The background of the cover is a detailed illustration of various pieces of Roman lorica segmentata armor. These include several helmets (crests and cheekpieces) and individual plates of the cuirass, arranged in a layered, overlapping fashion. The color palette is dominated by shades of blue, purple, and brown, giving it a historical and scholarly appearance.

JOURNAL OF ROMAN  
MILITARY EQUIPMENT  
STUDIES

# LORICA SEGMENTATA

**Vol. I**

**A Handbook of Articulated Roman  
Plate Armour**

**M.C. Bishop**

*JRMES* Monograph No.1

THE ARMATVRA PRESS

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***Lorica Segmentata***  
**Volume I: A Handbook of**  
**Articulated Roman Plate Armour**

M.C. Bishop



*JRMES* Monograph 1

THE ARMATVRA PRESS

For Peter Connolly,  
who cajoled, inspired, and nagged over many years  
(I hope he thinks it was worth it)

Argiletanas mavis habitare tabernas,  
cum tibi, parve liber, scrinia nostra vacent  
Martialis *Epigrams* I,3

***Lorica Segmentata***  
**Volume I: A Handbook of**  
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*JRMES* Monograph 1

THE ARMATVRA PRESS

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# Preface

This monograph is about Roman segmental armour. I have thought about writing it for a number of years (the germ of the idea may even have been sown the day I first marvelled at H. Russell Robinson's momentous *The Armour of Imperial Rome* in 1975), but it is only comparatively recently that (failing to avoid a pun) all the pieces have begun to fall into place: I have seen all the major finds and important new discoveries have been made that have started to cast light into previously shadowy corners.

There will be a second volume, by Dr M.D. Thomas, which will include detailed lists and illustrations of the published archaeological finds of *lorica segmentata* and it is very much a companion to the present volume, although each may be used independently of the other. For this reason, bibliographic references are given for finds mentioned in the text in case the reader does not have Volume 2 to hand. In drawing artefacts, I have attempted to depict fittings at 1:1 (since they are so rarely shown at full size in older archaeological reports) and larger sections of plates at 1:2 for the sake of consistency and to allow comparison.

A companion website ([www.loricasegmentata.org](http://www.loricasegmentata.org)) provides additional material, including animations, 3D digital models, and full-size patterns, which is beyond the limited capabilities of the present cellulose-based medium. Likewise, whilst colour printing is expensive, colour images on the web are not, so more colour illustrations can be found on the website.

This book is by no means the last word on *lorica segmentata*: in fact, it could equally be taken as a statement of how little we know about the subject, as it could how much we have found out. Thus it is perhaps both an attempt at an overview of how far we have come since the publication of Robinson's book more than 25 years ago, and a perspective on how much further we still have to go.

Lastly, whilst many see writing a book as an end in itself, there is something special (perhaps even self-indulgent) in writing, illustrating, designing, and publishing a volume on a subject close to one's heart. It is perhaps fitting that my interest in publication design was first tweaked by *The Armour of Imperial Rome*. Here, then, is a book about *lorica segmentata*.

*M.C. Bishop*  
*Chirnside April 2002*



# Acknowledgements

A work of this nature inevitably draws upon the kindnesses of many people in its preparation, and thinking of – and thanking – these provides a special sort of satisfaction to the writer.

Lindsay Allason-Jones and I spent much time discussing the Corbridge material whilst preparing our monograph on the Hoard and it goes without saying that I am highly appreciative of her contributions to our joint work. She and Georgina Plowright always allowed me generous access to the material from the Hoard held in the Museum of Antiquities at Newcastle upon Tyne and at Corbridge Roman site museum. The late Charles Daniels provided reminiscences, photographs, sketches, and even the original cardboard mockups used by him and Russell Robinson in the reconstruction process.

At the National Museums of Scotland, Fraser Hunter has been most helpful with access to, and information about, the Newstead cuirass and armguard fragments, whilst the enthusiasm of Walter Elliot, Donald Gordon, and all the other members of the Trimontium Trust reminds me why it is so much fun to delve into the nooks and crannies of the Roman army's toy cupboard.

Jenny Hall of the Museum of London allowed me to examine the Bank of England breast-plate (and has arranged for me to see every piece of military equipment known from Roman London... but that is another story), whilst the late Martin Howe of Peterborough City Museum enabled me to study the Longthorpe armour fragments at my leisure. Dan Robinson of the Grosvenor Museum in Chester helped untangle the history of the Chester legionary model and Chester City Council Grosvenor Museum were good enough to permit me to reproduce an image of that same soldier figure.

Mrs Margaret Robinson kindly gave me permission to use some of her late husband's illustrations, and both she and Miriam Daniels were kind enough to allow me to use the photographs of the early attempt at reconstruction of the Corbridge type cuirass.

Prof Thomas Fischer first told me about, and sent photographs of, the Eining cuirass, whilst Dr Christof Flügel, and later Dr Bernd Steidl, of the Archäologische Staatssammlung (formerly the Prähistorische Staatssammlung) at München permitted me full access to it and generously provided further photographs. Dr Egon Schallmayer similarly made it possible for me to study the Zugmantel fragments and this and the München expedition were generously funded by the Gunning Jubilee Gift of the Society of Antiquaries of Scotland.

