A FRAGMENTARY SHIELD COVER FROM CAERLEON

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with contributions by Dr E.M. Evans & J. Pickett-Baker

FIND CIRCUMSTANCES by Dr E.M. Evans

In June 1985 six test pits were dug by machine in the grounds of Cambria House, Mill Street, Caerleon by Barrett Development (South Wales) Ltd who were assessing the potential of the site for development. The site lies within the civil settlement to the east of the fortress, between the defences and the Afon Lwyd. The Glamorgan-Gwent Archaeological Trust, which was at that time excavating another part of the same settlement, was kindly permitted to examine the pits as they were being dug and to go through the upcast soil.

Those pits on the eastern half of the site indicated that the natural lay 2-2.5m below the present ground surface and was overlain by occupation deposits. On analogy with other, more completely excavated parts of the settlement, this clay was probably laid down when the area was being developed in the third century, the development being represented by the occupation deposit above. Little work has as yet been done on the earlier levels of the site, and consequently there is not at this moment much information on the nature and dating of the waterlogged deposits. From one waterlogged pit came the leather shield cover which is the subject of this paper. Given the circumstances of its discovery, it cannot be dated stratigraphically, but the pottery from the pit included samian dating to the first and early second century (Drag.29), and such a date is likely for the earlier, waterlogged deposits.

THE LEATHER SHIELD COVER (UCC Lab no.3966 82B 003, 004, 005)

When found, the cover consisted of a semi-circular piece of goatskin, 76 X 40cm, folded into three (Fig.1). The leather was fully conserved by Ms Kate Hunter at the Department of Archaeology, University College Cardiff, who made the preliminary drawings of the object when wet. No dressings were applied other than the glycerol used for the freeze-drying process. This treatment enhanced the scuffing and colour differences on the grain side of the leather, making areas covered by applied panels stand out well. The treatment left the cover clean and easy to handle, though it remains fragile, with considerable surface and edge flaking.

The object represents the top section of a broad, oval shield cover with decorative stitching and a unit insignia attached at the apex. The piece has been rather roughly cut away from the rest of the cover, but was neatly folded up, possibly in anticipation of reuse. The neat folding up of scrap leather is a recurrent phenomenon on military sites and it may go some way to explaining the nature of the excavated leather complexes. Saving all manner of odds and ends for possible reuse is a characteristic of leatherworkers everywhere and these neatly

folded packages and bundles of scrap may repreent a thorough clean out of the workshop, when everything not of immediate use would be jettisoned. This may explain the very varied and fragmentary nature of many of the larger leather complexes, as well as accounting for the frequent observation of cut and torn edges. The leather in such complexes would tend to be old, though still serviceable, the useless and damaged pieces having been removed and thrown away at once. Leather seems, therefore, to have been recycled in military workshops in much the same way as is suggested for metalwork.[1] The tentage and shield covers from the Bonner Berg[2] were similarly cut up, folded and stored and at Valkenburg[3] several packages of reusable leather lay in a small room off the principia where equipment seems to have been repaired. The occasion for the final clean up of the workshop at Bonn was presumably the abandonment of the fabrica outside the camp[4] while at Valkenburg a change of garrison and the simultaneous raising of the camp living surface sealed the room and its contents. In view of several tears and the extensive stitching on the surface it may be questioned whether the Caerleon fragment came from a leather store. It looks rather more like the piece which was cut away from an otherwise serviceable sheet: in this case, the folding must be seen simply as an example of military precision.

Most impressions visible on the flesh side are from the pre-tanning processes (fleshing and scudding) and, for most part, the imprints of the organic materials amongst which the object lay. None of these pertains to the use of the cover. The leather is fragile and, in places, severely worn, making it difficult to distinguish the thread impressions which are crucial to the interpretation of the types of hems and seams present. Fortunately the conservation laboratory was aware of the adverse effects on visibility of dressings, and only the minimum treatment was undertaken. In consequence of this decision, many of the rather faint thread impressions are still visible, as are numerous tiny stitch holes, and changes in surface colour and texture can also be discerned. The flesh side is rather better preserved and several lines of thread impressions are visible: in view of the symmetry of the object, the course of the impressions can be reconstructed from remaining sections. Parts of the cover are extremely worn and tattered. The tears at the lower left and right corners may have been caused by the pulling out of the draw-string ends which usually emerge in this area.

The cover is edged by a folded, tacked hem, which has left the characteristic paired stitch holes and (where visible) thread impressions alternately on the front and back of the fold (the occurrence of the impressions on both sides of the fold indicates that no other piece was attached to it, and the stitching is therefore an edging hem not a joining seam). The hem has become flattened-out over most of its length and is almost unrecognizable, except for the matching stitch holes and in the expectation of this arrangement. Where preserved in its original form, it is clear that the hem makes allowance for a cord to pass through. The characteristic puckered hem of the covers in fact forms a channel for a draw-string which could be pulled tight to fit the cover round the shield board when necessary. The strings would presumably emerge at the four small, reinforced holes in the hem at the sides of the cover, which occur on the more completely preserved examples, such as those from Valkenburg.[5] This

would enable the cover to be adjusted to the length and curvature of the individual shield board. No other form of attachment would be necessary.

