

Preliminary report on the leatherwork from Roman Berenike, Egyptian Red Sea Coast (1994–2000)

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62 figures

Abstract

The excavations at Berenike during the 1994–2000 season yielded various finds of skin and leather. Leatherwork is one of the neglected fields in the study of ancient Egypt and it is therefore that this paper presents the leatherwork from this important site, even though the material has not been studied in as much detail as would be necessary. All discussed objects were excavated from early Roman rubbish layers.

Key-words: footwear, handle, leather, rawhide, stitching, shoe, water bag

Contents

1. Introduction
2. Preservation
3. Description
 - 3.1. Water bags
 - 3.2. Footwear
 - 3.3. Miscellaneous
4. Discussion
5. Acknowledgements
6. Cited literature
7. Appendix



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1. Introduction

The excavations at Berenike during the 1994–2000 season yielded various finds of skin and leather.¹ Although both were registered in the same category, in this work attention is given to leatherwork only. Eighteen trenches produced material (table 1). The leather objects were found in 233 pottery buckets from 159 loci (including 33 cleaning loci). All leatherwork discussed here can be dated to early Roman period (1st c. AD); a more precise date is incorporated, taken from <http://www.archbase.com/>, the database website where the database of the Berenike excavations are partially available. The hide and skin fragments originate mainly from later contexts (5th c. AD). Leather and related products excavated are little more than scraps and pieces of skin. No complete objects have been recovered.

Trench	Real loci	Cleaning loci	Pb's (incl. cleaning loci)
BE94/95–01	11	6	27
BE94/95–02	7	–	8
BE95/96/97–05	2	–	1
BE95/96–06	7	1	13
BE96/97/98/99/00–10	30	4	44
BE96/97–13	3*	–	13
BE97/98–16	8	2	16
BE97/98–17	1	1	2
BE97/98–19	6	3	6
BE98–20	3	3	6
BE98–21	12	4	17
BE98–22	4	–	6
BE98–23	3	–	4
BE98–25	1	–	2
BE99–29	2	–	3
BE99–31	6	3	15
BE00–33	16	4	38
BE00–37	4	2	12
Total	126	33	233

Table 1. Leather finds from the 1994–2000 excavations. The second column lists the loci and the third column the cleaning loci, which contained leather finds. The last column lists the pottery buckets.

This paper presents the leather with important features as well as an appendix. The appendix, listed by context, includes information on dates, specialist numbers and preservation; measurements are given as well. The entries are numbered as to make future references easier. The material has not been studied in detail due to an unforeseen delay in further excavation work. Therefore, detailed registration of important features, such as stitching, seams, tanning and the like has not been executed or have been identified on the basis of the photographs/drawings. All material discussed in this paper were excavated from rubbish deposits.

2. Preservation

The preservation of the leather artefacts is, compared to other sites in Egypt, such as Mons Claudianus, bad. Most of the leather items are hard and often of a dark brown or blackish colour and (extremely) brittle in many cases. The items have been drawn various seasons before I had the opportunity to see the material and pack it in a sufficient way to warrant proper long term storage. Consequently, the state of the material as it was seen was less good relative to the time of drawing.

3. Description

This paragraph concentrates on the discussion of the leatherwork in functional groups, mainly water bags and footwear.² The third group, 'miscellaneous', includes unidentifiable objects and objects with a tentative

¹ Although the term 'leather' is used, technically speaking this term only refers to tanned or tawed [converting (skin) into white leather by mineral tanning, as with alum and salt] skins rather than cured skins (Van Driel-Murray, 2000: 299). Skin treatment however, has not been determined.

² Reference to the objects is made by means of the specialist number.

interpretation. Most of these fragments however, were parts of larger objects, which became detached, due to extensive use, wear and/or post-depositional circumstances.

3.1. Water bags

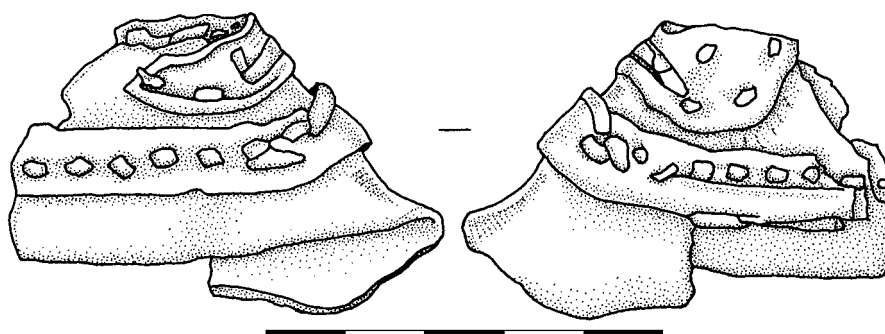


Figure 2. Attachment of a water bag BE00–33.008 I307–J–119 (appendix no. 18). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

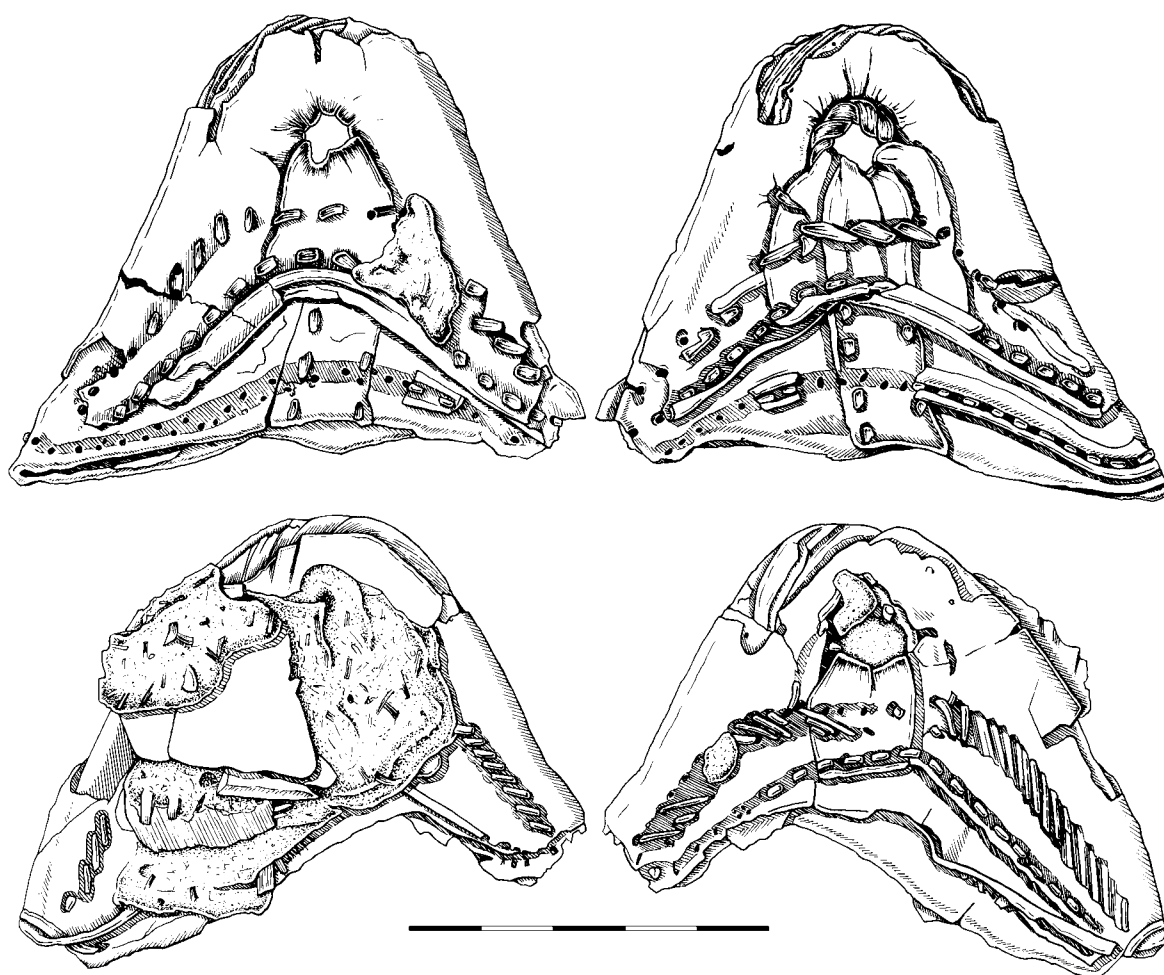


Figure 3. Various handles of water bags. Top: obverse and reverse of BE99–31.006 3057–J–028; bottom: obverse and reverse of BE99–31.006 3057–J–029 (appendix no. 3). Note the combination of the diagonal whip stitching and the running stitching at the lower end of the handle. Scale bar in cm. Drawings by A. England.

Twenty-six fragments³ are parts of water bags (*askoi*), mainly (part of) handles and seams and one attachment (figure 2). As seen in figure 3 the handles consist of a vegetable core, covered with leather. The hole that separates the handle from the body of the bag is too small to allow carrying by hand; it was intended for a linear piece of cordage. Their solid appearance indicates that the handles are made for heavy-duty-purpose (in one of the handles, 070, the circular hole is malformed into an oval due to the forces exerted by the weight of the contents of the bag). A broad vertical strip of leather has been pulled through the hole in 028, 029 and 070 and is attached with whip stitching below the hole and included in the running stitches at the lower end. These two rows of stitching run in a curve parallel to the curving of the handle. The vertical running sides of the handle often display elaborate, dense whip stitching. Based on this whip stitching, some small fragments which preserve identical stitching are assigned to water bags as well, for instance the fragments shown in figure 4. Another handle, shown in figure 5, differs from the previous described handles in the fact that it has a seam horizontally at a substantial level below the hole; it has become detached during storage. The seam is fastened with two rows of parallel running stitches, as usual made of narrow leather thongs. The handle is repaired with zS₂ string and the leather at the vertical running sides is severely damaged, possible due to extensive use.

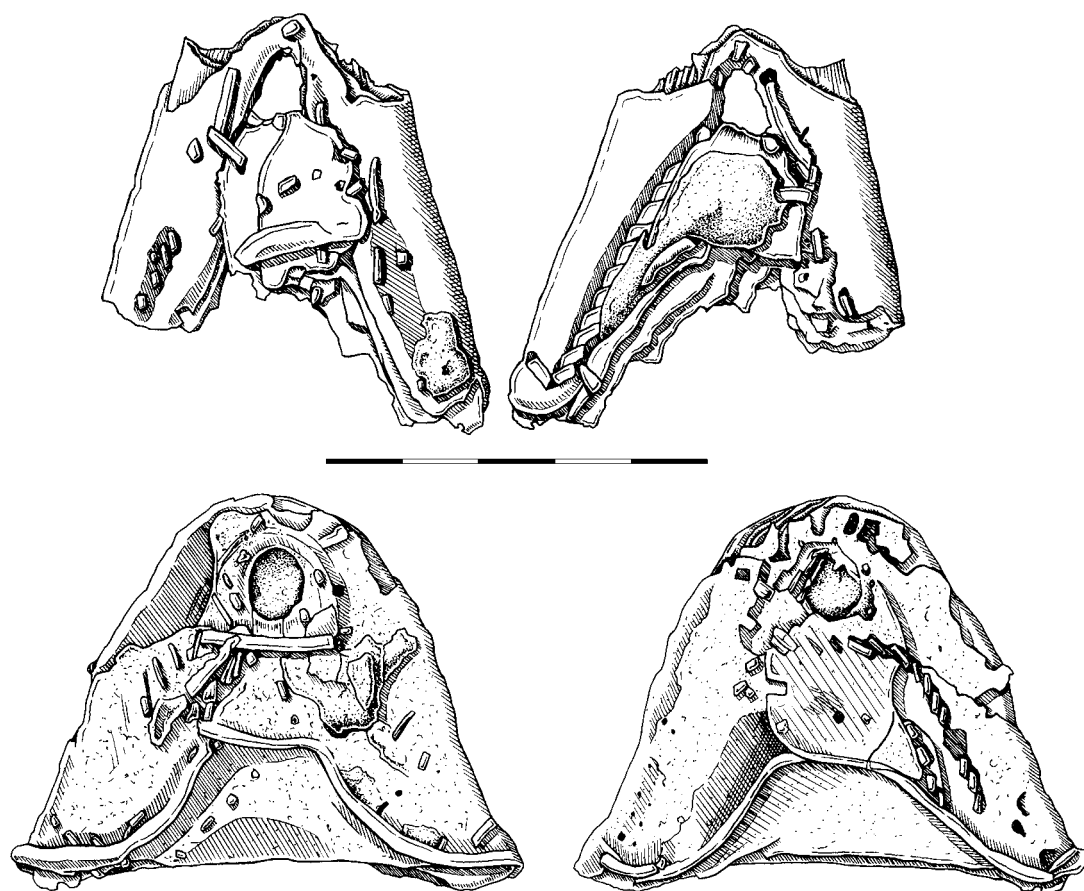


Figure 3 (continue). Various handles of water bags. Top: obverse and reverse of BE99-31.007 2896-J-070 (appendix no. 9); bottom: obverse and reverse of BE00-33.022 2516-J-184 (appendix no. 28). Scale bar in cm. Drawings by A. England.

One of the handles has a different shape (figure 6); it consist also of a fibre core, covered with leather, but the hole is far larger and the 'handle' itself less solid. Possibly, this is not a part of a water bag but a belt buckle.

Two fragments are most likely to be identified as spouts (figure 7). One of the fragments (190) has a twisted neck and a folded and stitched lip. The base, if compared with an identical spout from Mons Claudianus (Winterbottom, 2001: 331-332), is missing. The other spout (167) has a tightly squeezed neck, and a string (zS₂) has been wound around to close it.

³ Spec.id. 020, 028, 029, 030, 031, 032, 033, 034, 035, 039, 041, 042, 070, 119, 139, 151, 167, 168, 184, 190, 230, 233, 234, 237, 242, 243.



Figure 4. Fragments, assigned to water bags based on the diagonal whip stitching (cf. figure 3) and the shape of the topmost layer. Left: obverse and reverse of BE99–31.006 3057–J–030; right: obverse and reverse of BE99–31.006 3057–J–031 (appendix no. 3). Scale bar in cm. Drawings by A. England.



Figure 5. Obverse and reverse of part of a water bag, including the handle BE99–31.007 2272–J–245 (appendix no. 5). Photograph courtesy of the University of Delaware/Leiden University/UCLA Berenike project. Scale bar in cm.

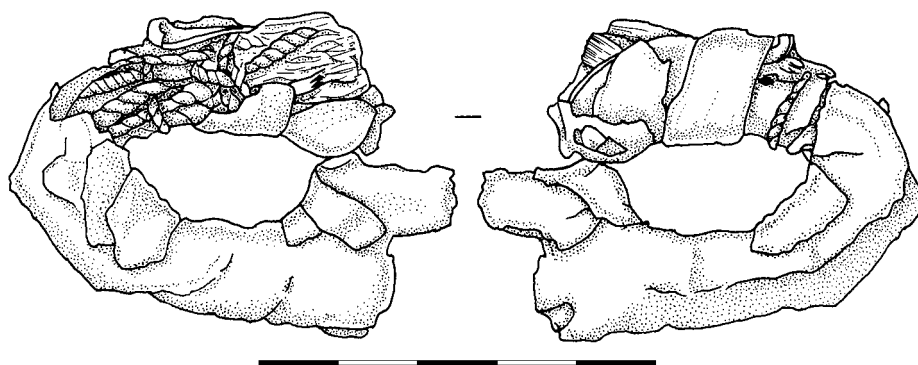


Figure 6. Obverse and reverse of possible belt buckle BE00–33.017 1493–J–168 (appendix no. 25). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

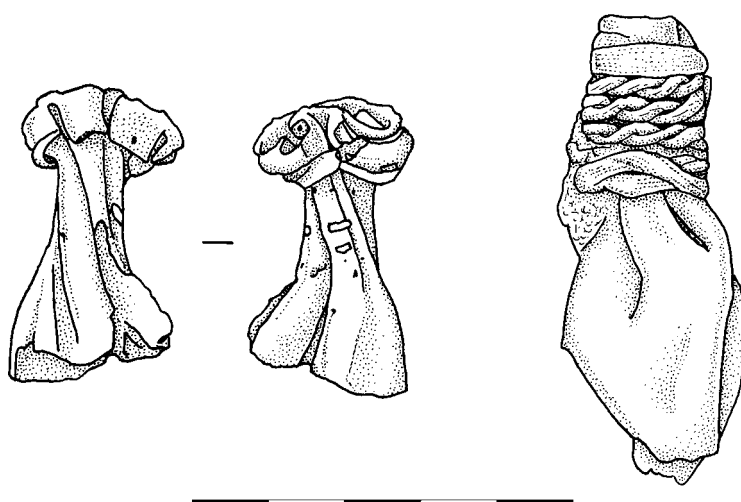


Figure 7. Spouts. Left: obverse and reverse of BE00–33.025 3021–J–190 (appendix no. 30); right: BE00–33.017 1493–J–167 (appendix no. 35). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

Thirty small fragments⁴ are identified as possible seams of water bags on the basis of the similarity in double row of stitches between these fragments (figure 8) and the fragments that are attributed with certainty to water bags (see above). In general, the rows of running stitching are regularly interspersed and of approximately even width and made of narrow leather thongs. One fragment (figure 9) shows a stitched strip, which is curved instead of straight at one side and has a half circular recess on the other side. Another interesting fragment is shown in figure 10. The fragment consists of a larger surface on which two strips are stitched over each other and resembles in this the corner of water bags.