I am particularly grateful to Dr Ernst Künzl and Sebastian Keil of the Römisch-Germanisch Zentralmuseum Mainz for the opportunity to examine the Stillfried cuirass fragments whilst they were being conserved.

In Osnabrück, Dr Günther Moosbauer was most helpful in arranging for me to see the Kalkriese *segmentata* pieces and Dr Wolfgang Schlüter very kindly allowed access to the material outside normal museum hours.

Many re-enactors have also helped me during my studies of *lorica segmentata*. To those – like Matthew Amt and Sean Richards, Dan Peterson, and the indomitable Chris Haines – who have provided detailed accounts of their experiences working with and using replica armour, down to the humble foot soldiers (the PBI) who have patiently (often bemusedly) posed to allow me to photograph details, I must say a hearty 'thank you'. Michael Simkins kindly allowed me

to use his photograph of his reconstruction of the Arlon mail cuirass with segmental shoulderguards and provided details of the evidence and techniques he used for it.

Mike Thomas has been a constant source of inspiration, fascinating facts, and obscure references (which I have always tried to counter with my own, equally obscure). Thom Richardson of the Royal Armouries at Leeds has participated in extremely useful discussions on the recent Carlisle find and helped me with details relating to this important discovery and provided invaluable advice on medieval armour, as well as a deeply instructive tour of the Royal Armouries in Leeds; he has also been good enough to read through a preliminary draft of the text. I owe a debt of thanks to Thom and to the Royal Armouries for permission to reproduce Fig.8.3 from the *Royal Armouries Yearbook* 6 (2001). I am also grateful to Mike McCarthy, formerly of Carlisle Archaeology, for drawing the Carlisle material to my attention and allowing me to examine it.

My friend and colleague Dr Jon Coulston has invested much time and effort enduring my interrogations on the subject of the iconographic evidence, especially Trajan's Column (about which he has an unparalleled knowledge), contributed generously from his vast photographic archive, and provided a particularly noteworthy discussion on the origins of segmental armour whilst driving through northern Germany. He too has, for his sins, read (and commented widely upon!) a preliminary draft of this book.

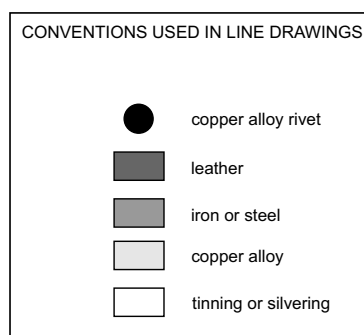
A special debt of thanks is owed to Peter Connolly. Not only has he been a persistent driving force behind this monograph and allowed me to use some of his illustrations, but he has frequently provided invaluable information about his friend Russell Robinson's involvement in the understanding and reconstruction of *lorica segmentata*. Most importantly, he has been an unwitting inspiration: there is no more eloquent an advocate of the importance of Robinson's work.

Finally, my wife Martha Andrews and my children, Oliver and Christabel, have shown great patience in living, breathing, and tripping over *Lorica Segmentata* for far too long. For some reason which defies logic, Martha nevertheless also read the final draft of the book for me.

I apologise to any I have overlooked and caution, as I always do, that whilst all of the above have helped me in the preparation of this volume, I must accept sole responsibility for all horrors, howlers, and ill-conceived notions that may lurk within. You have been warned.

## Note

Sites from many countries are discussed in the text and, in order to avoid constant repetition, information about the country of origin of any given site is given in the index entry as an ISO 3166 abbreviation.



# Chapter 1: Introduction

## NAMING THE PARTS

Few images are more redolent of Roman military might than the sight of legionary troops clad in body armour made of strips of mild steel plate. Known nowadays by the term *lorica segmentata*,<sup>1</sup> the name – which is not Roman in origin – seems first to have been used at the end of the 16th century, when scholarly interest in Roman arms and equipment began to make its way into print. Since academic works at that time tended to be written in Latin, the lingua franca of European scholars, the term was invented by writers to describe this unusual type of armour. It can be seen being used by a native of the Netherlands, Just Lips (better known by the Latinised form of his name, Justus Lipsius) in his 1596 work *de Militia Romana* in a way that implied that the term had been in use for some time (there is no indication that Lipsius actually invented it).<sup>2</sup>

The Roman name was for this type of armour is not known. *Lorica* ('body armour' or 'cuirass') is obvious, but the qualifying epithet has not survived.<sup>3</sup> A reasoned guess has been made at *lorica lam(m)inata*,<sup>4</sup> based on the use of *lamina* to describe a sheet of metal. There is at least one instance of the use of the word *lam(i)nae* in a military context, in Berlin papyrus inv. 6765 (which appears to be a report from a legionary *fabrica*, probably that of *legio II Traiana Fortis*).<sup>5</sup> In that, we find reference to *lam(i)nae levisatares*, possibly to be interpreted as 'light plates'. Unfortunately, there is no reason why this term needs to be associated with the segmental cuirass in this particular context.