Caesar[6] implies that the covers could be removed quickly in need: the point of the passage is that the Gauls attacked so unexpectedly that there was not even time to remove the covers. In any case, the covers did not seriously impede the soldiers' use of their shields. The draw-string arrangement would indeed allow the shield to be wielded, though the cover would, of course, add to its weight. Less happy was the experience of Varus, who, in the incessant rain, found that the covers and shield surfaces absorbed water, weighing down the soldiers still further and, presumably also causing the glued plywood shield boards to warp.[7]

Lines of stitching reveal the position of panels once sewn to the front of the shield cover. In all cases, continuous thread impressions (running stitch, using 2 threads simultaneously, passing through awl-punched holes and leaving a typical 8-shaped stitch hole) are visible on the flesh side, while the grain surface within the stitching is slightly better preserved. As pointed out by Miss Pickett-Baker below, the curved stitching on the body of the cover also marks an attachment to the front: unless it is only the outer edge which is covered (leading the practical difficulties in folding the edge), this was presumably oval in shape. However, no appropriate shapes in leather occur either in Valkenburg or Bonn, so it might be suggested that this was of cloth, perhaps rendered in the manner of the Dura Europos shield boards and, like them, painted.[8] Such an arrangement, using cloth as the support for any designs, would to some extent reconcile the apparent incompatibility of pictorial evidence for shield decoration with the almost total lack of it from the archaeological evidence.

The unit's symbol was originally attached at the top. As there are no thread impressions on either the flesh or grain side, a backing must have been sewn on together with the applique. The close set pairs of stitch holes indicate that a sort of whip stitch was used to attach the panel, but the associated felling stitches have penetrated the leather to catch up the backing material (cloth or leather). The symbol must have consisted of a solid panel, perhaps as at Vindonissa[9] as no more than its outline remains visible in the stitching. A second, separately applied piece was sewn to the centre of the panel. At both Valkenburg[10] and Bonner Berg[11] stitching used to pick out the design on the applied panel has left a clear outline of the badges' shapes on the shield cover. This is unfortunately not the case here and there is no hint of any symbol or inscription which could help to identify the unit involved. Damage to the top left hand corner of the stitching further hampers identification. The general form (including its crudity) and method of attachment suggested for the reconstruction accords well with the surviving features, even though the lettering is hypothetical. Both here and at other sites, the stitching used to attach the insignia is remarkable in its crudity. This might be interpreted as evidence of the professional, perhaps centralized, manufacture of the covers themselves, which were then 'personalized' by the men of the units concerned.

The grain direction of the leather indicates that the full length

Fig.1: Caerleon shield cover (1:3).

