian settlement at Caerleon.[7] They are not in a very good state and the bottom appears rounded but I found signs that part of the lower edge was straight and I have restored the scales on this basis (Fig.1.4). The scales are 17mm long, 9.5mm wide and there is no sign of doming.

Scales with six holes in vertical pairs across the top, pointed bottom and straight sides are known from other places in the Roman Empire. Examples have been found at Vindobona, Carnuntum and Dura Europos (Fig.2). The single scale from Vindobona (Fig.2.1) is 14mm long and 10mm wide.[8] About 1200 scales were found at Carnuntum (Fig.2.2) in the gutter of the *via quintana*. They are 14mm long, 8mm wide and the thickness is stated to be 'slight'.[9] The photograph of the scales in the Carnuntum Museum appears to show they are domed in the lower hald.[10] Finally, at Dura Europos many such scales have been found, some with fabric backing. The scale illustrated (Fig.2.3)[11] is 9mm long, 6.5mm wide and 0.25mm thick.[12]

As previously stated, the Ancient Monuments Laboratory estimated 14,000 of the Corbridge type 1 scales would be required to make a shirt of the type normally depicted on monuments. From the reconstruction (Fig.3), it would take about 28,500 Great Chesters scales to make the same shirt while for Dura Europos 47,000 scales would be required (Fig.4).

At present it is not possible to give any close dating of the seven examples of small scales except it was in use at Dura Europos in AD 256. With the exception of Dura, what is known of these scales leaves an impression of loss and abandonment rather than positive military action. The same can also be said of other scales. These small scales cannot be identified with any particular type of troops and in this regard, it is not thought that monuments would be likely to assist because the fine pattern of such scales (Figs.3 and 4) could not be reproduced in stone, or even in paint.

These small scales with six holes in vertical pairs across the top, straight sides and pointed bottom were considered by von Groller to be children's armour.[13] According to Robinson, 'such small and delicate scales seem hardly suitable for use in war, butthey may have formed part of a lorica squamata for cavalry sports wear'.[14] While the scales may be delicate this does not necessarily mean that a shirt made from them would be unserviceable in war. It is noteworthy that there is nothing basically different in the construction of a shirt of these scales than with larger scales. The horizontal rows are fastened together with wire. It would certainly be lighter and more flexible than other armour. The horizontal overlapping means that two-thirds of each scale would be of double thickness and the vertical overlapping would add a third thickness, say 0.75mm of which the outer thickness would be domed. In addition, for example with the Great Chesters scales, about 28,500 wire clips 0.3mm thick would be spread throughout the garment. Would the combined layers withstand a sword cut? In war, a scale shirt would be worn in conjunction with helmet and shield which would offer primary protection.

While parade helmets and masks are proved, I would suggest there is no proof that armour was made specifically for parade purposes. Dividing scale armour into types by assumed function may reduce the pool of information available for interpreting individual finds.

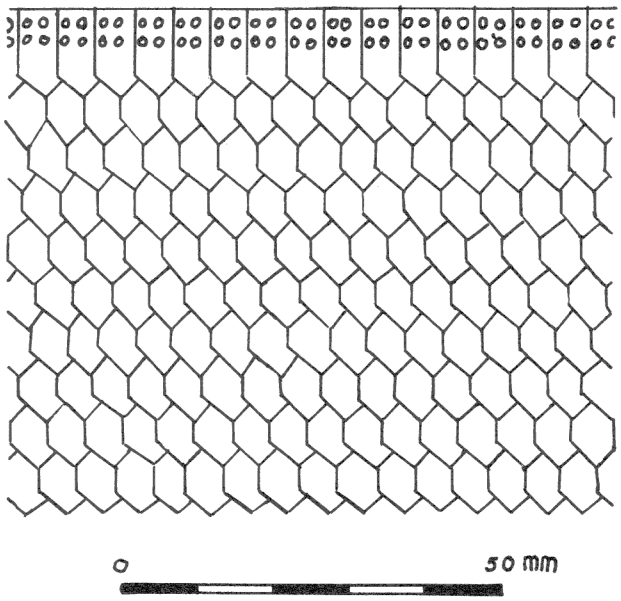

Fig.3 Reconstruction. Scale armour with Great Chesters scales.