Tacitus, when describing the armour worn by Sarmatian horsemen of the Rhoxolani, invading the Roman empire along the Danube frontier in AD 68, talks of them being '*tegimen ferreis laminis aut praeduro corio consertum*',<sup>6</sup> or 'completely covered with iron plates or toughened leather' (see below, Chapter 3). In a familiar rhetorical device, Tacitus sought to contrast their unwieldy armour with the much more flexible cuirasses of the Romans. Again, when describing the gladiators called *crupellarii* who, completely encased in iron,<sup>7</sup> participated in the revolt of Florus and Sacrovir in AD 21, he says they were equipped with '*restantibus lamminis adversum pila et gladios*'.<sup>8</sup> In the end, little reliance can be placed upon so fickle a writer as Tacitus and there is no guarantee that, when he talks of *laminae*, he might not in fact have meant scale armour. Indeed, in his *Origines*, the 6th century lexicographer, Isidore of Seville, defines scale armour using precisely this word: '*squama est lorica ferrea ex laminis ferreis aut aeneis concatenata*'.<sup>9</sup> More-

over, Tacitus' account, whether rightly or wrongly, inevitably brings to mind the images of scale-clad Sarmatian cavalry depicted on Scenes XXXI and XXXVII of Trajan's Column<sup>10</sup>. Nevertheless, the segmental armour depicted on the pedestal reliefs of Trajan's Column might be captured Dacian equipment, possibly even Sarmatian (see below, Chapter 3), in which case Tacitus' account would gain a little more plausibility.<sup>11</sup>

Inevitably, it has to be conceded that there is insufficient evidence to allow any firm conclusion on the original Roman name for this type of armour to be reached. It is not beyond the bounds of possibility that discoveries of new sub-literary texts, like the writing tablets from *Vindolanda* or Carlisle (England),<sup>12</sup> may eventually provide more information, but until such time arrives, we are forced to retain the Renaissance coinage of *lorica segmentata*.

A final pedantic question concerns the best way to commit the phrase to print. Since *lorica hamata* and *lorica squamata* are genuine Latin terms that were in ancient use, it is tempting to mark the early modern formulation of '*lorica segmentata*' thus with quotation marks.<sup>13</sup> An alternative approach might be to write of *lorica segmentata*, marking its difference (and its lack of ancient authenticity) by *not* italicising it. In the end, however, too many quotation marks become obtrusive on the printed page and editorial niceties of this nature seem unimportant beside the bigger questions tackled here. So it remains *lorica segmentata* with the proviso that the reader is aware of the problems attached to the name.

## WHAT IS LORICA SEGMENTATA?

The type of armour that has become known as *lorica segmentata* was an articulated cuirass – in other words, its component parts moved in relation to each other to allow greater flexibility than was possible with a rigid form of body armour (such as a muscled cuirass). In fact, most of the body armour used by the Roman army was articulated to some extent, insofar as the majority of cuirasses were of mail, scale, or segmental armour.

Also known in recent times as laminated or segmental armour, *lorica segmentata* was modular and consisted of four principal elements or units: one for each shoulder, and one for each side of the torso. Each of these four sections was made of overlapping curved strips of ferrous plate riveted to leather straps (known

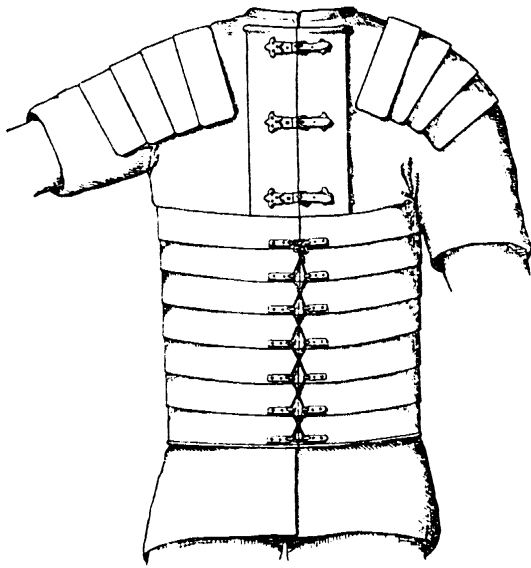


Fig.1.1 Von Groller's reconstruction of lorica segmentata based on Trajan's Column

as 'leathers'), permitting a considerable amount of movement between neighbouring plates (Plate 3). The same technology, although in a less complex form, was used for ancient articulated limb armour and re-invented in the medieval period.

## PAST WORK

It was not until the end of the 19th/beginning of the 20th century that scholars made any serious attempt to understand segmental armour, fuelled by the new archaeological studies of the second half of the 19th century. A first wave of finds (*Carnuntum*, Newstead, Zugmantel, and Eining) did not lead to the immediate solution of the problem and it took more than half a century and the discovery of the Corbridge Hoard (England) for a better understanding of *lorica segmentata* to develop, independent of the somewhat unsatisfactory iconographic record. As knowledge of this type of armour has improved, so its accepted earliest use has been pushed ever earlier in the imperial period.