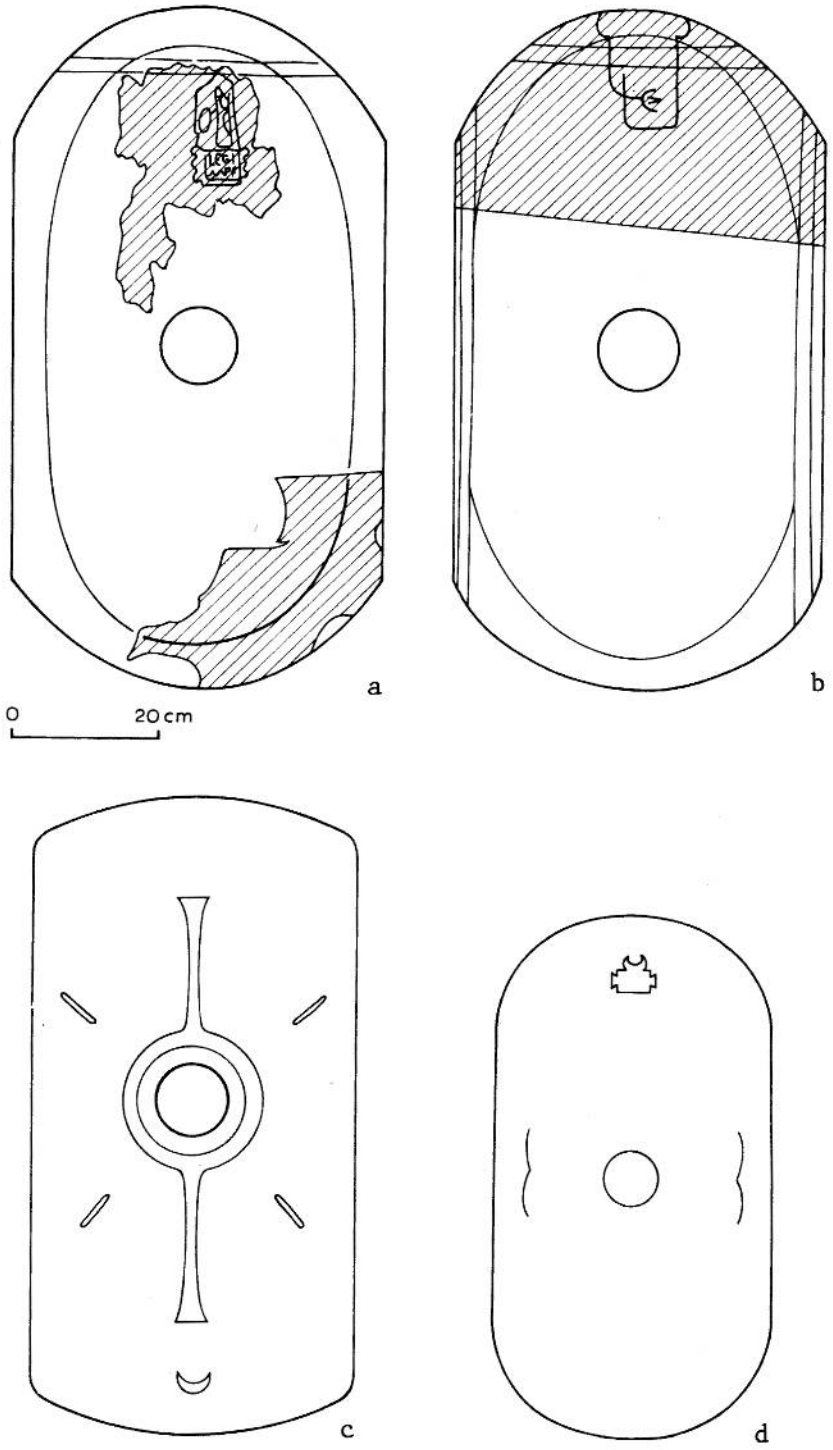
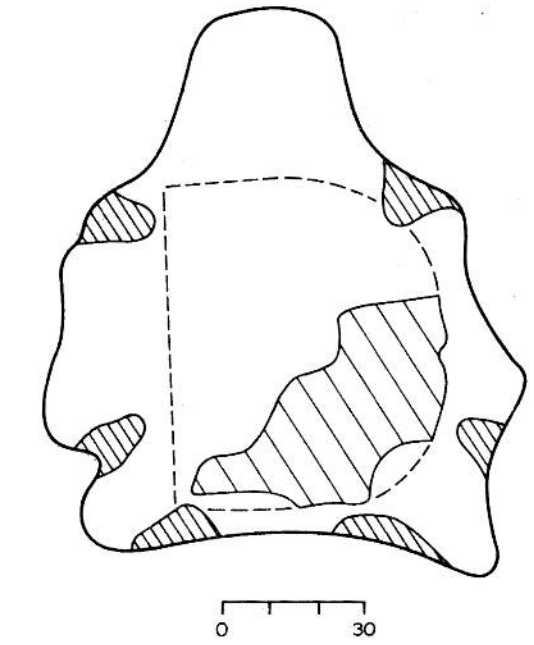


Fig.2: Shield comparisons a) Bonner Berg fragments projected onto the Caerleon model, b) Caerleon cover as reconstructed, c) Doncaster (after BUCKLAND, 1978), d) Valkenburg (after GROENMAN-VAN WAATERINGE, 1967). Lengths of a) and b) are hypothetical. Scale 1:10.



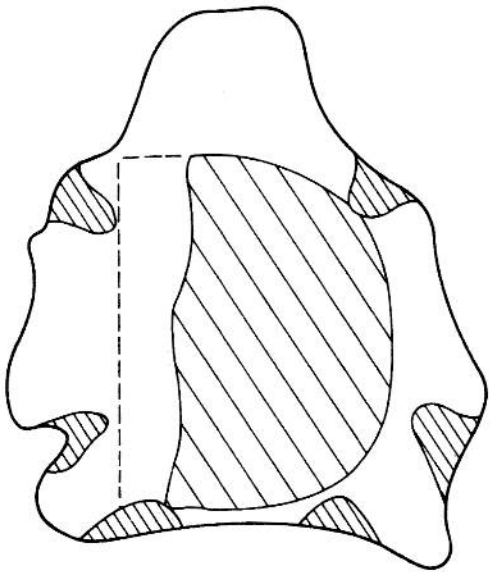


Fig.3: Shield covers projected onto a goatskin. Shaded are the weak areas of the axillae.

of the goatskin was used for the width of the cover (Fig.3). In fact, the width of the cover is more or less equivalent to the maximum useful back length of a full grown goat.[12] In view of the size of the cover and the loss of poor quality skin at the belly and neck, at least 2 skins would have been required, and in some cases 3, for the body alone. If, as Miss Pickett-Baker points out, the applied panels were also of leather, an additional skin would be necessary. If only 2 skins were used for the cover, the joining seam probably fell in the middle of the shield, over the umbo, as is the case with the large oval shield cover from Valkenburg.[13] Neither the position nor the size of the umbo opening can be reconstructed with certainty, though it was presumably located in the centre of the shield. There is no trace of metal edging strips, nor of rivet holes for their attachment: for this reason the leather is interpreted as a cover and not as a shield surface, although leather was certainly used to cover plywood shields.[14]

The mere fact of preservation implies the use of a vegetable tanned leather. In view of the mixture of tanning agents used and the effects of prolonged waterlogging in the presence of rotting organic materials, many of which also contain tannins, analysis of the tannins used is of doubtful value. Analysis for traces of dyestuffs would be useful, but is beyond my competence.