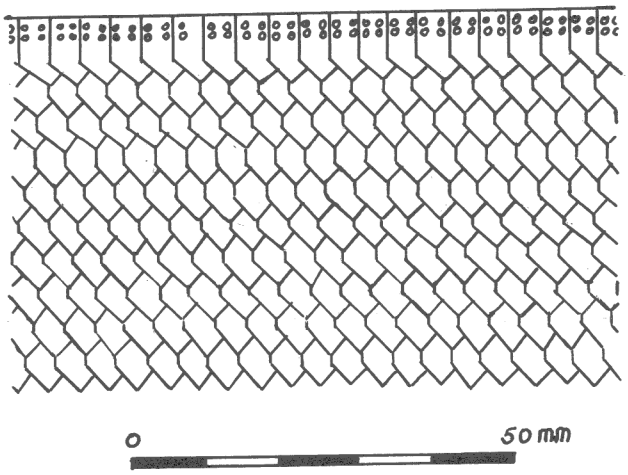

Fig.4 Reconstruction. Scale armour with Dura scales.

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REFLECTIONS ON THE *LORICA* ACCORDING TO THE *BELLUM IUDAICUM* OF JOSEPHUS

Mordechai Gichon

Few contemporary accounts of the Roman army in action have survived from after Caesar. Outstanding is the one of the Jewish War, written by Josephus Flavius. Josephus' special worth is in the fact that he was both a senior Jewish commander and later a privileged observer of the war from the Roman side, even before his release. Later, as trusted supporter of the Flavian cause, he had access to official military records of the Romans, besides commanding the facilities and means to query and interview, where necessary by letter, ancient combatants. Though in large circles on the Jewish side there may well have existed considerable reluctance to cooperate. In spite of this and an obvious subjective attitude in treating his facts, including wishful oversights and even falsifications, we possess in Josephus' *Bellum Iudaicum* a mine of information on details of various aspects of the Roman army of the second half of the 1st century C.E., from grand strategy down to minor tactics, the individual fighting men and their equipment.

Much ingenious thought has been given to the onerous and exacting task of correctly reconstructing the body armour of legionaries and all other categories of Roman soldiers, footmen and mounted troops. However, the factual impact of wearing armour on the mode and fighting on the qualities of the legionary and other similarly clad soldiers has not yet been sufficiently researched into. Here Josephus enables us to examine both the actual physical and tactical effects of encounters between the armoured Roman and a mostly unarmoured foe. This was the most common confrontation in external wars against the barbarians as well as in revolts within the boundaries of the Empire.

Another phenomenon to be examined with the aid of Josephus is the psychological effect on the Roman soldier of bearing armour in combat.

The episode I like to mention first is that of the attack of the tribune Placidus with a taskforce formed of infantry and cavalry (?) on the town of Jotapata, prior to its siege (*BI* III, 110–14†). His hope for a surprise was deceived, and on the contrary, the Jewish guerillas succeeded in ambushing him. Yet, in spite of the latter's success 'they killed no more than seven, because the Romans retired in good order, and their bodies were completely protected, received only superficial wounds, while the Jewish assailants, lightly equipped and opposed to heavy armed regulars, kept their distance and did not venture to come to close quarters with them' (*ibid*, 113).

Not only did the armour provide protection against the Jewish weapons and thus the Romans were able to extract themselves from an otherwise fatal situation with slight casualties only, but Josephus explicitly mentions that in the knowledge of the near invulnerability of the Roman soldiers on top of their superior offensive armament, the Jews were reluctant to close in, and therefore hung back. Since Josephus, who had no love and sympathy to spare for the Galileans, did in spite of that, reluctantly it seems, pays tribute several times to their personal bravery, we have here

rather a case of 'once burned, twice shy'. These zealots were the same that had faced the legate of the XIIth legion Caesennius Gallus with his taskforce on Mount Asamon, and, after intial success, had been severely mauled and beaten – since 'being lightly armed, they could not sustain the charge of the heavily armed legionaries. Their casualties amounted to two thousand' (*BI* II, 510–12).