## Oberst Max von Groller-Mildensee

Von Groller was one of the leading excavators of the legionary base of *Carnuntum* at Bad Deutsch-Altenburg (Austria). In the summer of 1899, he was directing the excavation of a building behind the west rampart. This structure (Building VI), which became known as the *Waffenmagazin*, contained a sizeable deposit of weaponry, apparently originally stored on shelving, divided by type over several partially subterranean rooms.<sup>14</sup>

Amongst this material (excavated 1899, published 1901),<sup>15</sup> von Groller was able to recognise 302 fragments of segmental armour and a small amount of this was duly illustrated in the publication, together with his thoughts on the likely reconstruction of this type of armour.<sup>16</sup> It is not now possible to know the condition of the material he found, but it seems likely that it was not as well-preserved as the later Corbridge Hoard, since von Groller went on to make some crucial mistakes that would not be put right until the Corbridge find was analysed.

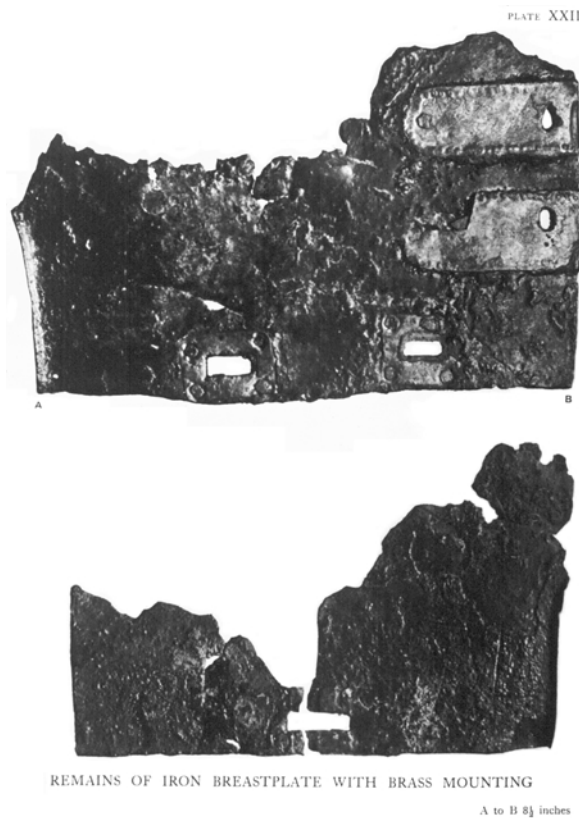
Interpreting the *Carnuntum* finds in the light of reliefs showing segmental body armour on Trajan's Column (see below, Chapter 2),<sup>17</sup> von Groller decided the armour must have been articulated on a short-sleeved leather garment (Fig.1.1). It is therefore clear that he recognised that the cuirass was articulated on leather, but mistook the remains of the internal straps (or 'leathers') for fragments of a garment. In doing so, it is unlikely that he was influenced by the design of medieval coats of plates (and *lorica segmentata* in fact more closely resembles later medieval plate armour).<sup>18</sup> He also used the Column as a guide for selecting the positions of the various fittings that were attached to the cuirass. In both cases he was making assumptions about the accuracy of the Column that would not now find much support, although contemporary scholarship gave him little reason to doubt the interpretation.

Von Groller's use of Trajan's Column to interpret the *Carnuntum* find in this way was to influence Roman armour studies for many years to come, and even H. Russell Robinson's early attempts to understand segmental armour (see below) were to be affected by this particular methodology.

Could the *Carnuntum* material have allowed von Groller to pre-empt Robinson in reconstructing segmental body armour? It seems doubtful: the limited evidence we have suggests the find was not in as good a condition as the Corbridge material (see below, Appendix A) and, crucially, he was no expert on medieval armour (whilst Robinson was). Moreover, his reliance upon the reliefs of Trajan's Column – a flawed source, as we shall see – ensured that he would not succeed. Thus the misinterpretation of the *Waffenmagazin* armour was probably inevitable. Its significance, in terms of the transition from the Corbridge to Newstead types, went unnoticed.

## James Curle

Curle was the polymathic excavator of the fort at Newstead (Scotland), where work was undertaken soon after that of von Groller, whose excavations in the *Waffenmagazin* were well known. Curle's discovery of the remains of a significant portion of a



*Fig.1.2 Curle's orientation of the largest Newstead lorica segmentata plates. Photo courtesy NMS*

segmental cuirass in a well in the headquarters building at Newstead (excavated 1905, published 1911) was certainly important.<sup>19</sup> However, his interpretation was inevitably based on von Groller's flawed reconstruction of the *Carnuntum* material.

So it was that Curle viewed what are now recognised as the back- and breastplates of a cuirass as having fitted at right-angles to their true position. He thought the rectangular slots belonged on the lower edge and served for attaching the girth hoops by means of straps,<sup>20</sup> and he duly published the main pieces in that orientation (Fig.1.2).

With the benefit of hindsight, it is easy to forget that nobody was then aware that there might be various types of segmental armour. It was not until Robinson had begun to understand the armour in the Corbridge Hoard that he was able to see that a separate Newstead type had existed.

As with von Groller, none of this can be viewed as having been the fault of Curle – the evidence available was just too flimsy to allow any interpretation other than that proposed by von Groller.