Thirty fragments,⁵ of which three examples are shown in figure 11, are tentatively identified as parts of water bags. Among these fragments are three larger fragments. The fragments show stitching comparable to the stitching seen in the fragments mentioned above, except that there is only one row of stitching. Three larger fragments, of which one shows a coarse stitching with a very small strip,⁶ another shows extensive folding⁷ and the last shows folding and two circular patches (figure 12), are interpreted as body parts of an object with relatively large areas of leather (which may be a water bag).

⁴ Spec id. 010, 011, 013, 015, 038, 040, 043, 061, 067, 069, 089, 090, 141, 142, 143, 144, 148, 155, 186, 194, 196, 199, 201, 203, 206, 215, 218, 235, 236, 238.

⁵ Spec.id. 012, 021, 036, 037, 045, 054, 079, 081, 091, 096, 102, 103, 120, 130, 138, 147, 152, 153, 156, 157, 175, 176, 180, 181, 185, 189, 222, 228, 239, 241.

⁶ Spec.id. 081.

⁷ Spec.id. 045.

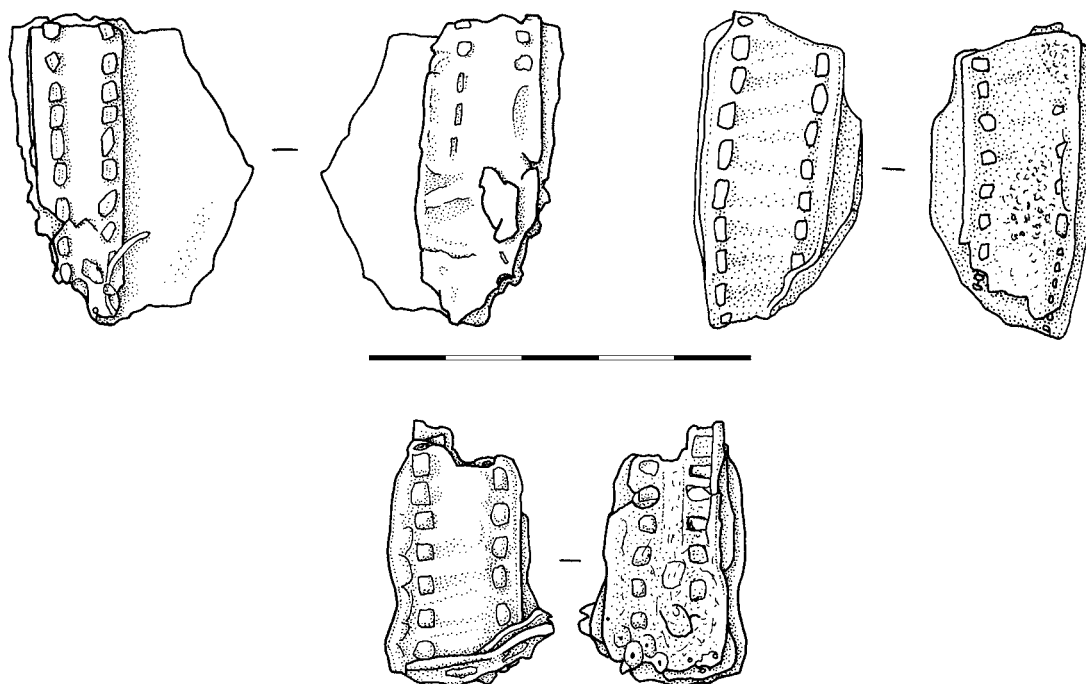


Figure 8. Possible seams of water bags. From left to right and top to bottom: BE99–31.007 2896–J–067 (appendix no. 9), BE00–33.013 1995–J–141 and 142 (appendix no. 23). All running stitch with narrow leather thongs. Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

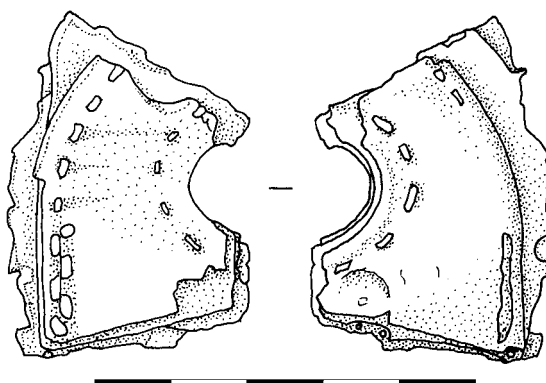


Figure 9. Obverse and reverse of fragment that differentiates itself from the fragments shown in figure 8 because of the curved strip, BE99–31.007 2272–J–043 (appendix no. 5). Sewn with narrow leather thongs; the stitches at the lower left corner are unidentified. Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

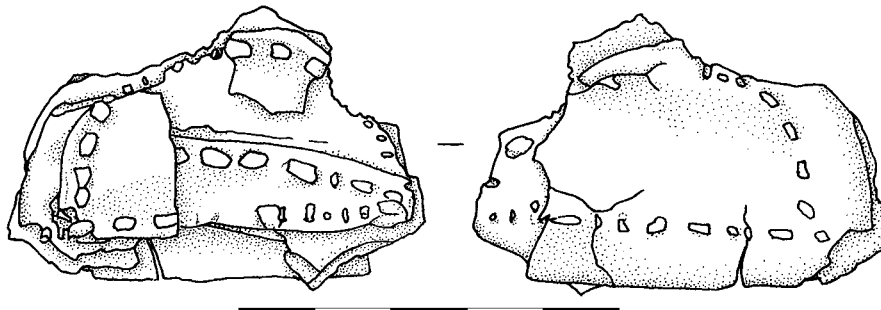


Figure 10. Obverse and reverse of fragment, interpreted as a corner of a water bag, BE99–31.006 3057–J–010 (appendix no. 3). The various parts are sewn with narrow leather thongs (running stitch). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

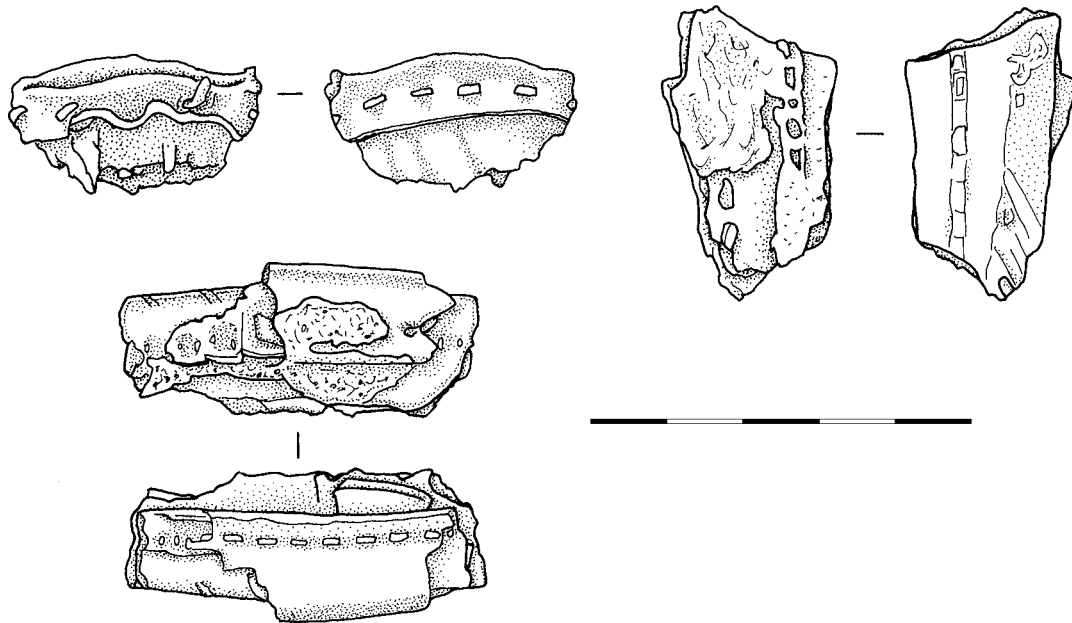


Figure 11. Possible parts of water bags. From left to right and top to bottom: obverse and reverse of BE99–31.007 2494–J–054 (appendix no. 7), obverse and reverse of BE99–31.007 2896–J–068 (appendix no. 9) and obverse and reverse of BE00–33.009 1141–J–139 (appendix no. 21). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

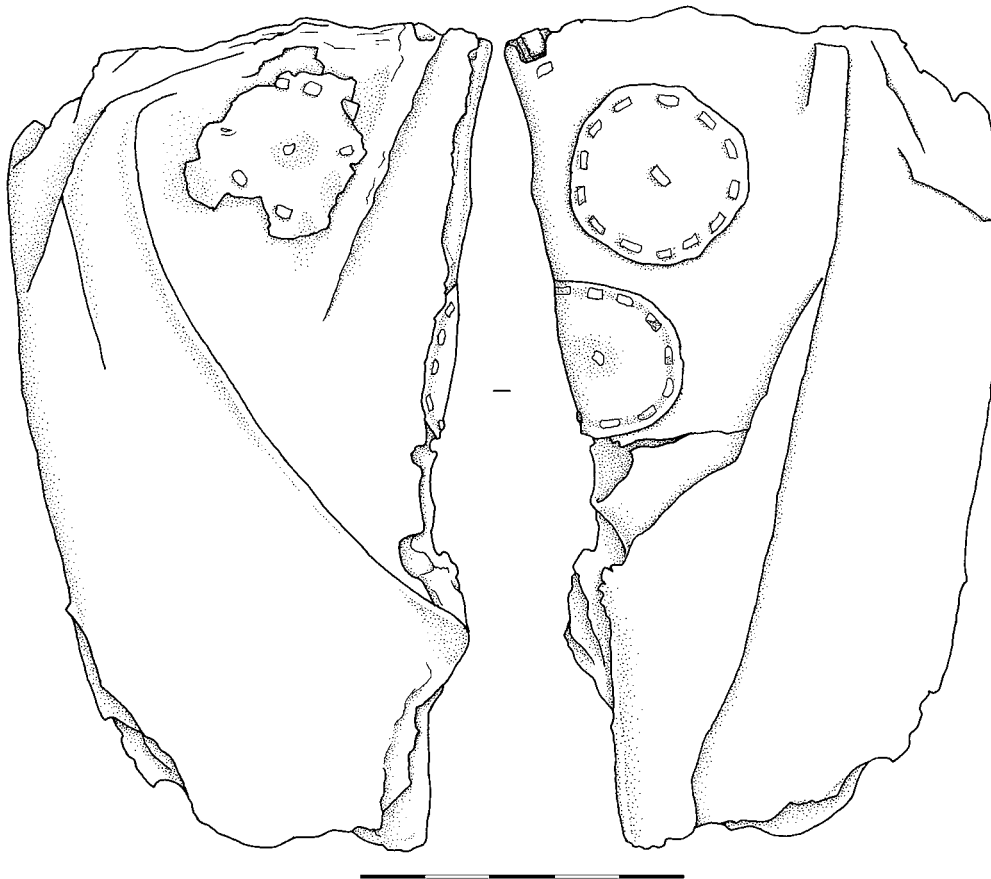


Figure 12. Obverse and reverse of folded sheet of leather, BE99–31.007 4536–J–079 (appendix no. 10). Note the small patches sewn with narrow leather thongs (running stitch). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

3.2. Footwear

The evidence of footwear is surprisingly small. No complete leather footwear is known in contrast to sites from the same period, such as Mons Claudianus (Winterbottom, 1999, 2001), Quseir al-Qadim (Phillips, 1999, 2001), Qasr Ibrim (own observation) and Dakhleh Oasis (Bowen, 2002). One possible shoe is presented in figure 13. The sole is badly preserved, broken in two pieces and still covered with dirt. It appears that three quarters of the width is preserved. The original length cannot be established. Possibly, the sole consists of various layers, but this could not be determined with any degree of certainty due to its condition. The rim of the half circular extremity of fragment 058 is rounded.

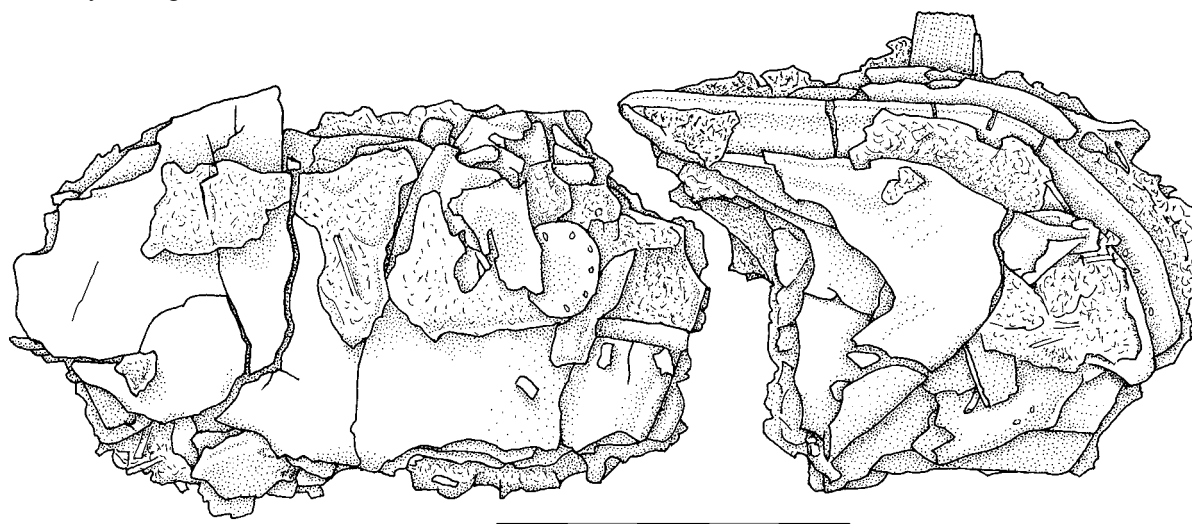


Figure 13. The sole of a shoe, BE99–31.007 2494–J–057 and 058 (both appendix no. 7) respectively. Note that at time of drawing, the sole was not cleared of debris. Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

One piece of leather is fitted with small circular iron studs (figure 14). Two of the studs are almost complete, the third one is badly fragmented. This is a small piece of a nailed shoe, as have been recovered in abundance from Mons Claudianus (Winterbottom, 2001: 325–327) and Qasr Ibrim (own observation) and various sites in northwest Europe (e.g. Van Driel–Murray, 2001).

Two pieces of small leather strips taper at one end (figure 15). Towards the tapered end, slits have been cut lengthwise. The pieces are identified as parts of sandal fastenings (Forbes, 1957: 59–60; Van Driel–Murray, 2000: 312–316; Winterbottom, 2001: 315–329; own observation Qasr Ibrim material).

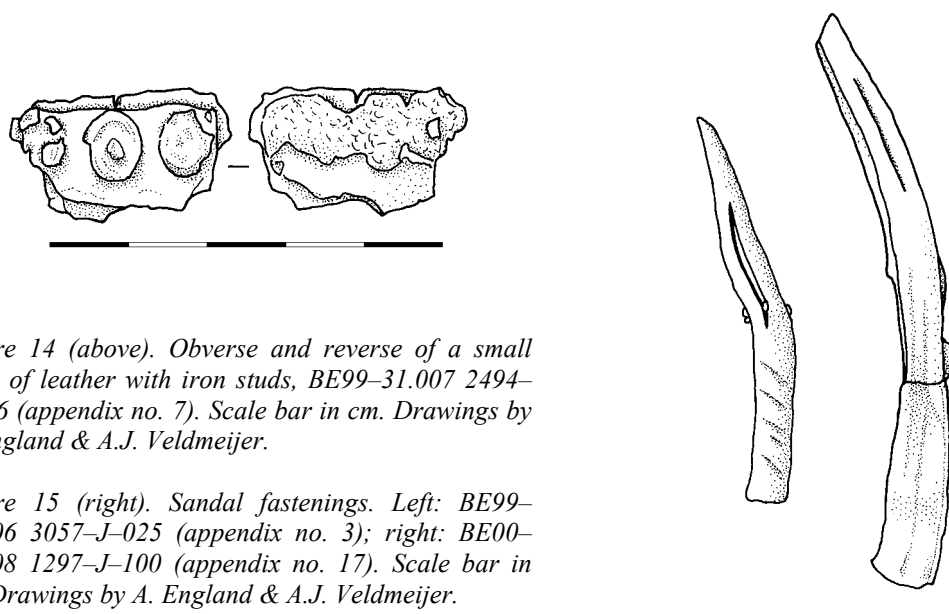


Figure 14 (above). Obverse and reverse of a small piece of leather with iron studs, BE99–31.007 2494–J–056 (appendix no. 7). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

Figure 15 (right). Sandal fastenings. Left: BE99–31.006 3057–J–025 (appendix no. 3); right: BE00–33.008 1297–J–100 (appendix no. 17). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

A knot made of a strip of leather is shown in figure 16. The strip is folded and one extremity is folded over the opposite extremity and pulled through a slit in the folded part (see inset). Winterbottom (2001: 338) described a slightly different but certainly comparable construction, which she interprets as a toggle and loop fastening; the knot forming the toggle (*cf.* Goubitz, 2001: 60; see also Cuvigny: 543, 547).