The curvature of the top, the straight lines of stitching at both sides, the break in curvature on the best preserved side and the assumption of symmetry make it possible to propose a reconstruction of the complete cover, and, by implication, of the type of shield it was intended for (Fig.2). Although the proportions of the object are the same as those of the virtually complete broad oval shield cover from Valkenburg (Fig.2d), an exact projection on the scale of the Caerleon piece results in an impossibly large shield, 149cm long and c.80cm wide (shrinkage seems to have been negligible, both in the ground and during conservation). When compared to other surviving shields, it would seem more likely that the shield, though larger than the Valkenburg ones, is proportionally shorter in relation to its width (Fig.2b). The exact length is difficult to estimate, but shields from Dura Europos of 102 X 83cm and 120 X 80cm[15] give some idea of the range. The Doncaster shield board (Fig.2c)[16] is 125 X 64cm in size and thus rather narrower than the Caerleon cover (which would have to be larger in any case, see below). It is, however, identical in shape, curvature and width to leather shield covers found at Vindonissa.[17] A length of 120-125cm would not, therefore seem unreasonable for our piece, especially in view of its width, suggesting that the Doncaster, Vindonissa and Caerleon shields were all of the same size range. This length would certainly be more managable.

Exactly how much of the cover was drawn over the shield board is difficult to establish, though it is of importance in the reconstruction of the size of the shield itself. The frequent occurrence of tears in the bottom edges of the covers is perhaps significant in this respect, since these may mark the place of the fold over the edge of the board. In general, the tears seem to correspond to the outermost line of the panel stitching, and this also appears to be true of the Caerleon specimen. Impressions or variations in the condition of the grain surface which might mark the shield edge have not been encountered on any of the covers so far examined. The tears on

Valkenburg cover no.6 suggest a width of 40/42cm, while Valkenburg covers 11 and 20 would be about 56cm broad. With some 5cm of the edge drawn to the back of the board the Caerleon shield would seem to fit a shield approaching the width of the Doncaster board (i.e. 64cm).

The Caerleon shield cover (and therefore its shield) is undeniably oval in shape, unlike either the Vindonissa or Doncaster specimens. This would seem to be contrary to all accepted theories concerning legionary equipment in the 1st century, yet the fact remains that in contrast to the number of oval shield covers now known, rectangular covers are remarkably rare. The only site with abundant evidence for rectangular shields is Vindonissa. Then there is the single, unique find of a complete shield from Doncaster.[18] The shields/covers from Valkenburg, Vindonissa, and Doncaster are all 1st century; those from the Bonner Berg early 2nd century, with Caerleon probably falling soemwhere in between, so some care is required in the use of the mid-3rd century shields from Dura Europos for comparative purposes. At the 2nd century legionary fabrica on the Bonner Berg, only oval shields were present. I see now, in the light of the Caerleon specimen, that these shields are of the same broad type. Indeed, the parallel lines of stitching at the top, from which the unit's symbol is suspended, is identical to the straight stitching at the top of the stitched Minerva on a cover from Bonn, which at the time seemed to be the only possible hint of the presence of rectangular shields there.[19] It now looks as though the covers from Bonn and Caerleon are identical in shape, size and disposition of the stitching (Fig.2). Moreover, in their dimensions they closely match the Doncaster shield board. This, then, may be the legionary shield type. Shield covers from other, auxiliary, sites along the Rhine and in Britain are clearly of the small, Valkenburg type. The position of Vindonissa, as sole possessor of the rectangular shield covers, still requires explanation.

In the case of Bonn, I suggested[20] that the legionaries adopted the more manoevrable oval shields in the first half of the 2nd century: was this process already underway in Britain at the end of the 1st century? In fact, the increasing body of evidence for oval shields - as represented by their leather covers - and the absence of rectangular shields from those sites where they would be expected, poses the question of whether the rectangular legionary shields was ever such a standard item of equipment as Trajan's Column has led us to believe. The evidence now provided by the leather shield covers appears to reinforce the conclusions drawn by G. Waurick[21] on the pattern-book and, indeed, almost symbolic nature of the Trajan's Column reliefs. There was probably a far greater degree of variation in equipment, although it is to be expected that the shapes and sizes of shields at least, are unlikely to differ much within a single unit. Looking at the archaeological evidence, it may well be that it is the rectangular shield which was exceptional, being used perhaps only for specialist tactics such as the much-famed testudo.