Curle was also fortunate enough to excavate fragments of a segmental armguard, although he failed to understand the significance of the find, or compare it with the examples von Groller had noted from the

*Waffenmagazin*. He thought it was a type of scale armour, noting that the curvature of its plates may have fitted the shoulders and arms.<sup>21</sup>

## Couissin

In his *Les Armes Romaines* (published 1926), Paul Couissin interpreted the segmental cuirass purely from the monumental evidence<sup>22</sup> and went on to suggest its evolution in exactly the same way.<sup>23</sup> Although he was aware of the material excavated at *Carnuntum* by von Groller, he merely saw this as confirming his views. His approach typified the uncritical acceptance of metropolitan propaganda sculpture that is still occasionally found today, despite Robinson's warnings about its reliability.<sup>24</sup>

## Alfs

Alfs' paper on the use of articulated cuirasses in the Roman army (published 1941)<sup>25</sup> might arguably be regarded as a low point in 20th century studies of *lorica segmentata*. Dealing with the other forms of armour used by the army, his section on segmental armour – like Couissin before him – laid heavy emphasis on the iconographic evidence at the expense of archaeology, even to the extent that he tried to interpret the fittings and fastenings used from Trajan's Column (Fig.1.3), with little more than passing reference to the excavated examples from *Carnuntum*, Zugmantel, and Newstead.<sup>26</sup> The extent of his preference for the iconographic evidence is even apparent from the crude measure of size: nine-and-a-half pages on sculpture, compared to just one page on the archaeological material.

Rather bizarrely, Alfs had brought the pre-eminence of the Column in segmental armour studies to a point where it was virtually possible to discard the hard archaeological evidence in favour of what, by any measure, was a very subjective medium.

## Graham Webster

After a long sterile period, when little new was published on the subject of *lorica segmentata* after Alfs' paper, an important article by Graham Webster<sup>27</sup> about a breastplate in the then Guildhall Museum in London, found on the site of the Bank of England (excavated 1936, published 1960), was the first step in remedying the situation.

This work inspired a new wave of scholarship that was ultimately to lead to the solution of the riddle of segmental body armour.

Webster followed von Groller and interpreted the London piece as having lain horizontally at the back of

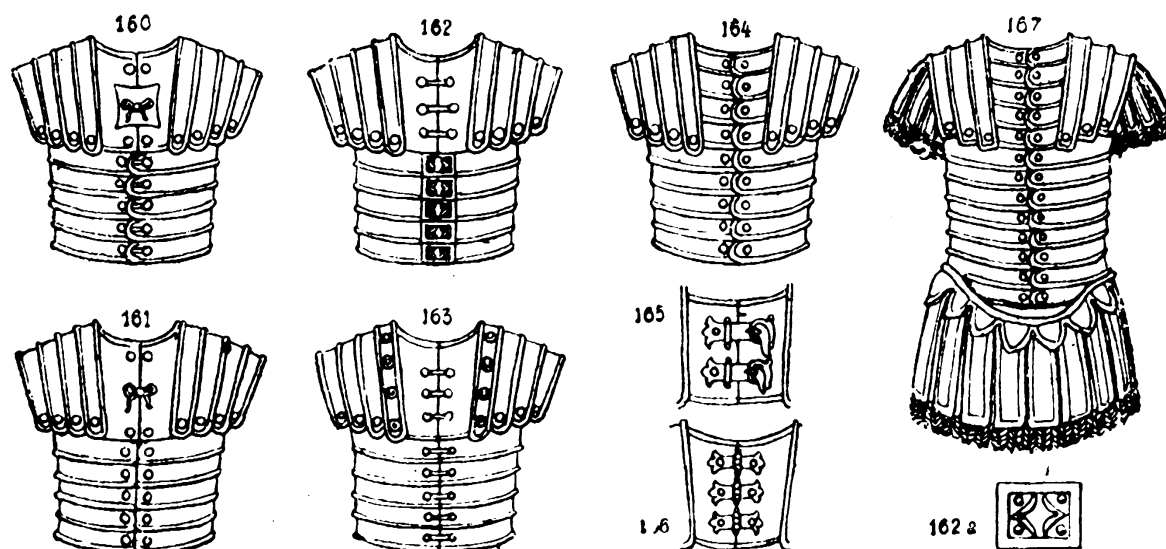


Fig. 1.3 Couissin's diagram illustrating the types of fittings shown on Trajan's Column

the cuirass. However, significantly, he admitted that less emphasis needed to be put on Trajan's Column and more on the archaeological finds.

### H. Russell Robinson

Robinson is first mentioned in connection with Roman segmental armour in an acknowledgement in Webster's publication of the Bank of England plate,<sup>28</sup> but by then the former had been working on it for a while. His association with Webster led him on to producing the reconstruction soldier (complete with *lorica segmentata*) for the new Newstead Gallery<sup>29</sup> of the Grosvenor Museum in Chester (where Graham Webster was curator from 1949) (Fig. 1.5). This was opened in 1953 and the reconstruction utilised the Newstead backplate as a model for the breastplates (albeit in the correct orientation, unlike Curle). The shoulderguards were still influenced by Trajan's Column (complete with rivets near their rounded ends) and the girth hoops were fastened by buckles. A slightly modified version of this reconstruction of the cuirass was illustrated in the first edition of Graham Webster's seminal *Roman Imperial Army*<sup>30</sup> as a line drawing by Robinson (Fig. 1.4).