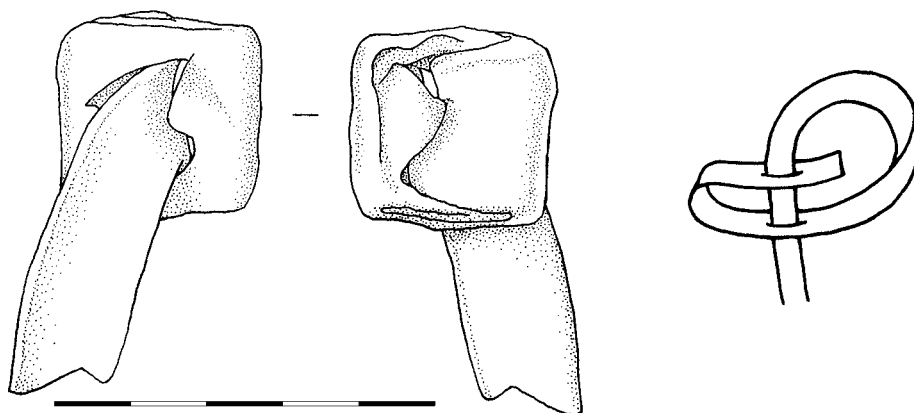


Figure 16. Knot, made by folding and pulling through a slit in the folded part (inset), BE00-33.018 1654-J-173 (appendix no. 26). Scale bar in cm (construction drawing not to scale). Drawings by A. England, A.J. Veldmeijer & E. Endenburg.

3.3. Miscellaneous

Thirty-six fragments⁸ have been recognized as isolated patches or possible patches. These patches are generally circular and vary in size; the smallest patches having an average diameter of 20 mm and the largest a diameter of 66 mm.⁹ Most patches have been sewn on several layers of leather (figures 17) but some have been attached to a single layer of leather (figure 18). The patches are attached by means of one row of leather thong stitches (running stitch). The density of stitches varies from dense to widely spaced, as seen in figure 17. The thongs have an almost equal width in all cases, despite the size of the patch itself. In the instances where the thongs are not preserved, their former presence is indicated by slits, sometimes grouped in pairs. Patches can be used for repairing holes, but also for the reinforcement of naturally weak spots in the animal skin (Winterbottom, 2001: 331; Yadin, 1963: 163; own observation Qasr Ibrim material). Various objects suggest that leather items were repaired repeatedly. The fragments shown in figure 19 show various layers of patching, even over older patches.

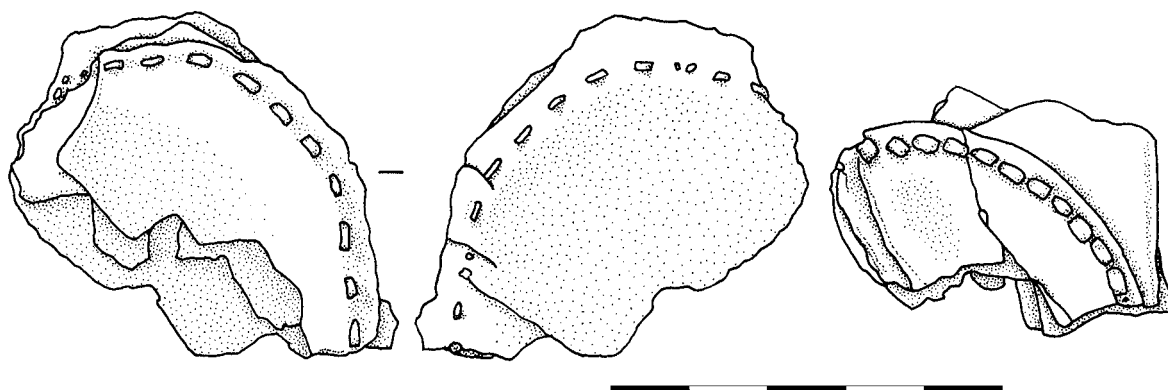


Figure 17. Examples of multi layered, patched leather fragments. All are sewn (running stitch) with narrow leather thongs. Note the difference in density of the stitching. Left: obverse and reverse of BE99-31.006 3057-J-018 (appendix no. 3); right: BE99-31.007 2593-J-065 (appendix no. 8). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

⁸ Spec.id. 006, 008, 016-018, 023, 024, 044, 052, 059, 060, 062, 063, 065, 066, 073, 075, 076, 077, 088, 121, 129, 140, 149, 150, 154, 158, 179, 191, 192, 198, 204, 205, 216, 223, 224.

⁹ Spec.id. 052 is even larger but its identification as patch is uncertain.

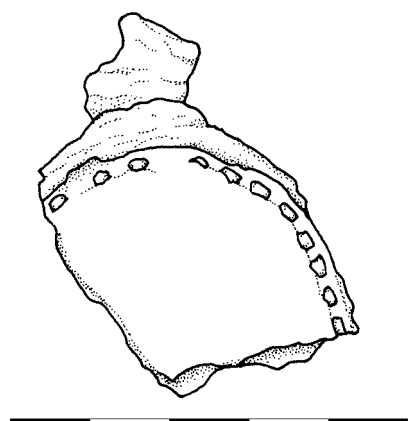


Figure 18. Example of repair of a single layer of leather, BE99–31.007 4536–J–077 by means of running stitch with narrow leather thongs (appendix no. 10). Scale bar in cm. Drawing by A. England & A.J. Veldmeijer.

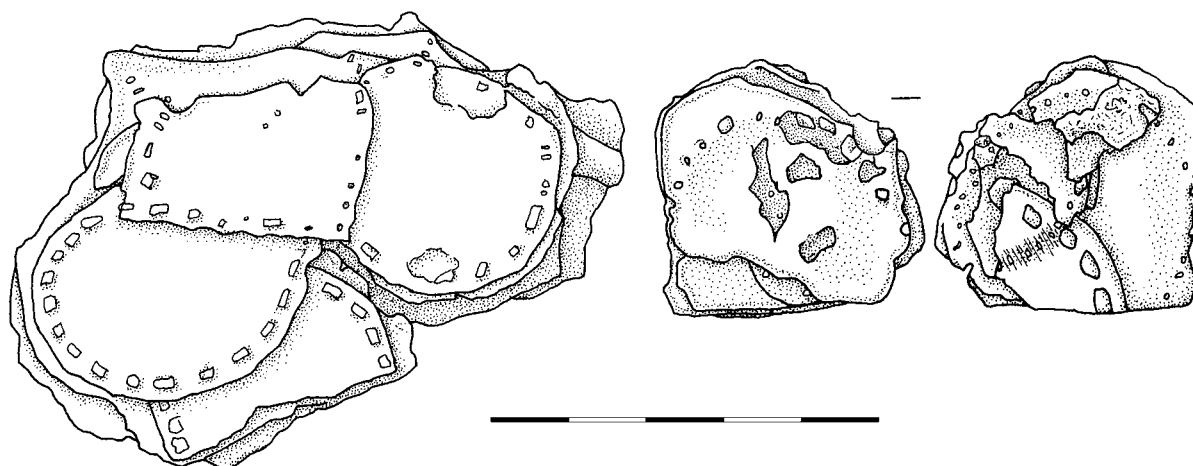


Figure 19. Various layers of patching, suggesting long-time use and multiple repair. Left: BE99–31.007 2593–J–060 (appendix no. 8); right: obverse and reverse of BE00–33.013 1995–J–149 (appendix no. 23). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

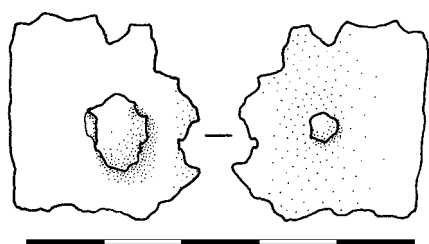


Figure 20. Obverse and reverse of thin piece of leather, decorated with a leather rosette, BE00–33.025 3512–J–217 (appendix no. 32). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

Various other objects cannot be identified with certainty but have features worth mentioning and differ therefore from fragments referred to as scraps (see below). Two singular strips of leather have been knotted into overhand knots.¹⁰ One piece of very thin leather has been decorated with a small leather decoration, of which the original form cannot be determined anymore due to the poor condition. It has been fastened at the concave side with a knob (figure 20). One small circular object has a punched centre point, resulting in a small dent in one side and a corresponding protrusion on the other side (figure 21), which is a clear indication that the circular object is compass drawn. Another circular object has a thick rounded rim at the obverse and has a flat reverse side (figure 22). Three pieces,¹¹ of which one is shown in figure 23, seem to be modelled purposely into bundles, held together by stitches. A remarkable piece is shown in figure 24. The fragment is part of a square or rectangular object. The slightly elevated edges of approximately 5 mm are situated at both obverse and the reverse side. Further study needs to shed light on the way the layers of leather have been removed but the corners

¹⁰ Spec.id 094, 099.

¹¹ Spec.id. 026, 082, 101.

of the elevated edges clearly show cutting marks. This might indicate that the leather worker made an incision along the edge after which the inner part was removed. The object is tentatively identified as part of a writing board (Veldmeijer & Van Roode, 2005).

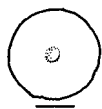


Figure 21. Small circular object with dent and protrusion, BE00–37.029 6452–J–244 (appendix no. 37). Scale bar = 5 mm. Drawing by A. England & A.J. Veldmeijer.

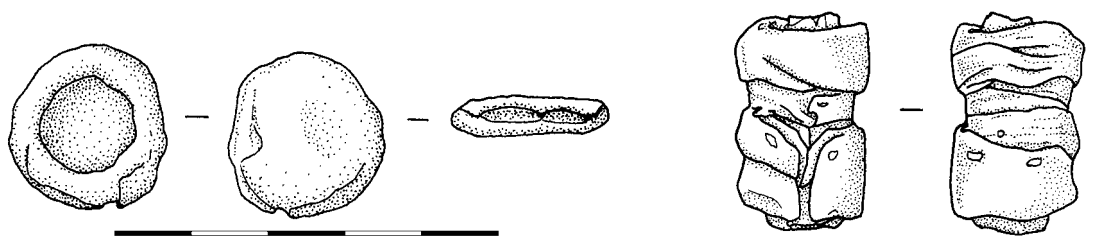


Figure 22 (left). Obverse and reverse of circular object with a thick rounded rim at one side, BE00–33.005 1120–J–087 (appendix no. 13). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer. Figure 23 (right). Obverse and reverse of one of three examples of purposely bundled leather, BE99–31.006 3057–J–026 (appendix no. 3). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

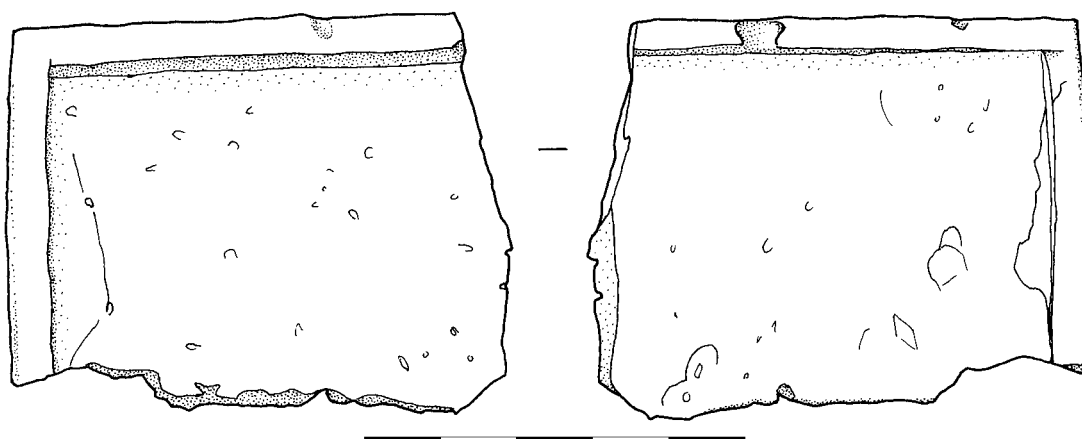


Figure 24. Obverse and reverse of part of a leather tablet, BE00–33.013 2147–J–164 (appendix no. 24), tentatively identified as fragment of writing board (Veldmeijer & Van Roode, 2005). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

Sixty-eight pieces of leather are categorized as scrap.¹² The reasons of referring to fragments as scraps are the fact that these are not attributable to any identifiable object because they do not have characteristics that could help classify them in a certain category. Five additional pieces¹³ are regarded as scrap, despite their relatively large size, varying from roughly 30 to 80 mm. A large amount of dirt still adheres to these five, which makes it impossible to identify them. One of the fragments has a small wooden stick protruding from it (figure 25). At the point where it emerges from the leather, cordage is wrapped around the stick.

A thin sheet of leather has been bent and stitched with a running stitch of leather thong to form a tube (figure 26). Winterbottom (1991: 81), who may have described a comparable piece from Mons Claudianus, remarks that a “[...] stitched tube of about the diameter of a man’s thumb, conceivable [is] a finger guard used by a leather worker.”

¹² Spec.id. 001-003, 005, 007, 027, 046-049, 051, 053, 055, 068, 072, 074, 083-086, 093, 097, 098, 104-107, 109-115, 117, 123 (on the basis of the drawing only; fragment not found), 126, 128, 131-134, 136, 137, 145, 146, 159-163, 165, 169-171, 177, 182, 188, 195, 197, 202, 208, 220, 226, 227, 229, 231, 232.

¹³ Spec.id. 009 (not preserved), 080, 172, 178, 240.