APPENDIX

A report on the reconstruction of the cover, which was made by Miss J. Pickett-Baker for the Newport Museum and Art Gallery, Newport, Wales, has been included in view of the useful details on construction and manufacturing techniques which emerged. The value of experimenting with archaeologically accurate replicas is increasingly recognized in the field of Roman military equipment studies.[22] Experiment not only clarifies technical details but also leads to a better appreciation of the capabilities and limitations of the equipment concerned, as well as providing an insight into the logistics of supply and manufacture.[23] By increasing the awareness of what to look for, experiment with reconstructions also stimulates the identification of missing, or fragmentary items.

THE RECONSTRUCTION by J. Pickett-Baker

This replica Caerleon shield cover was constructed on three types of evidence.

Firstly, the size and shape of the Caerleon find and the arrangement of awl holes found in it and the impressions on its surface.

Secondly, known facts about similar finds in other countries, other Roman leatherwork in general and military activity in the Caerleon area.

Thirdly, missing information was replaced by practical ideas, which, if no evidence existed to disprove them, were used. Some of these ideas, in the future, may, of course, turn out to be wrong, in which case the shield cover may need to be altered accordingly.

The shape of the remains suggested a striaght edged shield with a rounded top and bottom, this being the top third with the insignia, but clear of the umbo. The width to length proportions were suggested by other finds, and that it was likely to have been symmetrical (the boss situated centrally - Figs.4-5). It was vital to decide how the cover was going to be attached to the shield before anything else could be calculated. Strong evidence existed for a drawstring; rows of awl holes and thread impressions where the edge of the leather had been tacked back upon itself forming a casing. Some small mockettes of cardboard shields and pigskin covers were constructed to test the drawstring theory which worked well. It was also established that on a straight sided shield with a curved top and bottom just two drawstrings worked best, situated in the centres of the straight sides; whereas a completely oval shield needed four drawstring points situated on the shoulders of the shield (Fig.4).

Having decided on a drawstring, an estimated 5cm (allowing for the casing and the fold) was subtracted from the dimensions of the cover top and sides to give the width of the shield (66cm) from which the length was estimated (115cm) and the shape of the curved top and bottom. The overall size could then be calculated for the piece of leather needed (76cm X 125cm) for the main section. A basic shield was