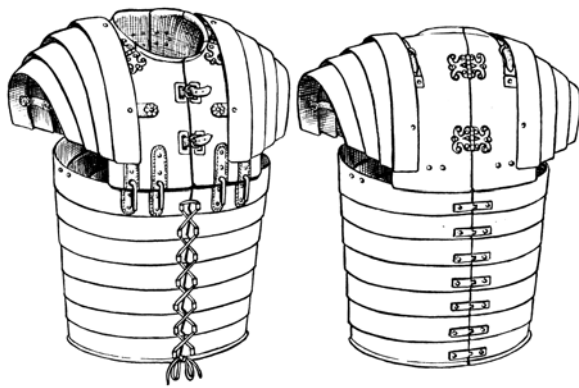
There was one important difference between Robinson and the scholars who had preceded him: instead of being a historian or an archaeologist, he was a practising armorer and a specialist in both western and oriental traditions, both of which made widespread use of articulated defences. He became involved with the armour from the Corbridge Hoard (excavated 1964, reconstructions published in 1972–5 and the artefacts in 1988) in June 1967, some three years after its discovery.<sup>31</sup> Various problems had delayed progress

in conserving this unusual find, but as new details became clear to Charles Daniels, he shared them with Robinson. The first attempt at reconstructing a cuirass using the Corbridge discoveries was still heavily influenced by the Grosvenor Museum model (Fig. 1.5), but as the new evidence reached him (in the form of sketches and cardboard mock-ups supplied by Daniels), the now-familiar reconstruction began to take shape.<sup>32</sup>

The completeness of the pieces in the Hoard allowed Robinson to reconstruct three variants on the cuirass, the Types A, B, and C. The replica Type A, now on display at the Museum of Antiquities in Newcastle upon Tyne (Fig. 1.6) in fact re-used many of the components from his first attempt at a reconstruction of the Corbridge type of armour.<sup>33</sup> Many of the superseded original rivet holes can still be seen.

Robinson's successful reconstruction of the Corbridge armour in time for the 1969 Roman Frontiers Congress saw an exhibition of his replicas in both Cardiff and, later, Newcastle.<sup>34</sup> Moreover, his new-found understanding of Roman segmental armour enabled him to move on to re-examine the Newstead armour and even attempt a reconstruction of segmental limb armour from the same site.

The significance of his study of the Newstead armour was that he realised that it was a different type to those found in the Corbridge Hoard. He deduced that, despite missing many diagnostic pieces, the Newstead type may have been simpler in form to its predecessors, going so far as to venture the notion that the tripartite upper shoulderguards were replaced by a single plate and that the breast-, mid-collar-, and backplates were riveted together, rather than joined by lobate hinges as was the case with the Corbridge types.<sup>35</sup> Robinson



*Fig.1.4 Illustration by H. Russell Robinson for Graham Webster's Roman Imperial Army of a pre-Corbridge Hoard attempt at reconstructing lorica segmentata.*



*Fig.1.6 Robinson's first reconstruction of a Corbridge Type A cuirass, now in the Museum of Antiquities, Newcastle upon Tyne. Photos H.R. Robinson*



*Fig.1.5 The Chester legionary, equipped by Robinson (cf. Fig.1.4). Photo Chester City Council – Grosvenor Museum*

started, but never completed, a replica of this 'new' type of armour and his premature death in 1978 meant that it was left to others to attempt, using Peter Connolly's reconstruction drawing.

Finally, Robinson looked at the fragments of laminated limb armour which had somewhat baffled Curle, and produced a reconstruction of the piece as a *cuisse* or thigh-guard.<sup>36</sup>

### **Andrew Poulter**

At the third Roman Military Equipment Seminar, held in Newcastle upon Tyne in 1987, Andrew Poulter gave details of a revised reconstruction of Robinson's 'Newstead' form of the segmental cuirass. A number of significant problems had struck him and, with the help of Jim Turner (an experienced craftsman), he presented the revised version



*Fig.1.7 Turner's revised reconstruction of the Newstead-type cuirass. Photo J.C.N. Coulston*

(Fig.1.7). Poulter was unhappy with Robinson's suggested method for fastening the breast- and backplates and preferred a simple strap and buckle, ironically reverting to the method Robinson had used on that early Grosvenor Museum model.<sup>37</sup> He also felt that the neck opening would have been bound in copper alloy, based on a new interpretation of the small holes near the top of the breast- and backplates.<sup>38</sup> Poulter's final contribution to the study of the Newstead cuirass was to note that, rather than being Trajanic, as Robinson had thought, that it was more likely to belong to the Antonine period.<sup>39</sup>

## THE FUTURE

Even now, our understanding of Roman segmental armour is far from perfect and new finds, such as those from Carlisle (England)<sup>40</sup> and Stillfried (Austria)<sup>41</sup>, continue to shed fresh light on the

subject. Only the Corbridge type has been recovered in sufficient diagnostic amounts to enable any real confidence in its reconstruction. Knowledge of the other main types – the Kalkriese, the Newstead, and the Alba Iulia – is essentially derived from composites of fragments from a wide range of sites or, in the case of the last, exceptionally based upon iconographic evidence alone. Moreover, there exists the very real possibility of other as yet unrecognised variants coming to light in the next few years.