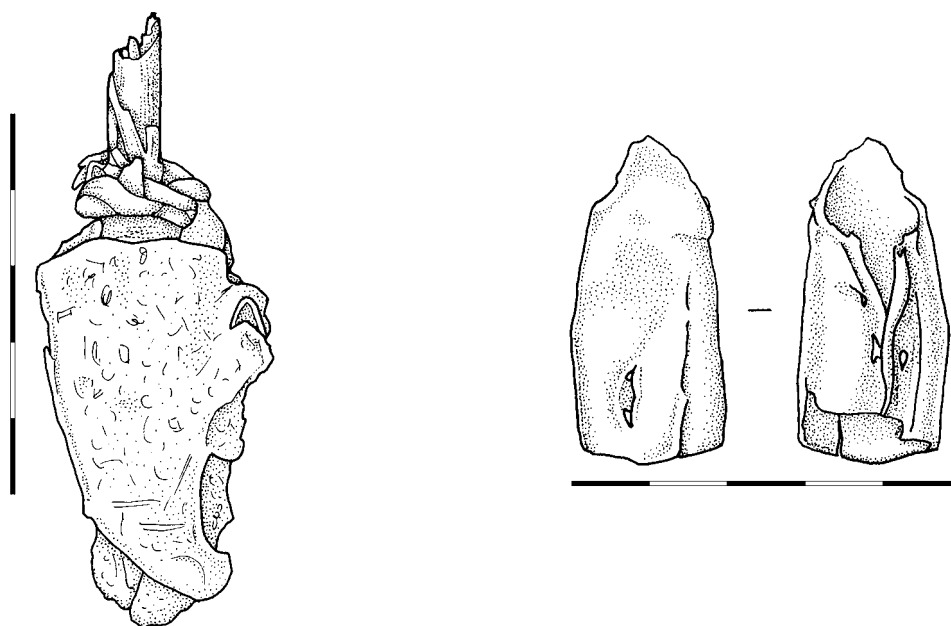


Figure 25 (left). Leather with stick protruding, BE00–33.018 1654–J–172 (appendix no. 26). Scale bar in cm. Drawing by A. England & A.J. Veldmeijer. Figure 26 (right). Obverse and reverse of sheet of leather, stitched into a tube, BE00–33.sbt 5626–J–092 (appendix no. 15). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

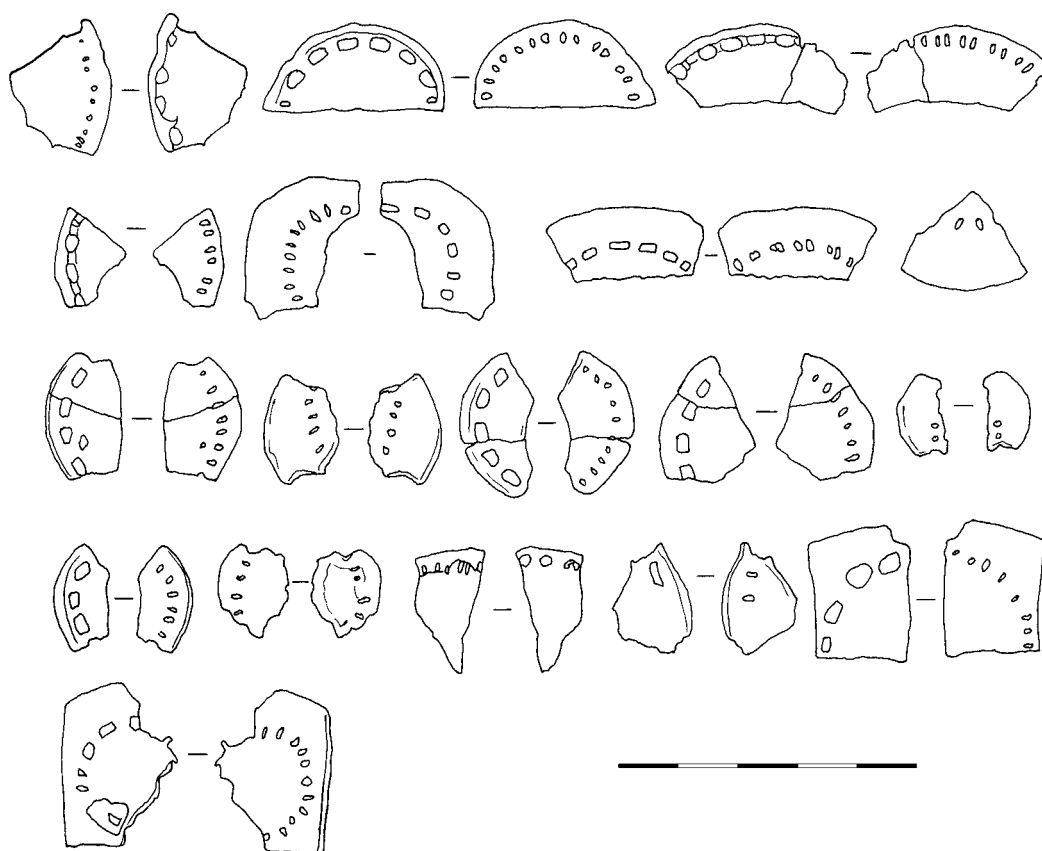


Figure 27. Various isolated, half circular fragments. Specialist id's (from left to right and top to bottom; NB for context the reader is referred to the appendix): 004, 014, 019, 020, 022 (appendix no. 3), 064 (appendix no. 8), 108 (appendix no. 18), 207, 209, 210, 211, 212, 213, 214 (appendix no. 32), 219, 221, 225 (all appendix no. 33), 166 (appendix no. 25). Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

Twenty fragments¹⁴ are small isolated half circular fragments of leather (examples are seen in figure 27), apparently produced to be sewn onto an underground. But instead, they occurred in the archaeological record as isolated objects. Although they vary in size, in general they are small (about 15–30 mm in diameter). In contrast to the patches discussed previously, these fragments are half circular (for instance 014) or likely half circular but only partly preserved. However, there are two exceptions, 166, 225, the fragments being almost square. In contrast, the running stitching displays a circular pattern. The objects also have one row of leather thong stitches of approximately comparable size, in which in some cases the small strips of leather are still partly visible. The variation of the density of the stitches is far less relative to the situation in the patches discussed previously. Based on the fact that no fragment exceeds beyond a half circle it seems that these fragments were meant to have this shape. Van Driel–Murray suggests (pers.com. 2003) that these fragments may be segments cut from sandals, or wedges inserted between sandal layers. The absence of the sandals themselves, as noted before, is all the more striking.

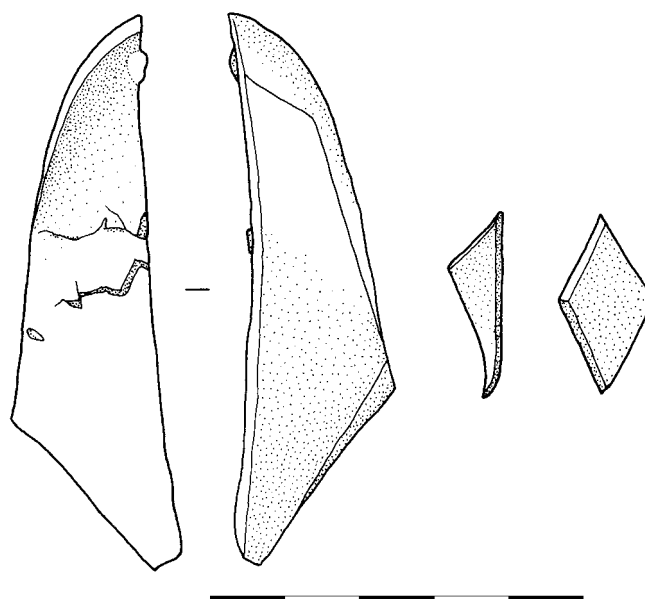


Figure 28. Pieces of leather (off cuts?) as possible evidence of leather working, Obverse and reverse of BE00–33.008 1297–J–095 (appendix no. 17) and obverse and reverse BE00–33.008 1307–J–116 (appendix no. 18) respectively. Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

Three fragments are evidence of leather working (figure 28). The fragments are off cuts; one being diamond shaped and one triangular, both of which are of small dimensions.¹⁵ The third one is roughly triangular with one corner rounded. The fragment is far larger relative to the other off cuts. The fragments are identified as off cuts because of the sharp cutting edges and the fact that they are not worked. The roughly triangular might be an off cut from a shoe sole (Van Driel–Murray, 2001: 341; Winterbottom, 1991: 81; 2001: 330).

Three pieces have irregularities on the leather that are not caused by anthropogenic factors. Possibly, they are remains of nipples, navels, anuses, ears etc.¹⁶ These naturally weak spots sometimes were patched over to reinforce the skin before it could be used. One of the pieces has a protrusion wrapped in cordage (figure 29; comparable constructions have been identified in water bags from Qasr Ibrim). A comparable, though larger and unwrapped protrusion was described by Winterbottom (2001: 331), who suggested that it may be the remnant of a leg.

An unprocessed piece of hide, with the hairs still mostly *in situ*, shows a hole pierced in approximately the middle.¹⁷ On the flesh side, two traces of cuts can be seen. Two rectangular pieces with traces of cuts differ from the other described material in the fact that the fragments are relatively thick and hard (figure 30). Their colour is yellowish. According to Van Driel–Murray (2000: 302): “Rawhide dries to a hard, yellow–white horny substance (desiccated collagen).”

¹⁴ Spec.id. 004, 014, 019, 020, 022, 064, 108, 122, 166, 183, 187, 207, 209–214, 221, 225.

¹⁵ The two small fragments are registered as one.

¹⁶ Spec. id. 050, 078, 174.

¹⁷ Spec.id. 118.

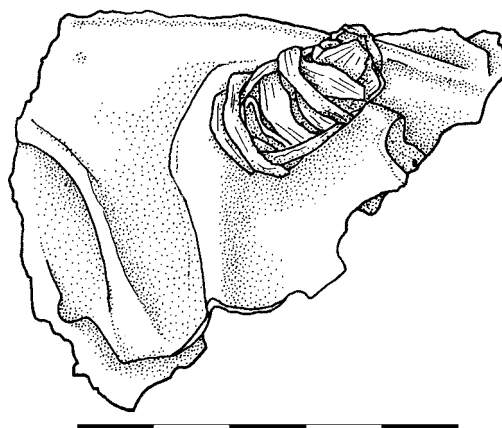


Figure 29. Remnant of a leg, wrapped with linear cordage, BE99–31.007 4536–J–078 (appendix no. 10). Scale bar in cm. Drawing by A. England & A.J. Veldmeijer.

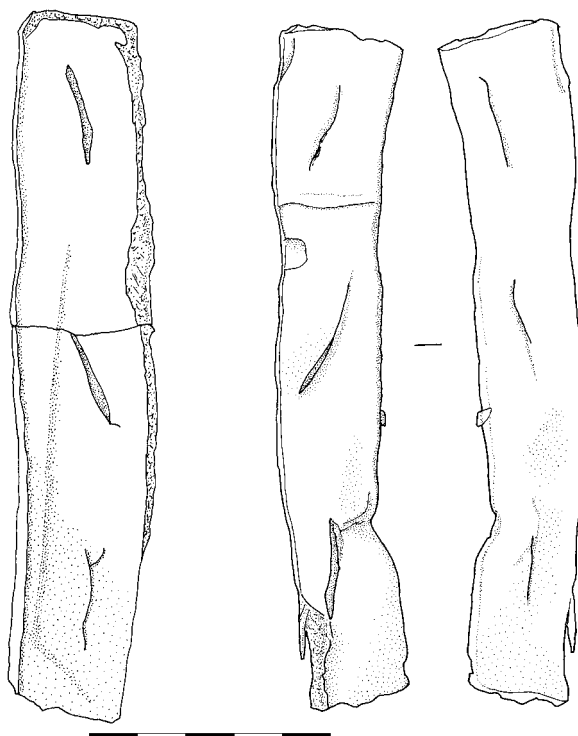


Figure 30. Rawhide with slits, BE00–33.008 1307–J–127 (appendix no. 18) and obverse and reverse of BE00–33.008 1339–J–135 (appendix no. 19) respectively. Scale bar in cm. Drawings by A. England & A.J. Veldmeijer.

One piece of leather shows evidence of a linear piece of cordage having been pulled through a hole in the leather (figure 31); the material is wrinkled which indicates that there was force executed on the rim of the hole. The fragment has been cut from a larger object as evidenced by the square edges. The original object may have been used for carrying or dragging.

4. Discussion

Material from these provincial Roman sites is often compared with the so-called ‘northern sites’. Due to lack of well preserved material from Berenike and the difference in circumstances between an Egyptian site and a site from northwest Europe, this comparison will be greatly limited here. Comparison of the leather with the corpus of other Roman sites in Egypt is also limited and will be mainly restricted to Mons Claudianus and, to a lesser extend, Quseir al-Qadim. The reasons for this limitation are mainly found in the lack of published

comparable material (an instance is Qasr Ibrim) or the rather passing manner in which the leather is discussed (for instance Bowen, 2002).

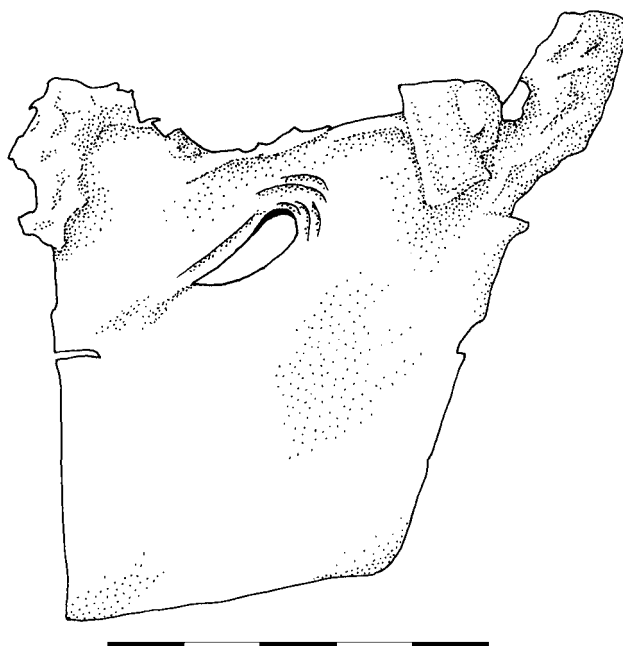


Figure 31. Leather with a hole being used to carry by a linear piece of cordage as evidenced by the wrinkles, BE99–31.007 4536–J–071 (appendix no. 10). Scale bar in cm. Drawing by A. England & A.J. Veldmeijer.

The corpus of leather finds from Berenike is mainly dated to the early Roman periods. The almost evenly extensive excavated 5th c. AD and later contexts surprisingly did not yield leather finds worth mentioning. A reason for this absence cannot be given at the moment; this will be one of the focal points of future research but the fact that the two dumps differ fundamentally in character, the early Roman one containing more industrial waste and the late Roman rubbish dumps contained more household goods (Sidebotham & Wendrich, 2000: 417–418), seems to play at least a role in the differences.

In contrast to Mons Claudianus and Quseir al-Qadim, no footwear except a tentative sole, has been recovered in Berenike. The reason for this absence is difficult to assess. Although the preservation circumstances certainly account for part of it, especially for footwear with one layer soles, this can hardly be the explanation for the almost complete lack of leather footwear. At least part of discarded soles, seams and the like should have been found, since these thick parts relatively well withstand deterioration. Furthermore, the inhabitants were wealthy enough to obtain leather footwear (Sidebotham & Wendrich, 1999: 453) but they might have had a preference for palm and cordage made footwear. However, the number of these types of footwear is few as well, which is remarkable because there are relatively large amounts of organic artefacts (such as textiles, basketry and cordage) recovered.

The items that are assumed to be the handles of water bags (Winterbottom, 2001), differ from those recovered from Mons Claudianus and the one known from Qasr Ibrim,¹⁸ in the fact that the latter do not display the diagonal stitching at the bottom of the handle, below the eye, seen in most of the handles from Berenike. Furthermore, the eyes in the Berenike handles are smaller. In general, the Berenike handles appear to be made with much more care. On the other hand, the handles with the diagonal whip stitches closely resemble the ones from Maximianon (Cuvigny: 541, 545) whereas the handle shown in figure 5 closely resembles the specimen from Krokodilô (*ibidem*: 544).

5. Acknowledgements

I thank S.E. Sidebotham and W.Z. Wendrich, the co-directors of the excavations at Berenike. I thank C. van Driel-Murray and J.B. Phillips for critically reading the manuscript; their invaluable comments greatly improved the paper. E. Endenburg is acknowledged for helping with drawing as well as for his all-round

¹⁸ 95.1.2/122, not published. Note that, despite the fact that many (parts of) water bags are registered from this site, the isolated handle is remarkable.

assistance. I thank E. England for producing figures 3 and 4, as well as allowing me to prepare his other drawings for publication. The SCA is thanked for admittance to the SCA magazine in Quft to study the material in storage. E.N.A. Heirbaut and H.J.M. Meijer are acknowledged for the willingness to act as interim editor for this PalArch journal.

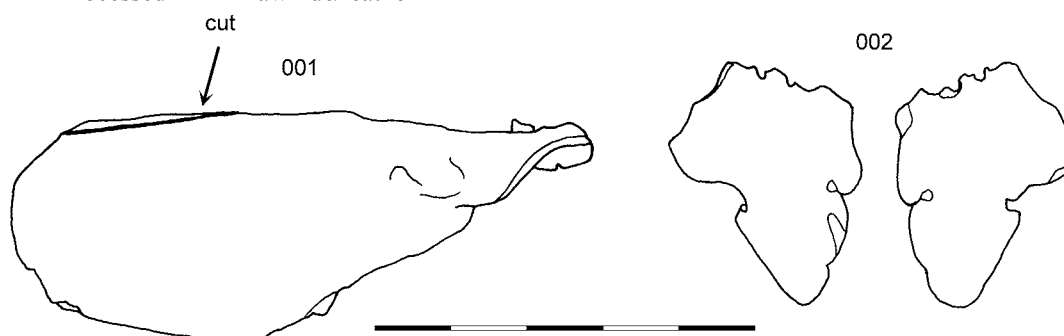
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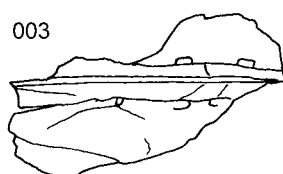
7. Appendix

This appendix consists of the fragments which display evidence of working, however small, classed by context. Especially the material from the last seasons (the 1999 and 2000 seasons) are included because the material from previous seasons are either scraps or unprocessed material. Details can be found in the body of the text. 'text figure' refers to the drawing in the text; 'figure' refers to the line drawings in the appendix. All scale bars in the appendix figures are in cm; all measurements are in mm. In the drawings, > refers to (remnants of) whip stitching; —> refers to (remnants of) running stitching.