The expression 'heavily armed' alluded of course to the whole of the armament, defensive as well as offensive. The effect of the former, exclusive even of the shield, in providing protection and consequently a feeling of security as well as additional physical push (of which more below) is being stressed in these pages.

The extent of protection afforded by the body armour is very plastically demonstrated by Josephus' narrative of the feats of the *centurio* Iulianus (*BI* VI, 81–8), who slipped in his *caligae*, while pursuing single-handed a number of Jews over the smoothly paved Temple court in Jerusalem. Having fallen 'on his back with a loud clash of armour..., the Jews crowding around him struck at him from all sides with swords and spears. Many heavy blows he stopped with his shield, time after time he tried to stand up, but was knocked down by the mass of assailants. Even then as he lay, he stabbed many with his sword, for he could not be finished off easily, as he was protected in every vital part by helmet and cuirass and drew in his neck. Only after all his limbs were slashed and nobody dared to come to his aid, he ceased to struggle' (*ibid*, 88).

Far be it from the writer of these lines to belittle the valour of the armour-clad Roman fighting man vis-a-vis armour-bearing and non armour-bearing foe alike. Yet, there is no denying the message brought home to the spectators of even this calamitously ending combat, that the chances of survival in armour were great. Had Iulianus not slipped, the outcome of this contest would have been quite different.

We have proof that the Romans were fully conscious of these facts. During the final phases of Vespasian's campaign in Galilee in autumn 67 C.E., the Roman advance guard, commanded by Titus, hung back when confronted at Tarichaea with superior Jewish forces. One of the main arguments in Titus' harangue, aimed at rekindling the flagging spirits of his troops, was as follows: 'Consider again that you will contest in full armour against men that have scarcely any [my emphasis], that you are cavalry against infantry, that you have true commanding officers and that they have none. These advantages greatly multiply your effective strength as the enemy's disadvantages greatly detract from his' (*BI* III, 477).

The relative security given to him by his armour consciously and unconsciously could not but afford the Roman soldier with an extra ounce of dash and daring. Evaluating the deeds such as those of the trooper Longinus, fighting on foot before the walls of Jerusalem – to be fair, one must always remember the lack of enemy among his enemies: leaping out from the Roman line, Longinus broke into that of the Jews 'by his charge, he slew two of their bravest, piercing one in front as he advanced to meet him, and transfixing the other through the side, as he returned to flee' (*BI* V, 311–17).

In a similar attempt by a non armour-clad soldier, very superior skill in fencing for a considerable time and much luck were needed to bring the trained *miles* to expose the few vulnerable zones of his body sufficiently to be seriously wounded.

As a matter of fact, Josephus mentions, not only in connection with Placidus' coup-de-main against Jotapata but in the siege of Jerusalem too, how in close combat, the wounds suffered by the Romans were rather less frequently severe. For instance, commenting on a successful Jewish sortie towards a main Roman siege camp, he has this to say: '...The Jews grappled with any whom they met, and all unguardedly [i.e. with unprotected bodies], flinging themselves bodily upon the spearpoints, struck at their antagonists. But their superiority lay less in their deeds than in daring, and the Romans yielded rather to intrepidity than to injuries received' (*BI* V, 484–5).

The uselessness of the light weapons of the Jewish guerrillas and their sling shot (?) stones against the Roman armour in close combat is evident also from Josephus' description of the naval encounter on the Sea of Galilee. The Jews manned small skiffs, mainly fishing boats, and tried to attack and board the Roman rafts. '...Their skiffs... were no match for the rafts... with the dense ranks of their Roman assailants. However, they hovered around the rafts occasionally, even approaching them, now attacking them at close range... their stones produced nothing but a continuous rattle in striking men well protected by armour, while they themselves were exposed to the arrows of the Romans' (*BI* III, 521–2).