In all future work, Robinson's crucial interpretation of the Corbridge Hoard cuirasses will remain pivotal. However, it must be remembered that he inherited nearly three-quarters of a century of archaeological scholarship of varying quality. Just because much of it was wrong does not make it any less important to the process of understanding *lorica segmentata*, but it does highlight the importance of interdisciplinary cooperation.



## NOTES

- 1 Literally 'Body armour (or cuirass) in pieces'.
- 2 'Cum segmenta ferrea, tamquam fasciae aliae aliis superpositae, corpus ambiunt. Nusquam legi, fateor: sed in columna Traiani assiduum et paene unicum in romano milite hoc genus' with a marginal heading 'lorica segmentata' – LIPSIUS, 1630, 132 (Liber III Dialog. vi). Interestingly, Lipsius assumed the cuirass was made of iron. The term is not used in the literary-based account of Roman feats of arms by his contemporary, Alberico Gentilis (where the subject of military equipment is rather comprehensively ignored: GENTILIS, 1596).
- 3 *Lorica hamata* (mail) and *lorica squamata* (scale) have both come down to us from more than one source (Isidore *Etym.*, XVIII,13); not so, alas, the term for segmental armour.
- 4 SIMKINS, 1990.
- 5 *P. Berlin* inv.6765: BRUCKNER & MARICHAL, 1979, 409.
- 6 *Hist.* I,79.
- 7 'Continuum ferri tegimen': *Ann.* III,43.
- 8 'Plates resistant against *pila* and swords': III,46. Picard attempted to identify the *crupellarius* with a particular statuette of a gladiator equipped with what appears to be segmental armour (PICARD, 1980). For military equipment terminology in Tacitus' writings see COULSTON, forthcoming a.
- 9 *Orig.* XVIII,13,2.
- 10 CICHORIUS, 1896–1900, Tafn. XXII–III and XXVII–VIII. See COULSTON, forthcoming a.
- 11 It is generally thought that Tacitus was publishing the *Histories* in the first decade of the 2nd century AD (WELLESLEY, 1972, 9; MARTIN, 1981, 30), after the conclusion of the Second Dacian War and only a few years before the dedication of Trajan's Column (LEPPER & FRERE, 1988, 15). It is thus possible that Tacitus was describing contemporary captured equipment, rather than armour of the time of which he was writing (COULSTON, forthcoming a).
- 12 Cf. BOWMAN & THOMAS, 1983 and 1994 for Vindolanda; TOMLIN, 1998 for Carlisle.
- 13 And this is an approach that the present author has until now adopted (e.g. BISHOP, 1999b).
- 14 VON GROLLER, 1901, 39–44.
- 15 Most of which is unlocated at the time of writing.
- 16 VON GROLLER, 1901, 95–113.
- 17 VON GROLLER, 1901, 98.
- 18 For coats of plates, see THORDEMAN, 1939–40, 210–25, 322–8, 345–92; EDGE & PADDOCK, 1988, 73–4. Von Groller may have been familiar with the concept of coats of plates, although no mention of this type of armour appears in his text. It is also worth noting that coats of plates had the plates fixed inside the fabric backing, not outside as with von Groller's proposed reconstruction.
- 19 CURLE, 1911, 156–8.
- 20 *Ibid.* 158.
- 21 *Ibid.* 159, Pl.XXIII.
- 22 COUISSIN, 1926, 452–6.
- 23 *Ibid.*, 456–8.
- 24 ROBINSON, 1975, 182–4.
- 25 ALFS, 1941.
- 26 ALFS, 1941, 121–2
- 27 WEBSTER, 1960.
- 28 WEBSTER, 1960, 197 n.1.
- 29 Named after Robert Newstead, the Chester archaeologist (LLOYD-MORGAN, 1987), not the Scottish site.
- 30 WEBSTER, 1969, Figs.15–16.
- 31 Daniels in ALLASON-JONES & BISHOP, 1988, 97.
- 32 These patterns and sketches are now preserved in the archive at Corbridge Roman Site museum.
- 33 His replicas of the types B and C cuirasses are now on display in the Römisch-Germanisches Zentralmuseum Mainz and the Legionary Museum at Caerleon respectively. Intriguingly, his reconstruction of the C variant

- features tie rings of the type found at *Carnuntum* (and now recognised to be part of the Newstead system of fastening girth hoops – see below, p.51), even though no tie rings were found in the Corbridge Hoard.
- 34 ANON, 1969. The new reconstruction marks one of the key differences between the 1969 and 1972 editions of *The Sunday Times* Roman army wallchart.
- 35 I am grateful to Dr Coulston for pointing out that Robinson’s interpretation of simplification in Roman segmental cuirass design may owe much to his knowledge of the simplification of Japanese lamellar armour during the 15th century AD (cf. ROBINSON, 1967, 190–1).
- 36 This reconstruction is now held by the National Museums of Scotland in Edinburgh.
- 37 POULTER 1988, 37.
- 38 Which, in his scheme, were no longer needed for fastening: *ibid.* 35–6.
- 39 *Ibid.* 39–42.
- 40 McCARTHY *et al.* 2001.
- 41 EIBNER 2000.