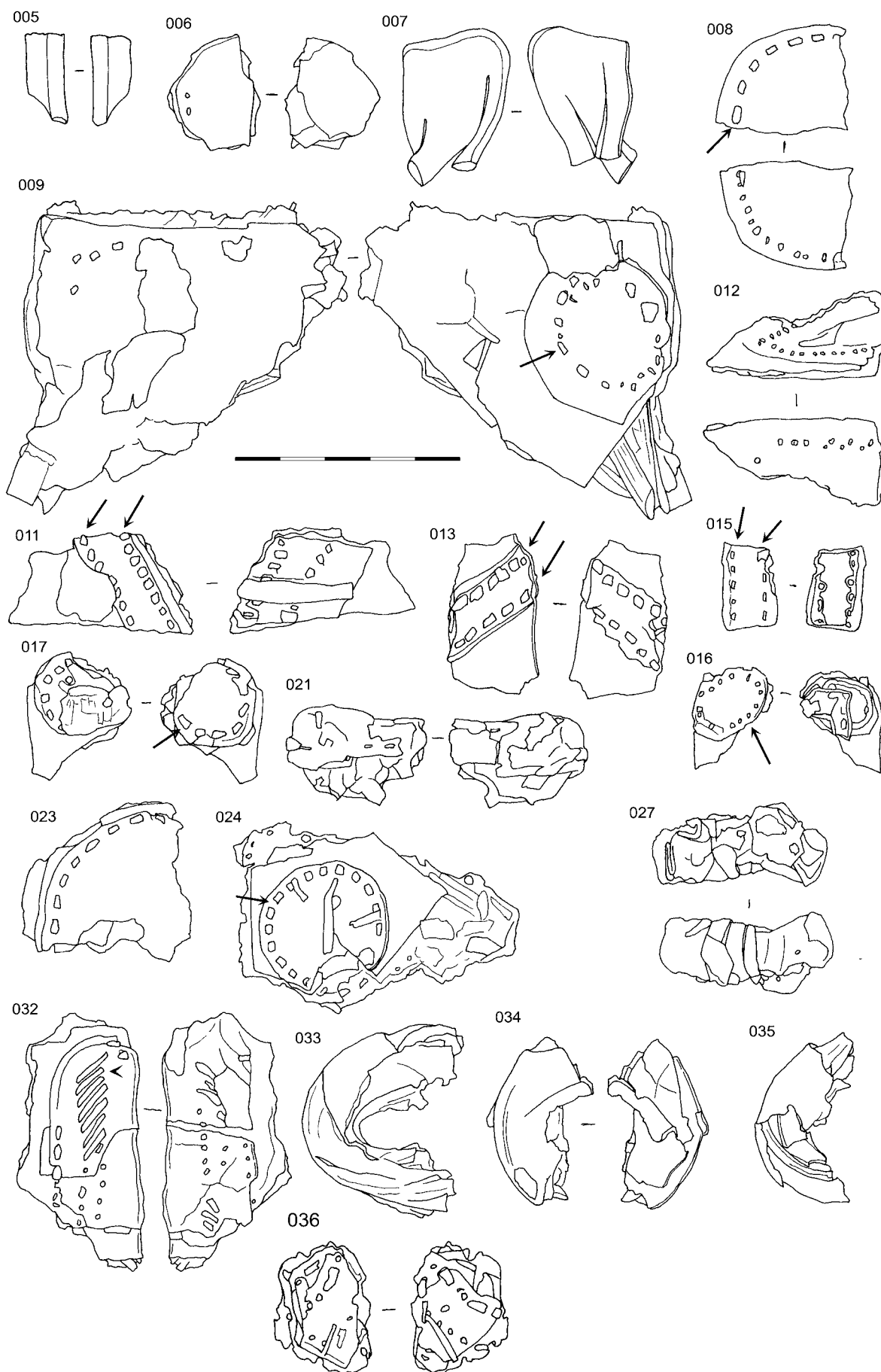
- 1 Context BE99–29.002 0407–J
PB 04
Spec. id. 001–002
Measurements 001: 33x77; 002: 25x31
Dates 70 AD plus
Processed rawhide/leather



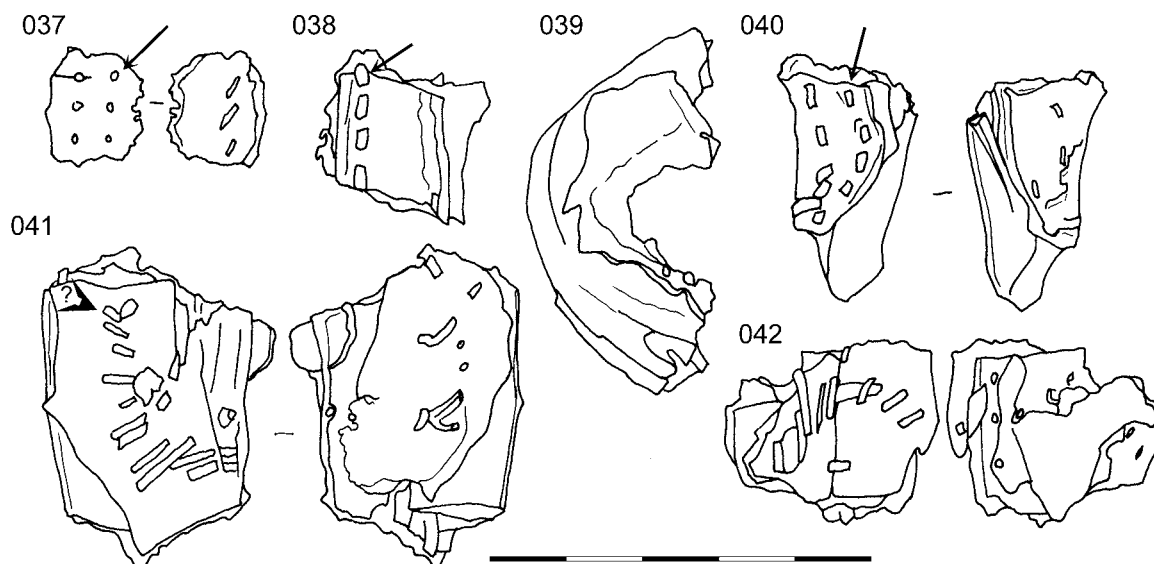
- 2 Context BE99–29.002 0547–J
PB 05
Spec. id. 003
Measurements 19x37
Dates mid 1st c. AD plus
Processed leather



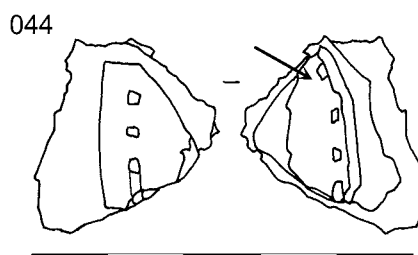
- 3 Context BE99–31.006 3057–J
PB 16
Spec. id. 004–036
Measurements 004: 16x23; 005: 8x21; 006: 21x26; 007: 24x36; 008: 26x33; 009: ?; 010: 36x55; 011: 27x42; 012: 24x39; 013: 21x37; 014: 17x30; 015: ?; 016: 18x23; 017: 24x29; 018: 46x48; 019: 13x23; 020: ?; 021: 22x31; 022: 18x24; 023: 38x38; 024: 50x64; 025: 8x6; 026: 16x17; 027: 21x38; 028: 76x80; 029: 75x83; 030: 33x72; 031: 38x85; 032: 24x57; 033: 35x45; 034: 24x39; 035: ?; 036: app. 19x26
Dates later part 1st c. AD
Processed leather
Remarks 020: not preserved (is the reason for the lack of measurements); 019: only partly preserved; 035: too deteriorated to measure.
Text figure 3: 028, 029
4: 030, 031
10: 010
15: 025
17: 018
23: 026
27: 004, 014, 019, 020, 022



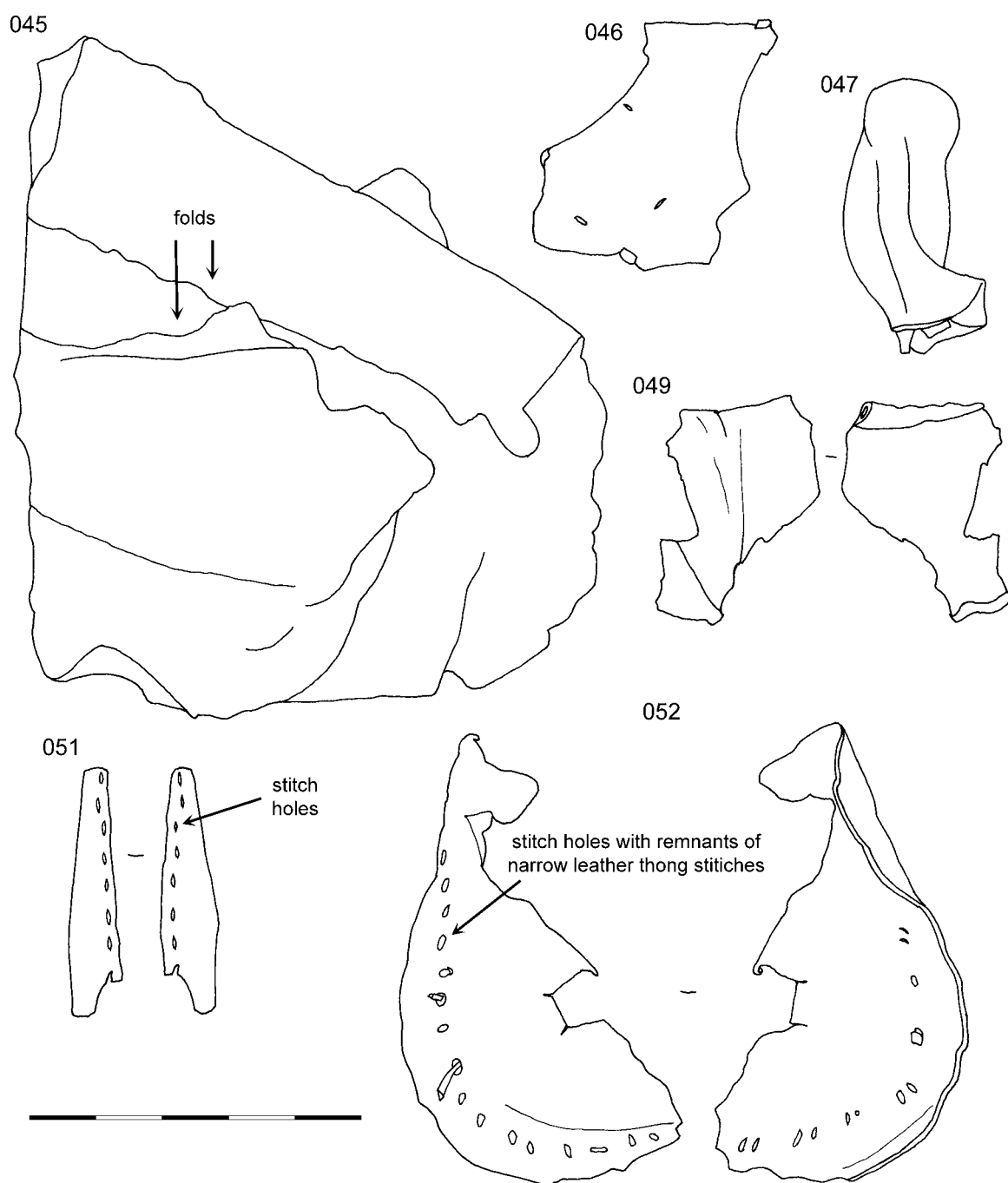
- 4 Context BE99-31.006 3318-J
 PB 23
 Spec. id. 037-042
 Measurements 037: ?; 038: ?; 039: 32x37; 040: 17x32; 041: 26x38; 042: 25x30
 Dates mid-late 1st c. AD
 Processed leather
 Remarks 037, 038 was not preserved



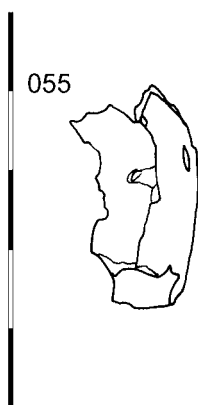
- 5 Context BE99-31.007 2272-J
 PB 02
 Spec. id. 043-044, 245
 Measurements 043: 31x46; 044: 24x27; 245: appr. 50x100
 Dates AD 70 plus
 Processed leather
 Text figure 5: 245
 9: 043



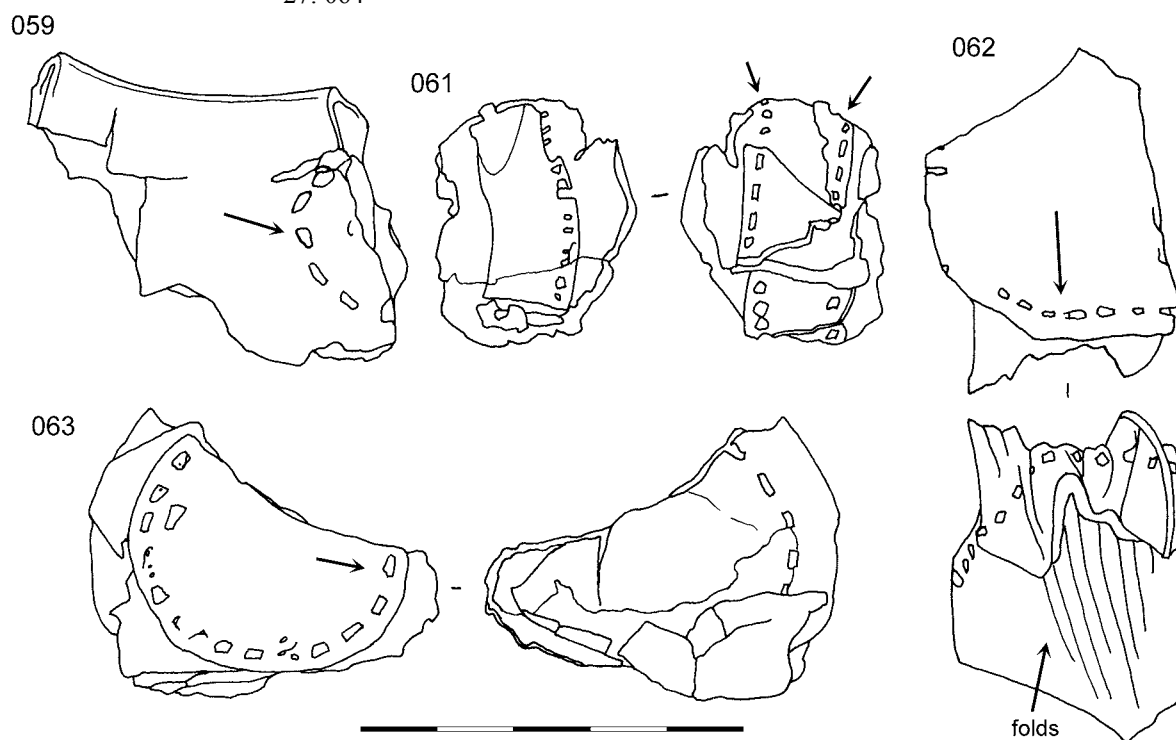
- 6 Context BE99-31.007 4536-J
 PB 03
 Spec. id. 045-052
 Measurements 045: 88x104; 046: 31x37; 047: 15x41; 048: 27x42; 049: 24x36; 050: 35x64; 051: 18x38; 052: 35x72
 Dates AD 70 plus
 Processed rawhide, leather
 Remarks 048 and 050 not illustrated



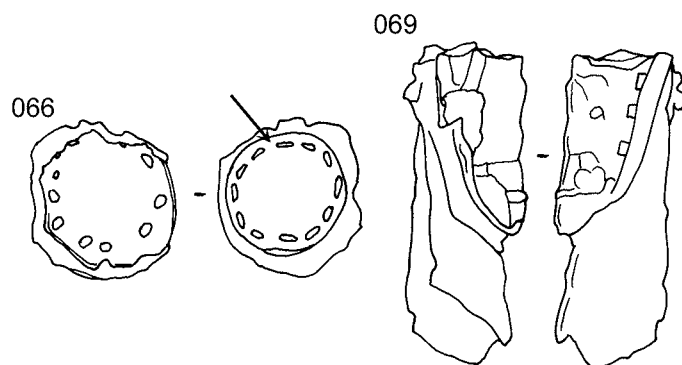
7	Context	BE99-31.007 2494-J
	PB	04
	Spec. is.	053-058
	Measurements	053: 13x15-19x23; 054: 19x32; 055: ?; 056: ?
	Dates	mid-late 1 st c. AD
	Processed	leather
	Remarks	053 consists of four small thin pieces, all broken, 055 and 056 not preserved
	Text figure	11: 054
		13: 057, 058
		14: 056