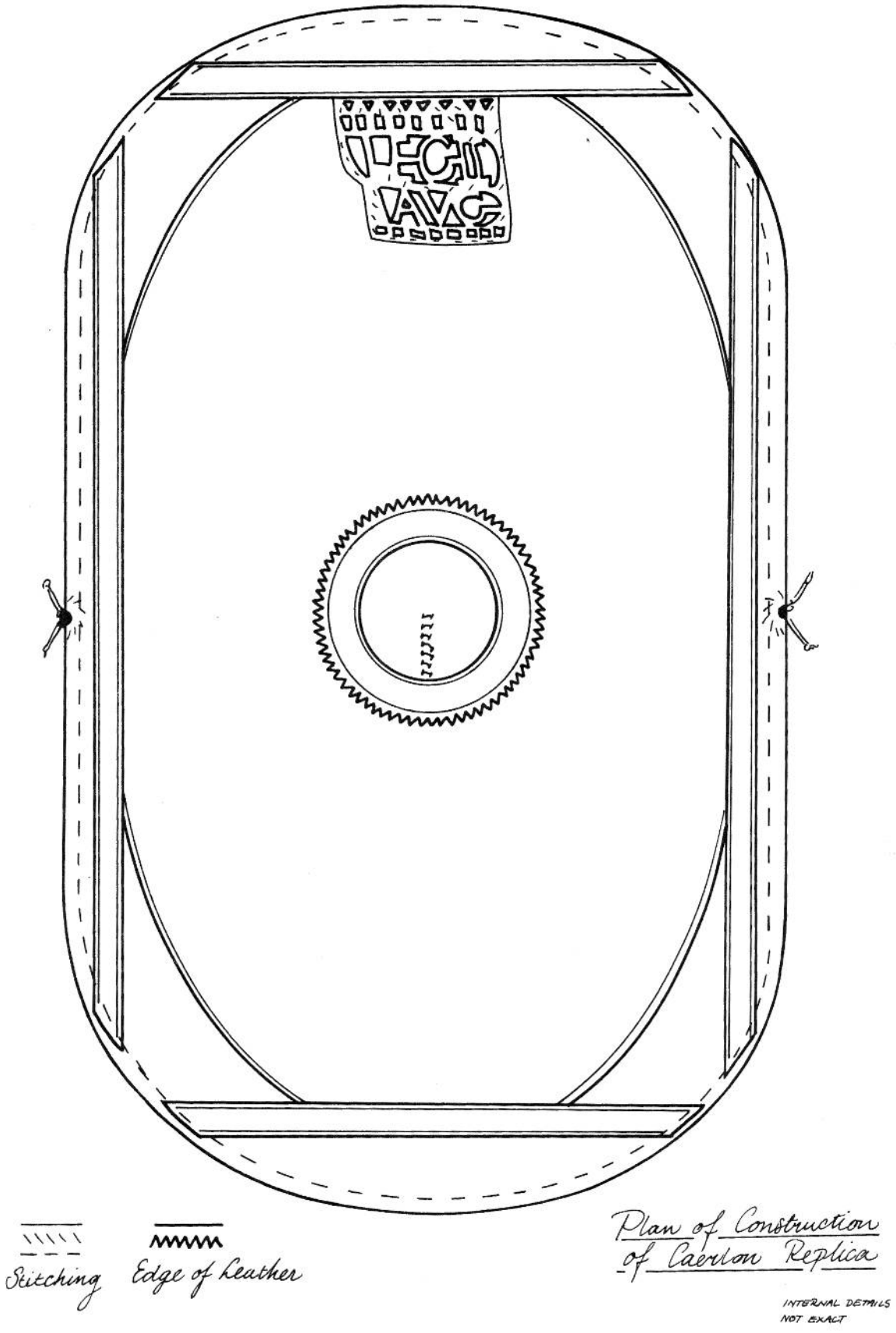


Fig.4: Plan of construction of Caerleon replica (c.1:6).

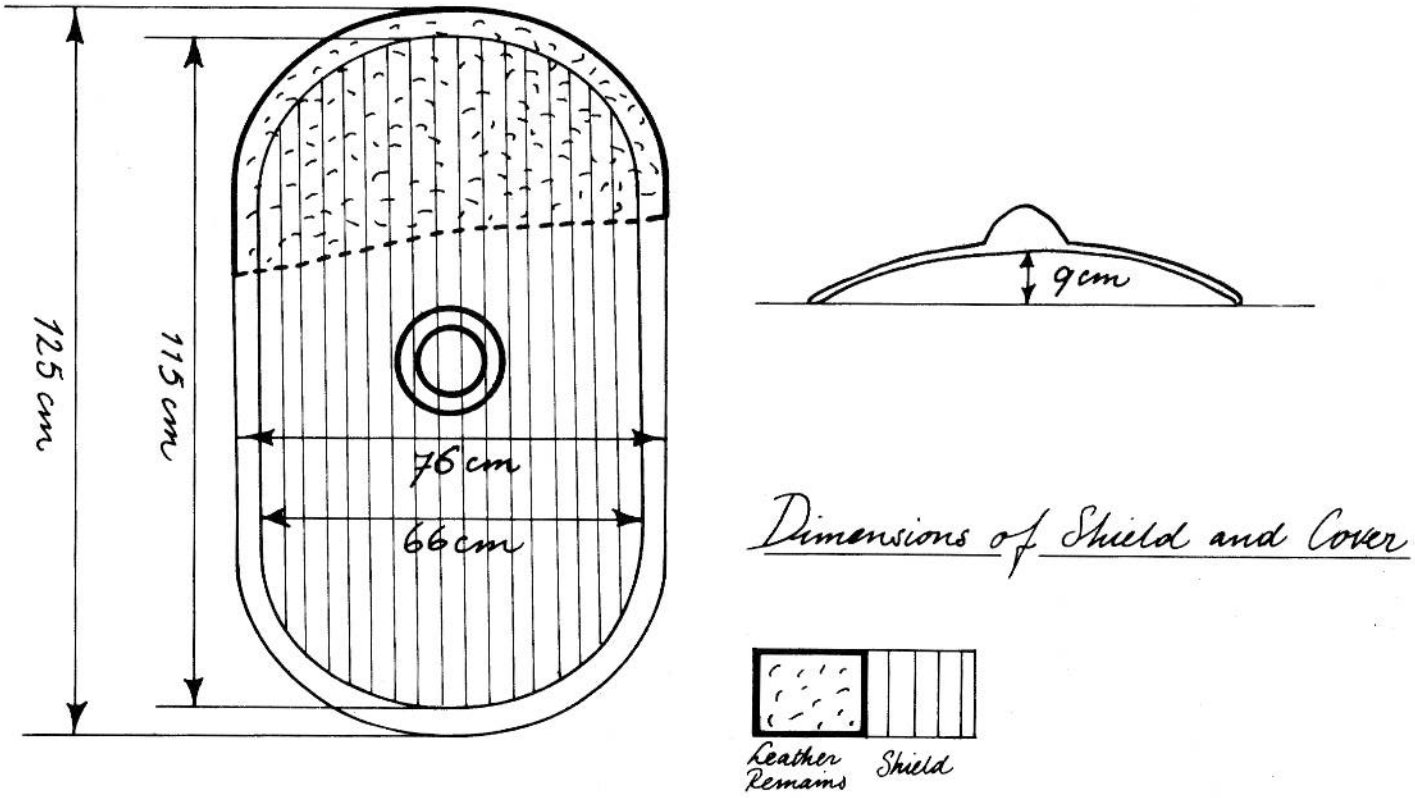


Fig.5: Dimensions of shield and cover.