Polybios' comparison between phalanx and legion (XVIII, 11–15) does not allude to the merits of the respective body armours, which, in his time, may still have had much in common. However, in the first century A.D., Roman armour and shields had achieved that nearly perfect balance of adequate protection in close combat and of sufficient lightness of weight, to permit swift movement and free use of weapons. These conditions enhanced the capabilities of the Roman fighting men throughout combat as explained in these pages. One further aspect needs stressing, though it is not directly mentioned in the narrative of the *Bellum Iudaicum*: the additional thrust and shock provided in assault by wearing mail.

Much discussion has taken place throughout the ages and under changing tactical conditions about the relative merits of the charge by troops protected or unprotected by armour, in deep columns or echeloned lines. There is however no doubt that in its day, the Roman impetus (charge) was accorded added drive and thrust to break the hostile array by the very force and pressure exercised by a disciplined body of mailed men, attacking in close formation. The exercise and effort of this pressure was of course greatly enhanced by the above mentioned sense of security afforded to the wearer of mail.

The lack of direct evidence in the *Bellum Iudaicum* may be explained by the absence of large-scale set battles and the adoption of guerrilla tactics by the Jews when fighting in open country. Yet even so, one must add also this additional impact of wearing armour to most of the successful Roman charges and counter-attacks related, such as *BI* IV, 424; V, 81, 311, 486–8; VI, 19; etc.

At least one much used and successfully tried Roman manoeuvre would have been considerably less effective and often useless without body armour: the *testudo*. The versatility of the *testudo*, but also its dependence on body armour, is

apparent from Vespasian's adventures during the first penetration into the fortress of Gamala, on the Golan heights (*BI* IV, 31–6). The Roman commander got entangled deep into the built-up space of that town, at the head of the break-in force and cut off from all other Roman troops around the breach, with an overwhelming number of defenders pressing upon him all around. Vespasian's answer was the *testudo*, i.e. the creation of a roof and all-round wall of shields for his small band, thus guarding against stones and missiles cast upon them from above, and meanwhile slowly retreating towards the breach: 'he, like one inspired, linked his comrades together with shields enveloping both body and armour, and stemmed the tide of war that streamed upon him from above, and so... he stood his ground... (and) retreated step by step... until he was outside the walls' (*ibid*, 34–5). While his manoeuvre necessitated constant shielding of the heads by the inner ranks against hits from above, the shields of the outer ranks had to be handled flexibly, both as a means of thrust and guard, so as to permit efficient use of the *gladius*, *pugio*, *pilum*, *hasta* and the like. Evidently, in a melee like that, with a more numerous enemy espying from all around any chance to thrust and hit, only the additional protection provided by the armour assured the success of the *testudo* in extricating the stranded troop.

Under special conditions, body armour could of course turn into a disadvantage. Caught in deep ravines and precipitous mountain passes as in Castius' march to Jerusalem and retreat from there, the armour impeded the Roman soldier as it had done in the *saltus Teutoburgiensis*. Worse was the pouring of boiling oil at Jotapata against an attempted scaling of the breach. The scalding liquid 'instantaneously penetrated beneath their [the Roman's] armour from head to foot.... Encumbered with their cuirasses and helmets, the victims had no escape from the scalding fluid...'. Yet, these disadvantages arose only on infrequent occasions and could, to a large extent, be avoided.

In summing up, one should not go as far as did Vegetius, who considered the abandonment of armour as one of the main causes for the decline of Rome's military might. His dictum 'troops without armour and exposed to all the weapons of the enemy are more imposed to flee than to fight' (Veget. I, 20, p.22, 10‡) is certainly too sweeping, what with the stubborn and often offensive fighting put up again and again by the non armour-bearing Jews during the *Bellum Iudaicum* – to give only one example.

Yet Vegetius was correct in posing the question 'with what propriety could the ancients call the infantry a wall, had in some measure they not resembled it by the complete armour of the legionaries' (*ibid*, p.23, 7–8).

In its time, Roman body armour including the helmet and augmented by the infantry, respectively cavalry shields, was an important asset in providing the individual and the unit the best possible preconditions for successful and even risky combat.

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