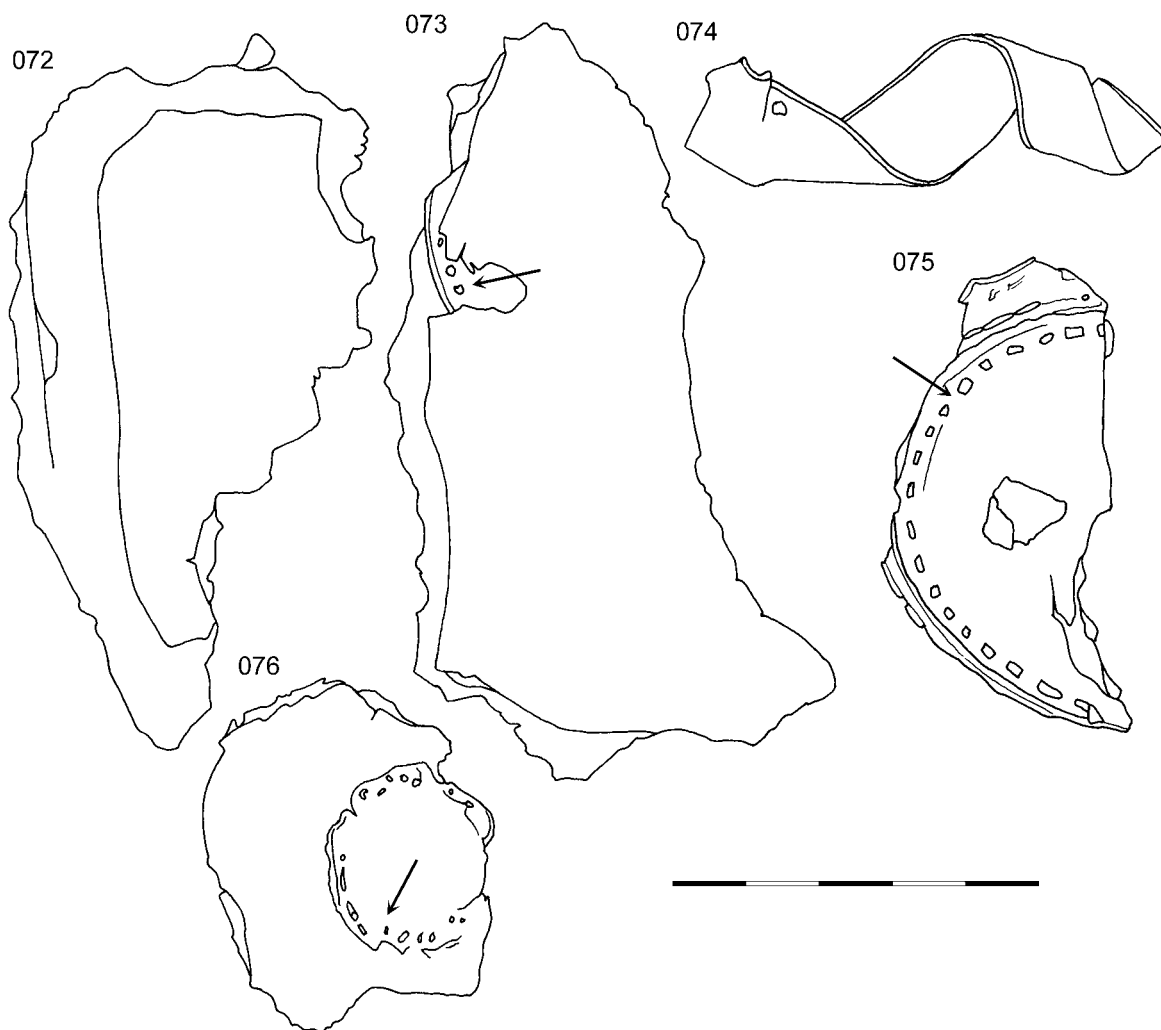
- 8 Context BE99-31.007 2593-J
 PB 09
 Spec. id. 059-065
 Measurements 059: 38x51; 060: 59x85; 061: 23x28; 062: 31x43; 063: 38x47; 064: ?; 065: 31x47
 Dates mid-late 1st c. AD
 Processed leather
 Remarks 064 is not preserved, 061 is partly preserved
 Text figure 17: 065
 19: 060
 27: 064



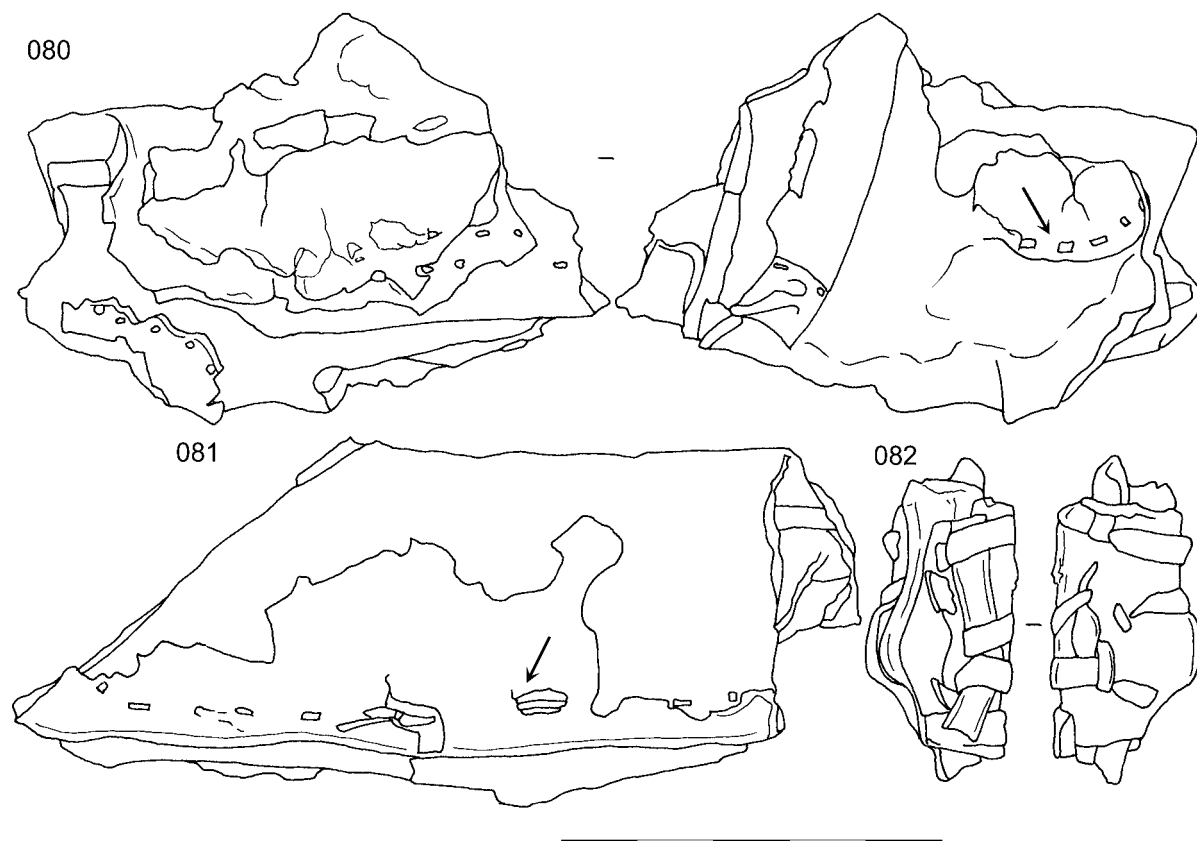
- 9 Context BE99-31.007 2896-J
 PB 13
 Spec. id. 066-070
 Measurements 066: 20x21; 067: 31x41; 068: 21x37; 069: 16x41; 070: 58x68
 Dates late 1st c. AD
 Processed leather
 Text figure 3: 070
 8: 067
 11: 068



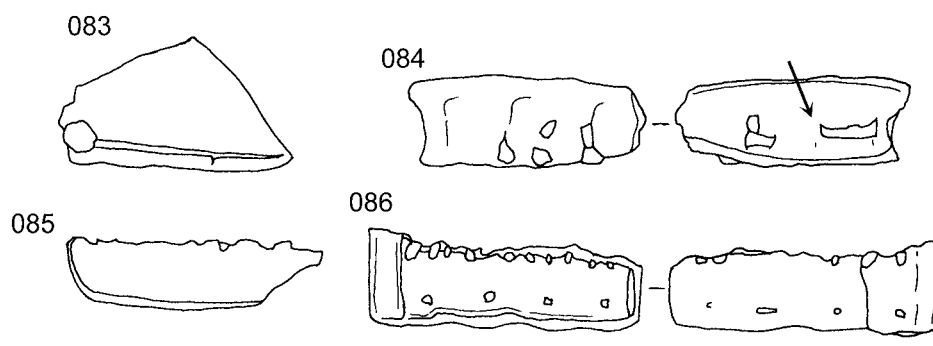
- 10 Context BE99-31.007 4536-J
 PB 03
 Spec. id. 071-079
 Measurements 071: 71x84; 072: 48x94; 073: 58x105; 074: 15x67; 075: 32x66; 076: 41x50; 077: 31x46; 078: 50x72; 079: 78x133
 Dates AD 70 plus
 Processed rawhide (071), leather
 Remarks 077 is partly preserved
 Text figure 12: 079
 18: 077
 29: 078
 31: 071



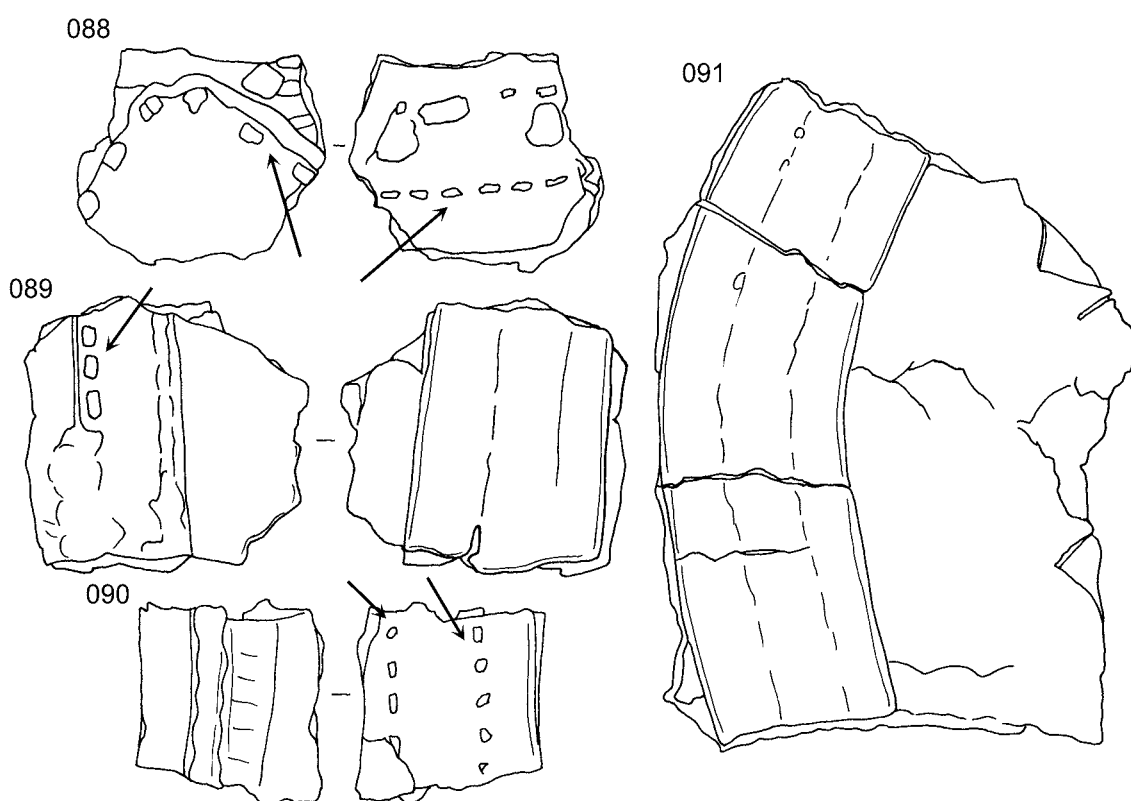
11	Context	BE99-31.wbt 4362-J
	PB	36
	Spec. id.	080-082
	Measurements	080: 42x78; 081: 51x112; 082: 43x17x20
	Dates	not dated
	Processed	leather



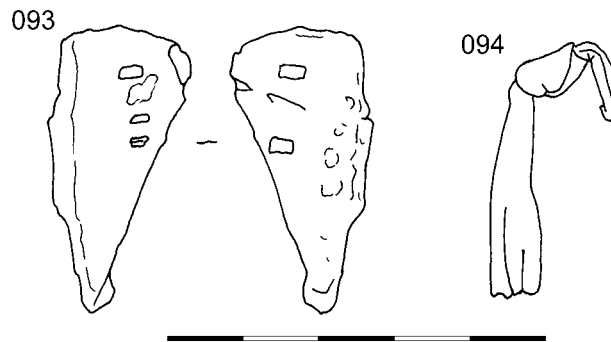
12	Context	BE00-33.004 1096-J
	PB	05
	Spec. id.	083-086
	Measurements	083: 18x31; 084: 12x31; 085: 10x33; 086: 11x36
	Dates	early mid 1 st c. AD
	Processed	leather



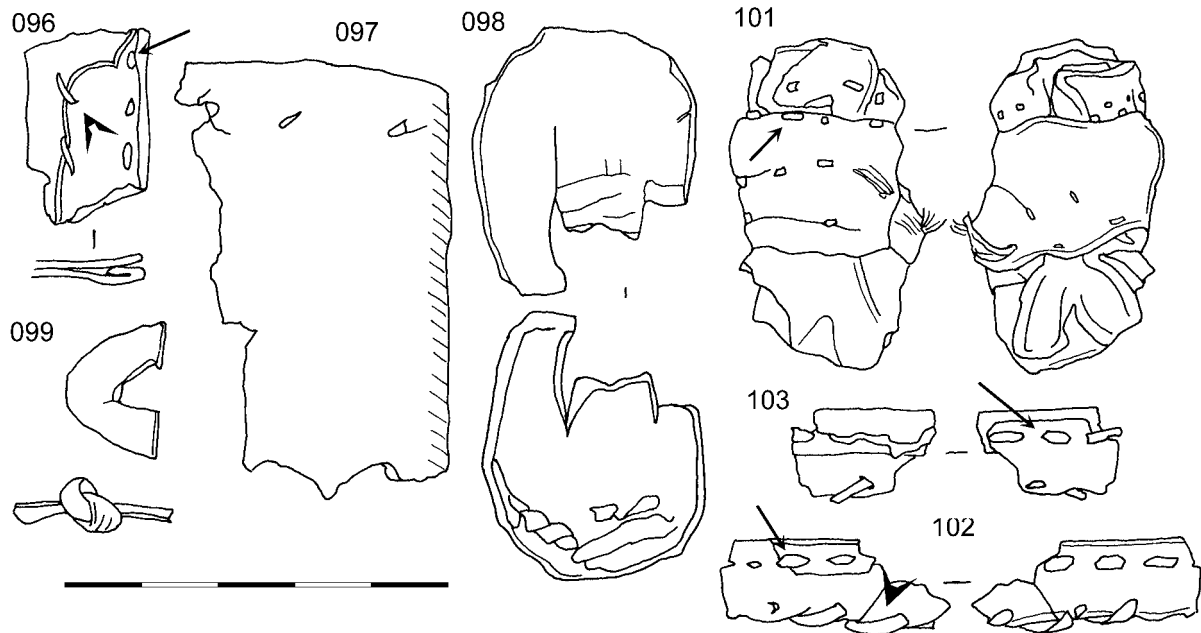
- | | | |
|----|--------------|--|
| 13 | Context | BE00-33.005 1120-J |
| | PB | 09 |
| | Spec. id. | 087 |
| | Measurements | 21x21 |
| | Dates | 1 st c. AD |
| | Processed | leather |
| | Text figure | 21: 087 |
| 14 | Context | BE00-33.005 1151-J |
| | PB | 10 |
| | Spec. id. | 088-091 |
| | Measurements | 088: 29x34; 089: 36x38; 090: 25x26; 091: 57x88 |
| | Dates | mid-late 1 st c. AD |
| | Processed | leather |