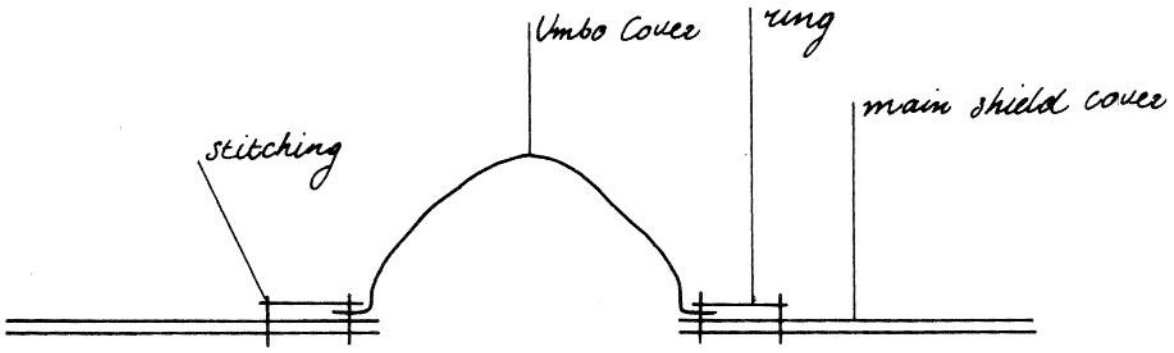


Fig.6: Cross section through umbo cover.

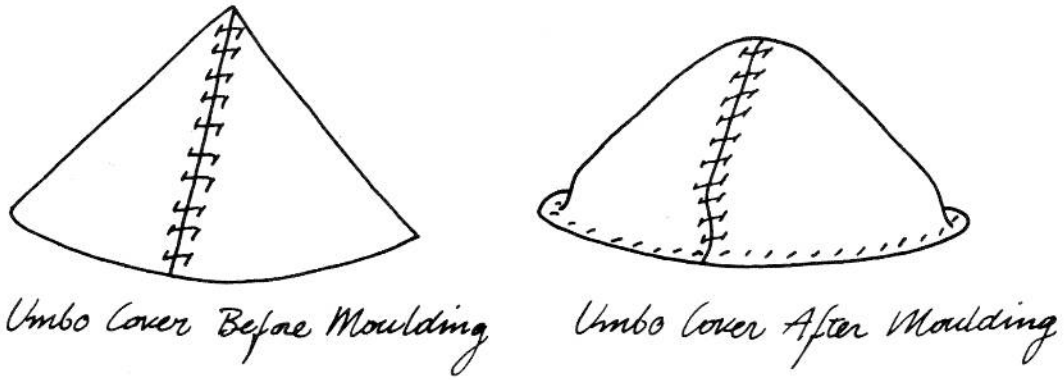


Fig.7

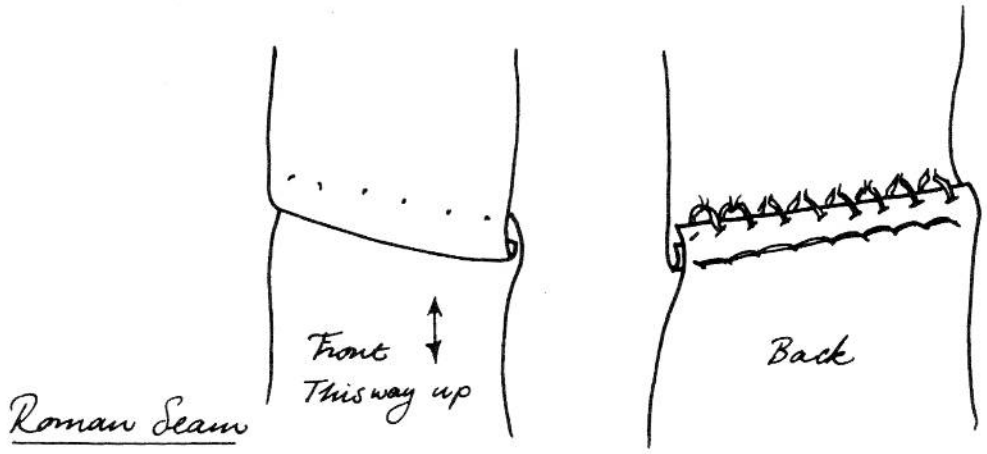


Fig.8

then constructed to act as a frame for the cover (Fig.5).