## Chapter 2: The Evidence

The strands of evidence that allow us to study segmental armour are comparatively limited and have to be used with great caution. Each has its own problems, which will be briefly covered below, but overall they allow a reasonably comprehensive view of the form and manner of use of *lorica segmentata* to be built up.

### ICONOGRAPHIC

Representational evidence for *lorica segmentata* is not abundant and what does exist is not very reliable, by and large. Part of the problem lies in the heavy reliance that has to be placed upon metropolitan propaganda monuments, given the absence of relevant provincial funerary reliefs. Indeed, following it too closely was to prove one of the most common pitfalls in early attempts at reconstruction.

*Lorica segmentata* has become synonymous with Roman legionary troops largely thanks to one particular iconographic source: Trajan's Column. Erected as part of the Forum of Trajan complex in c. AD 106–13<sup>1</sup> to commemorate his two Dacian Wars, the spiral relief on the column uses segmental body armour as shorthand to represent citizen troops (both legionaries and praetorians). Some 608 figures are represented wearing this type of defence, 42.5% of the armoured Roman soldiers depicted on the relief (Fig.2.1).<sup>2</sup>

The Column sculptors showed some of the armour in considerable detail, notably depicting fittings on the armour. Plates were typically represented with some sort of border, the shoulderguards having a circular stud at each of their rounded ends (a feature imitated on the Chester soldier: Fig.1.5). It is particularly noteworthy that they made a distinction between girth hoops and breastplates, something later sculptors failed to do, and attempted to provide some indication (albeit wildly inconsistent) of the fittings so familiar from this type of cuirass. These representations were thought sufficiently accurate by Couissin for him to note the variants in his consideration of the armour (Fig.1.3).<sup>3</sup> However, the Column is deceptive and its attention to detail should not be mistaken for accuracy: mistakes like segmental plates sculpted to resemble the texture of mail should counsel caution against investing too much trust in it, and it is probably safest to interpret the Column reliefs as 'impressions', rather than accurate representations, of the sort of segmental armour the sculptors would have seen in Rome.<sup>4</sup>

More or less contemporary with Trajan's Column, and surviving in fragments (often incorporated in later monuments), the so-called Great Trajanic Frieze presents a different, but recognisable image of segmental armour (Fig.2.2), in the same tradition as the images on the Column. However, the cuirass is typically over-simplified: no distinction is made between girth hoops and breastplates, with horizontal bands shown all the way up to the neckline.<sup>5</sup>

The reliefs on the column of Marcus Aurelius (Fig.2.3), erected at some point in the 2nd century AD, are heavily influenced by Trajan's Column and, consequently, greatly simplified in applied detail and of even less use in the study of segmental body armour.<sup>6</sup> The pedestal reliefs of the Column of Antoninus Pius depict *segmentata* rather simplistically (Fig.2.3).<sup>7</sup> Panels of Marcus Aurelius are also preserved on the Arch of Constantine and these show segmental armour, with bands running right up to the neck (Fig.2.4), worn with *pteryges*.<sup>8</sup> A copper-alloy statuette (Fig.2.7) depicting a helmeted soldier wearing *lorica segmentata* (now in the British Museum<sup>9</sup>) is stylistically very close to the Marcus Aurelius panels and, once again, of dubious value (other than as a statement of awareness of this type of armour). The same is true of reliefs on the Arch of Severus in the *Forum Romanum* (Fig.2.5).<sup>10</sup>

The 1st-century AD Rhineland infantry tombstones are of little help, since the few that do depict some sort of armour show mail (although one small frieze does include a diminutive representation of an articulated armguard: Fig.2.8). However, there are some pieces of provincial sculpture that provide tantalising glimpses.

The well-known series of reliefs on column pedestals from Mainz, generally held to be Flavian in date, include one scene of two legionaries advancing to the right (Fig.2.9). One is a standard bearer, but his companion is clearly a legionary infantryman, equipped with the typical curved rectangular shield, carrying a *pilum*, and with his helmet apparently slung around his neck. However, a small portion of his right shoulder is visible and this appears to show three shoulderguard plates above his (short) tunic sleeve. Whether this is indeed what it depicts is open to debate, and the relief has to be viewed in the context of its companion pieces in the group, one of which has a mail-clad legionary, whilst another shows a soldier wearing what appears to be some sort of overgarment but which certainly cannot be interpreted as segmental armour.<sup>11</sup>



*Fig.2.1 Detail of lorica segmentata on Trajan's Column (left) and on one of the Napoléon III casts of the Column (preserving more detail). Photos © J.C.N. Coulston*



*Fig.2.2 Details of lorica segmentata on fragments of the Great Trajanic Frieze. Photos © J.C.N. Coulston*