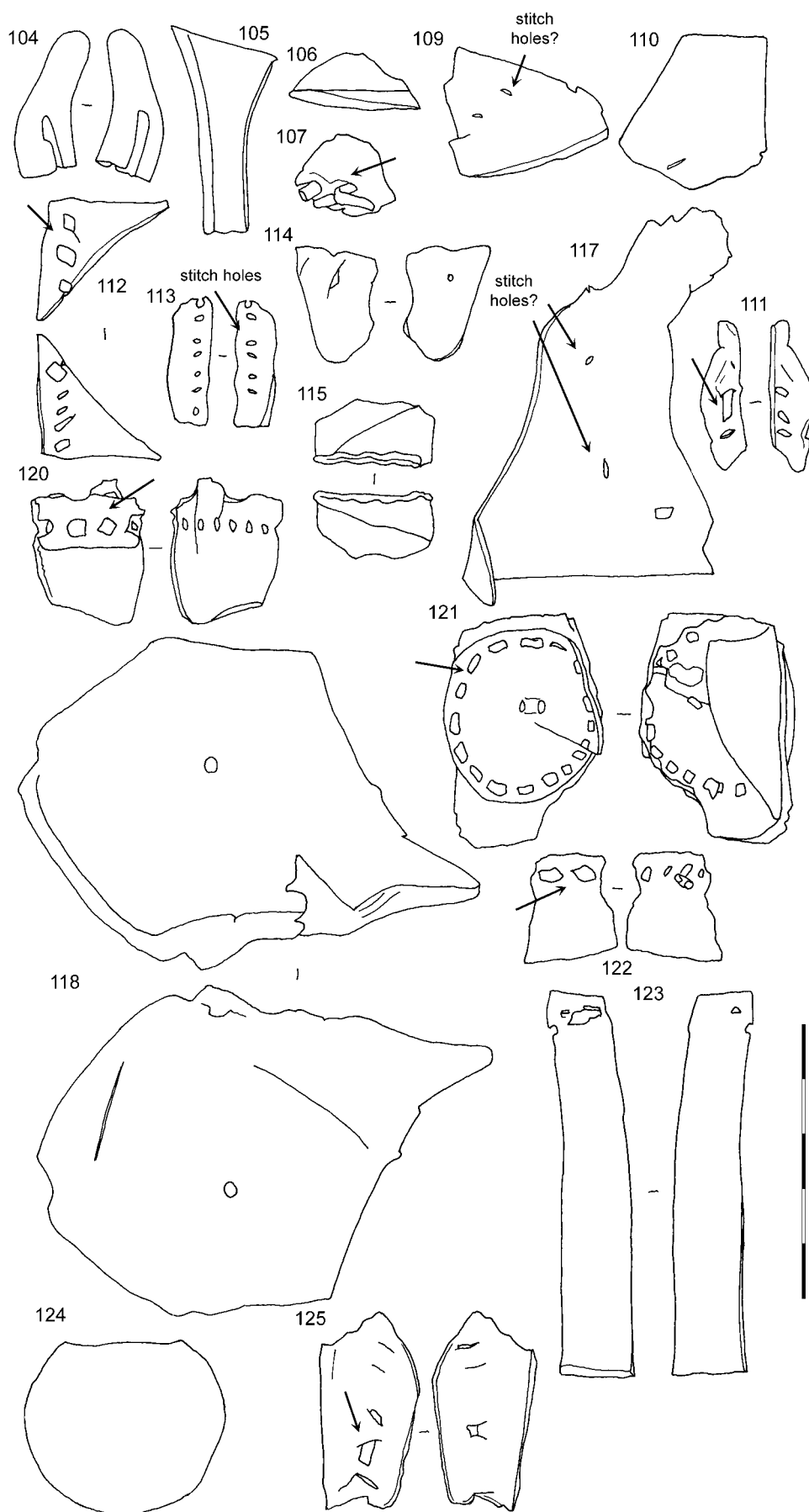
- | | | |
|----|--------------|-------------------------|
| 15 | Context | BE00-33.sbt 5626-J |
| | PB | 75 |
| | Spec. id. | 092 |
| | Measurements | 16x42 |
| | Dates | not dated |
| | Processed | leather |
| | Text figure | 26: 092 |
| 16 | Context | BE00-33.008 1180-J |
| | PB | 13 |
| | Spec. id. | 093-094 |
| | Measurements | 0093: 18x38; 0094: 8x34 |
| | Dates | 1 st c. AD |
| | Processed | leather |

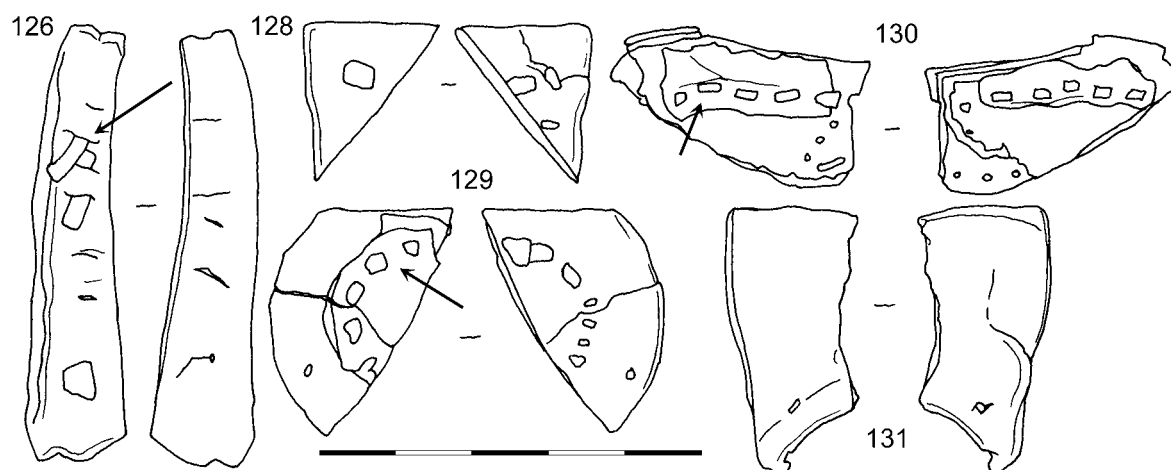


- 17 Context BE00–33.008 1297–J
 PB 23
 Spec. id. 095–103
 Measurements 095: 19x72; 096: 16x35; 097: 36x58; 098: 28x35; 099: ?, 100: 10x84; 101: 24x19x44; 102: 11x21; 103: 11x19
 Dates not dated, likely 1st c. AD.
 Processed leather
 Remarks 099 not preserved and not illustrated
 Text figure 15: 100
 28: 0095

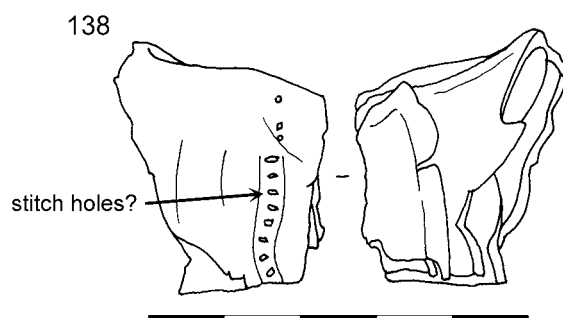


- 18 Context BE00–33.008 1307–J
 PB 15
 Spec. id. 104–131
 Measurements 104: 10x17; 105: 17x38; 106: 10x23; 107: 14x19; 108: 16x20; 109: 26x28; 110: 27x28; 111: 8x27; 112: 15x31; 113: 8x24; 114: 15x22; 115: 10x23; 116: 7x24; 117: 46x73; 118: 61x78; 119: 39x57; 120: 21x27; 121: 29x41; 122: 18x20; 123: ?; 124: 32x36; 125: 18x36; 126: 12x51; 127: 27x145; 128: 18x21; 129: 19x19; 130: 18x33; 131: 19x35
 Dates no date given, likely 1st c. AD
 Processed rawhide, leather
 Remarks 123 not preserved, 129 only partially
 Text figure 2: 119
 27: 108
 28: 116
 30: 127

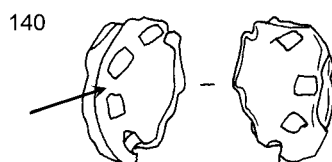




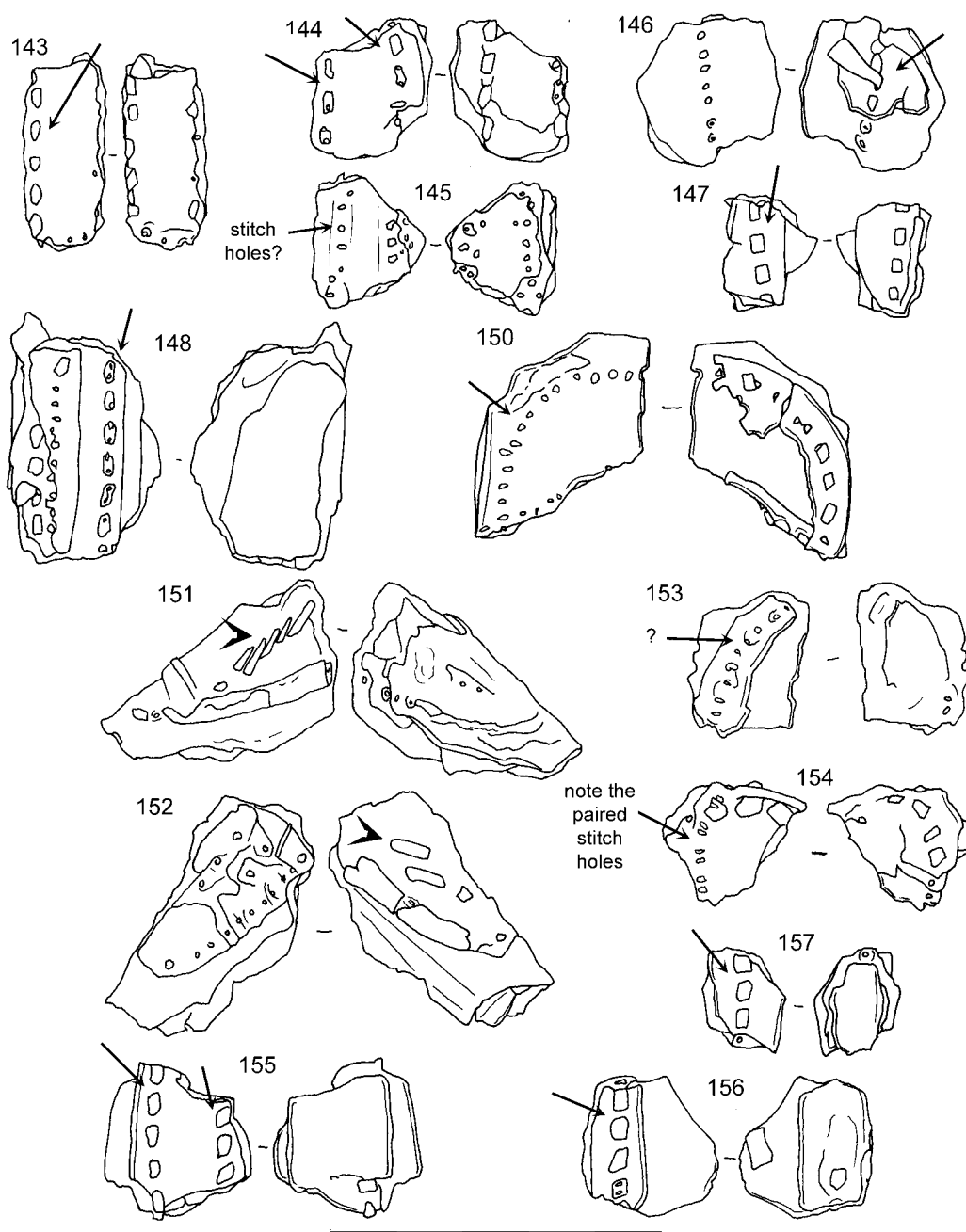
- 19 Context BE00-33.008 1339-J
 PB 16
 Spec. id. 132-136
 Measurements 132: 10x30; 133: 18x20; 134: 23x31; 135: 26x143; 136: 27x36
 Dates no date given, likely 1st c. AD
 Processed leather, ?
 Remarks 132-134 and 136 not illustrated
 Text figure 30: 0135
- 20 Context BE00-33.008 1460-J
 PB 19
 Spec. id. 137
 Measurements 40x66
 Dates no date given, likely 1st c. AD
 Processed rawhide
 Remarks not illustrated
- 21 Context BE00-33.009 1141-J
 PB 11
 Spec. id. 138-139
 Measurements 138: 28x32; 139: 20x46
 Dates mid-late 1st c. AD
 Processed leather
 Text figure 11: 139



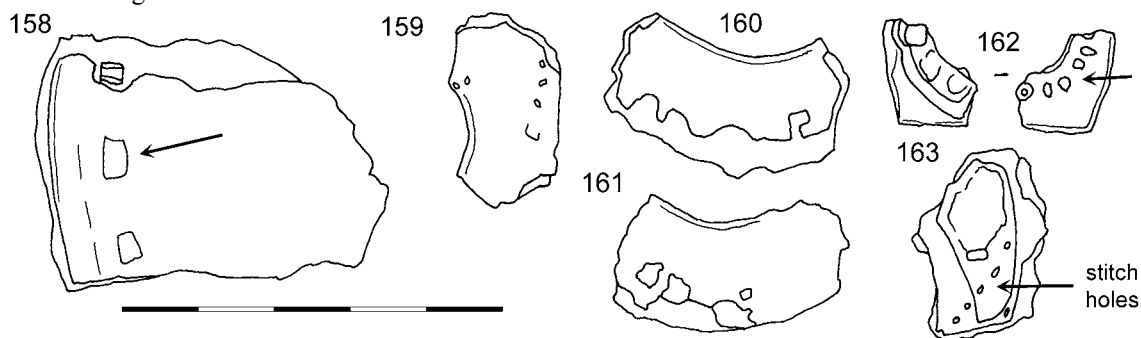
- 22 Context BE00-33.011 2294-J
 PB 32
 Spec. id. 140
 Measurement 14x20
 Dates at least mid 1st c. AD
 Processed leather



- 23 Context BE00-33.013 1995-J
 PB 29
 Spec. id. 141-157
 Measurements 141: 22x43; 142: 22x35; 143: 13x30; 144: 19x21; 145: 18x19; 146: 21x22; 147: 18x15; 148: 23x38; 149: 35x37; 150: 25x34; 151: 23x37; 152: 34x37; 153: 16x24; 154: 20x20; 155: 22x24; 156: 21x22; 157: 13x16
 Dates —
 Processed leather
 Text figure 8: 141, 142
 19: 149

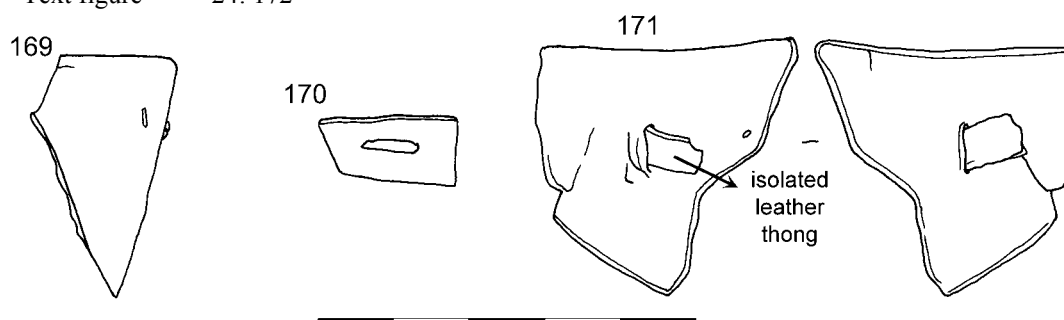


- 24 Context BE00-33.013 2147-J
 PB 31
 Spec. id. 158-164
 Measurements 158: 33x37; 159: 15x24; 160: 19x32; 161: 18x31; 162: 12x16; 163: 19x23; 164: 51x67
 Dates no date given, likely 1st c. AD
 Processed leather
 Remarks 158 partially preserved
 Text figure 24: 164