Thought was then given to the other awl holes. Clearly reinforcing strips had run down the sides and across the top and bottom, but these do not extend right to the edges. More puzzling were the rows of stitch holes following a path, in from, but more curved than the profile of the cover (Fig.4). These either attached leather between themselves and the outer edge of the cover (in which case there would be two layers of leather to try and fold over and gather), or, the rows of stitches were attaching a single large oval piece of leather covering the majority of the centre of the cover. The remains were re-examined for subtle indentations, which proved ambiguous. However, the matter of the insignia and the impracticalities of trying to fold two layers of leather resulted in the large oval theory being preferable. The stitch holes where the insignia were attached were puzzling as impressions of neither leather nor stitches existed on either side of the remains, only the holes. With the oval layer between the insignia and the remains this problem is solved. A piece of leather reinforcing was also placed behind to leave no thread impressions on the flesh side, either, as on the original. The size and shape of the oval section was then calculated. This passes under the strips sewn across the top, bottom, and sides, the stitches along the the straight sides corresponding. The top edge of the insignia is also caught under the stitching of the top strip.

Full scale paper patterns were drawn out with all details on them and the footage of leather estimated.

No evidence of the wording or the design of the insignia existed, so it was decided that it should read 'LEG II AVG', the legion based at Caerleon. The design was in the style of other insignia and shaped to fit the pattern of awl holes. These may, though, have resulted from more than one emblem originally. Evidence varies as to what this would have been made from, in this case leather has been used.

No umbo cover remains were found so it was decided this should be approximately 15cm in diameter and a cross between a cone and a hemisphere (Figs.6-7). Plans of other shield cover remains show a round hole in the leather with two concentric rows of stitch holes around this and a separate leather circle with a missing segment which is brought together to form a shallow cone. This has a single row of stitch holes along the edge. This umbo cover easily could be moulded from an uncut unstitched piece of leather; however, as all available reference plans have stitching this is how it has been made. A separate ring of leather has been added over the top of the join between the shield cover and the umbo cover, the outer edge of this is stitched through the outer ring of stitch holes in the main cover. In our case the hole for the umbo is through two layers of leather. After the umbo cover had been stitched into a cone it was wetted and moulded over the umbo of the mock-up shield and left in place to dry.

Small groups of other holes and marks exist on the remains but not in a pattern sufficient to add other definite pattern pieces. It is very likely that the shield cover remains were altered in their lifetime.

MATERIALS

Rough Goat, which is undyed fairly supple vegetable tanned goatskin was used for the majority of the shield. A slightly thicker, and stiffer, undyed veg-tan goatskin was used for the insignia, umbo and umbo-ring called Crust Goat; a leather more suitable for moulding.

The Caerleon remains have not been analysed for dyestuffs. It is quite possible that these covers were not dyed because of their function. All dyes fade and water and oil darken leathers. It is proposed to heavily oil the leather probably with Cod Oil to waterproof it. This would have protected the wooden shield from warping in wet weather.

Hand rolled and waxed linen thread has been used to stitch the cover. Two and three ply threads proved a good weight for stitching different parts. A twelve ply thread was made to use as the drawstring (3 X 4 ply), Alum Tawed Goat was considered, but the linen seemed perfectly good. The main section of the shield cover was cut from two goat skins, the length of the goat running across the width of the shield. These sections were joined with a special Roman Seam. It was important to get this seam the right way up, so that water would not run in the top of it (Fig.8). The oval section was cut in one piece with the length of the goat running with the length of the shield. Had this needed to be cut in two pieces it would have been joined in a similar fashion. Most other seams were a traditional leatherworkers' stitch made with two needles passing in opposite directions through each hole. The insignia was tacked on with small stitches on the front, large on the back. The drawstring casing seam was a single thread running in and out of the holes as the impressions on the remains showed.

NOTES

1. BISHOP, 1985, Fig.3.
2. VAN DRIEL-MURRAY & GECHTER, 1983, 30ff.
3. GROENMAN-VAN WAATERINGE, 1967, 196.
4. VAN DRIEL-MURRAY & GECHTER, 1983, 3.
5. GROENMAN-VAN WAATERINGE, 1967, fig.10.
6. Gallic Wars II,21,5.
7. Dio, Roman History LVI,3.
8. ROSTOVTZEFF et al, 1936, 457.
9. GANSSER-BURCKHARDT, 1942, Abb.61.
10. GROENMAN-VAN WAATERINGE, 1967, fig.10.

11. VAN DRIEL-MURRAY & GECHTER, 1983, Taf.7 no.137.

12. Ibid., 33.

13. GROENMAN-VAN WAATERINGE, 1967, fig.17.

14. BUCKLAND, 1978, 251; ROSTOVTZEFF et al, 1936, 457.

15. Cited in VAN DRIEL-MURRAY & GECHTER, 1983, 35.

16. BUCKLAND, 1978.

17. GANNSER-BURCKHARDT, 1942.

18. BUCKLAND, 1978.

19. VAN DRIEL-MURRAY & GECHTER, 1983, 35.

20. VAN DRIEL-MURRAY, 1986, 139-40.

21. WAURICK, 1983.

22. Cf. DAWSON, 1987.

23. E.g. in particular CONNOLLY, 1987; VAN DRIEL-MURRAY, 1986.

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