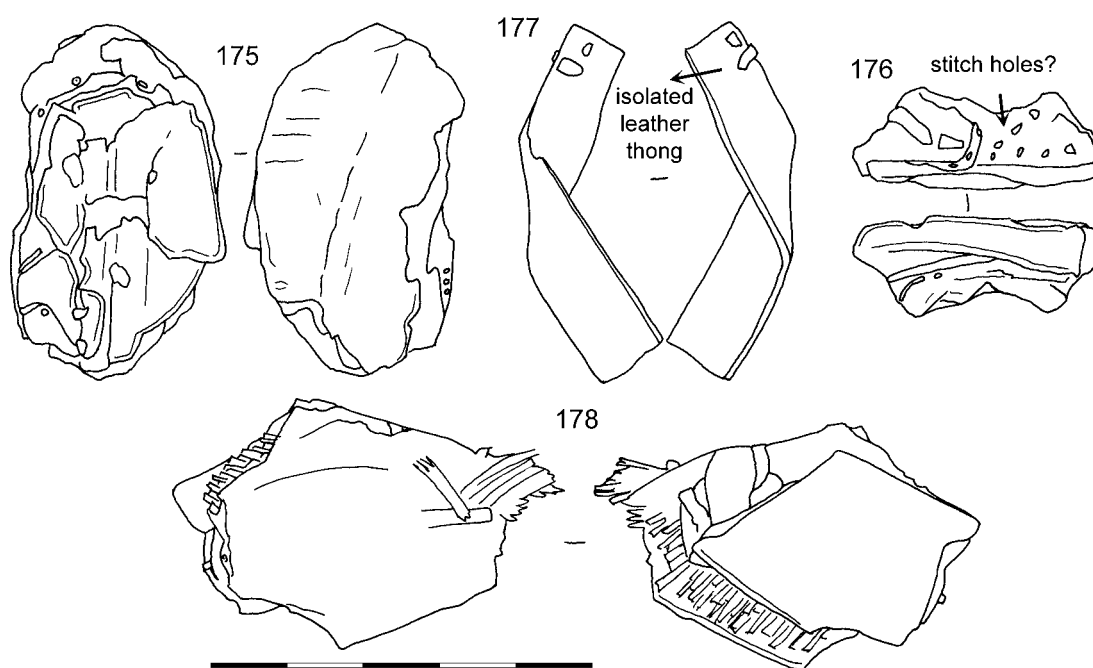


- 25 Context BE00-33.017 1493-J
 PB 22
 Spec. id. 165-168
 Measurements 165: ?; 166: 20x28; 167: 19x63; 168: 41x58
 Dates possibly mid 1st c. AD
 Processed leather
 Remarks 165 is not preserved and not illustrated
 Text figure 6: 168
 7: 167
 27: 166

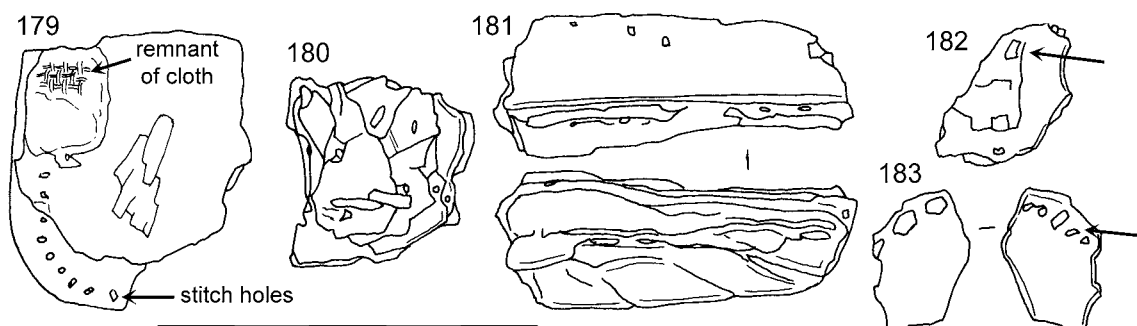
- 26 Context BE00-33.018 1654-J
 PB 26
 Spec. id. 169-174
 Measurements 169: 18x33; 170: ?; 171: 33x34; 172: 23x30x82; 173: 27x61; 174: 19x31
 Dates probably mid 1st c. AD
 Processed leather
 Remarks 170 not preserved, 171 partially preserved; not illustrated
 Text figure 24: 172



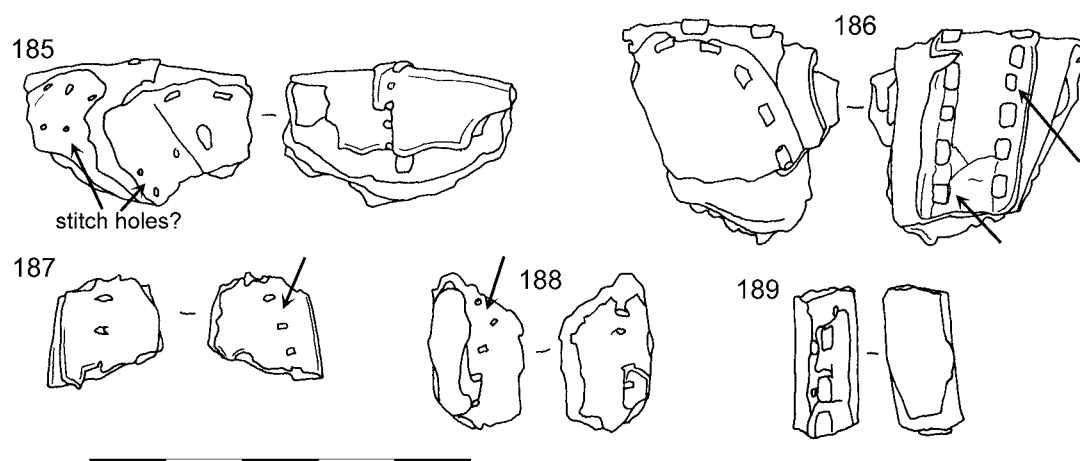
- 27 Context BE00-33.018 1799-J
 PB 27
 Spec. id. 173-178
 Measurements 175: 28x47; 176: 14x33; 177: 11x49; 178: 33x38
 Dates at least mid 1st c. AD
 Processed leather
 Remarks 174 not illustrated
 Text figure 16: 173



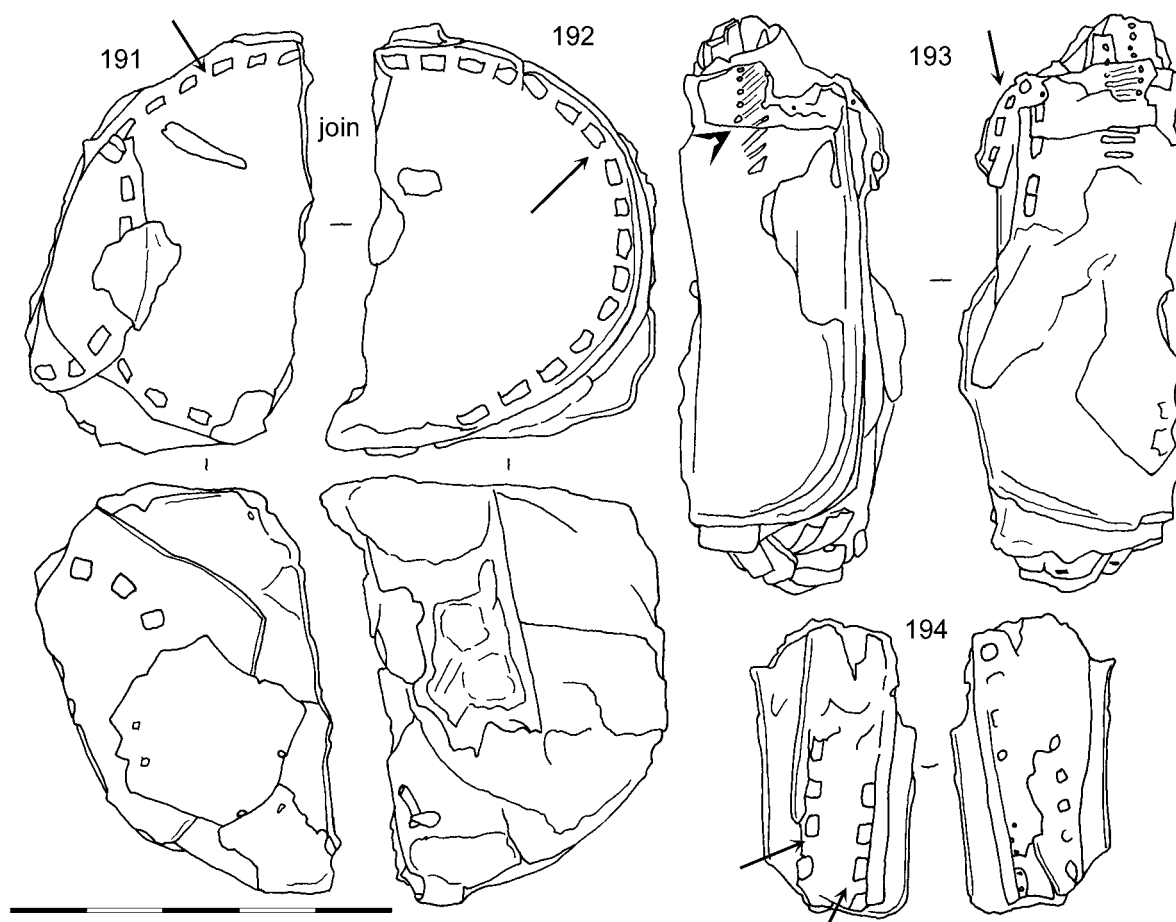
28	Context	BE00-33.022 2516-J
	PB	35
	Spec. id.	179-184
	Measurements	179: 32x37; 180: 25x25; 181: 19x68; 182: ?; 183: 14x18; 184: 59x77
	Dates	no date given, likely 1 st c. AD
	Processed	leather
	Remarks	182 not preserved, 181 broken in three parts
	Text figure	3: 184

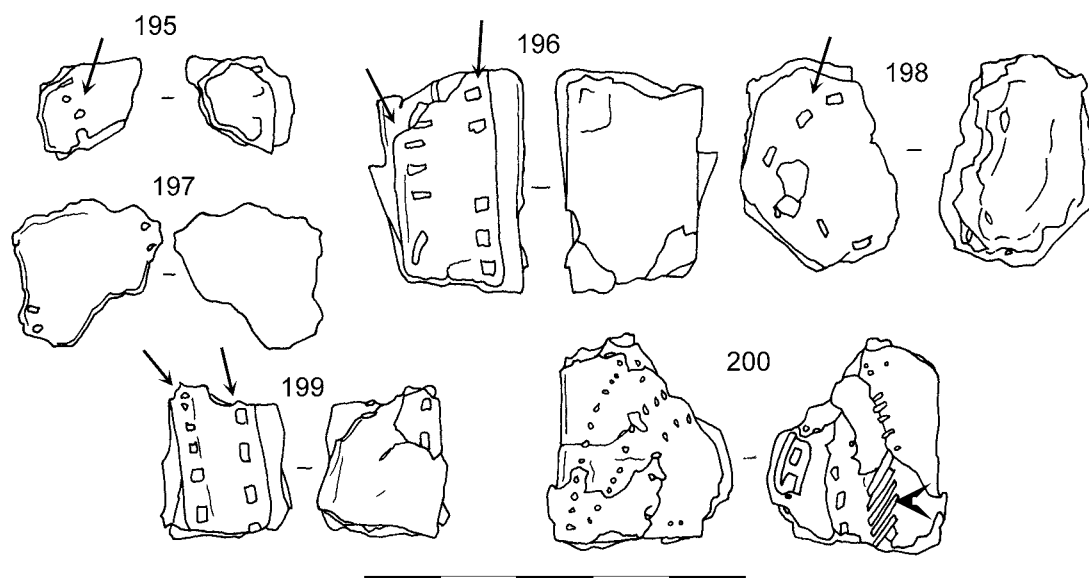


29	Context	BE00-33.025 2849-J
	PB	41
	Spec. id.	185-189
	Measurements	185: 19x30; 186: 26x29; 187: 15x16; 188: 13x21; 189: 10x20
	Dates	no date given, likely 1 st c. AD
	Processed	leather

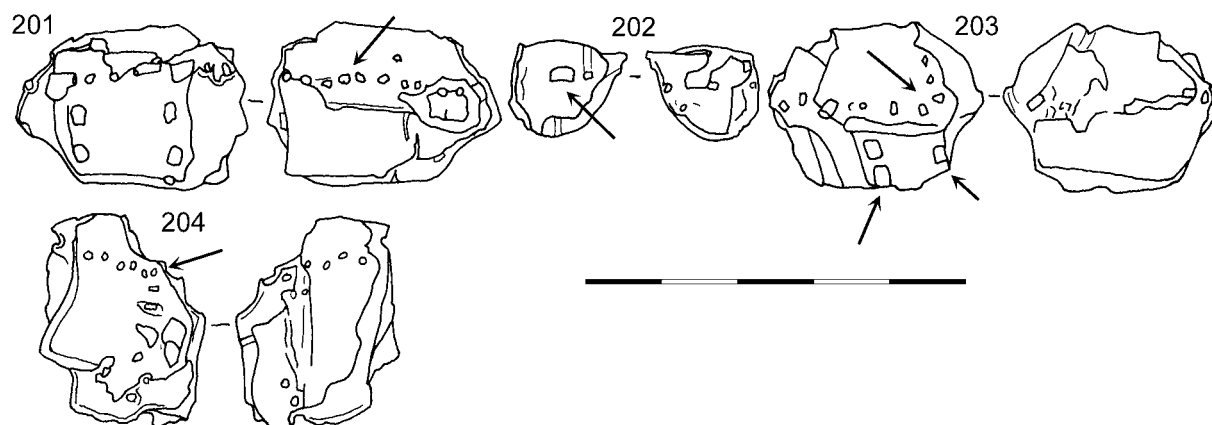


30	Context	BE00-33.025 3021-J
	PB	43
	Spec. id.	190-200
	Measurements	190: 14x21; 191: 35x54; 192: 39x57; 193: 31x76; 194: 21x39; 195: ?; 196: 21x28; 197: 20x20; 198: 20x27; 199: 17x20; 200: 23x29
	Dates	at least 1 st c. AD
	Processed	leather
	Remarks	195 not preserved, 191 and 192 join
	Text figure	7: 190

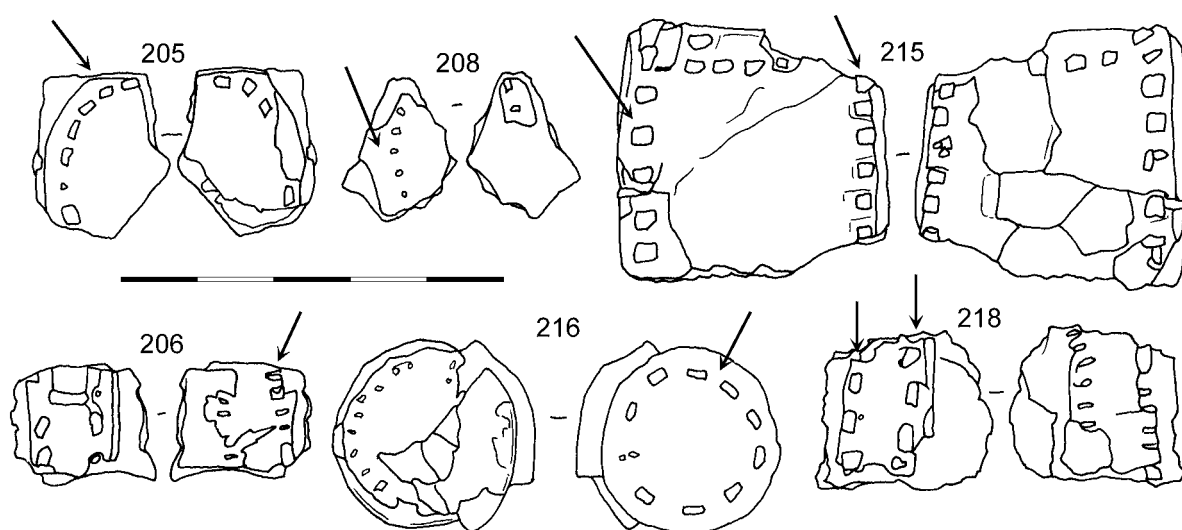




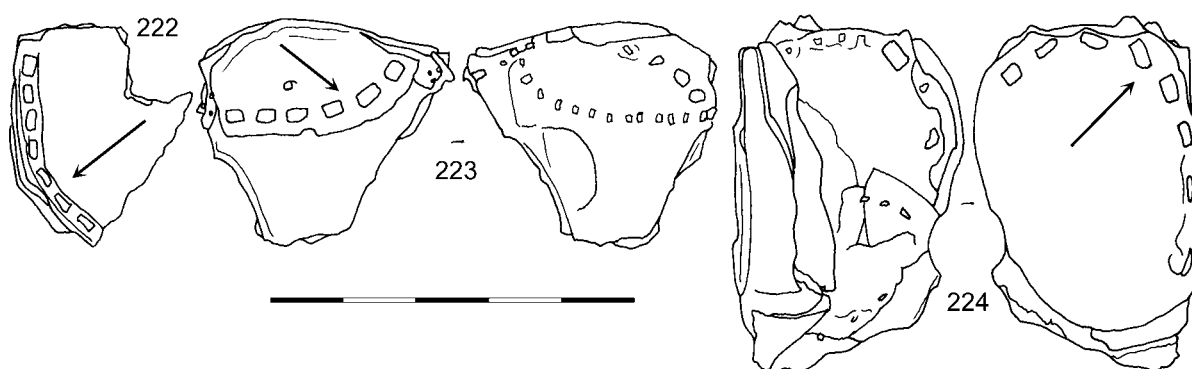
- 31 Context BE00-33.025 3342-J
 PB 45
 Spec. id. 201-204
 Measurements 201: 22x31; 202: 13x15; 203: 22x29; 204: 21x28
 Dates mid-late 1st c. AD
 Processed leather



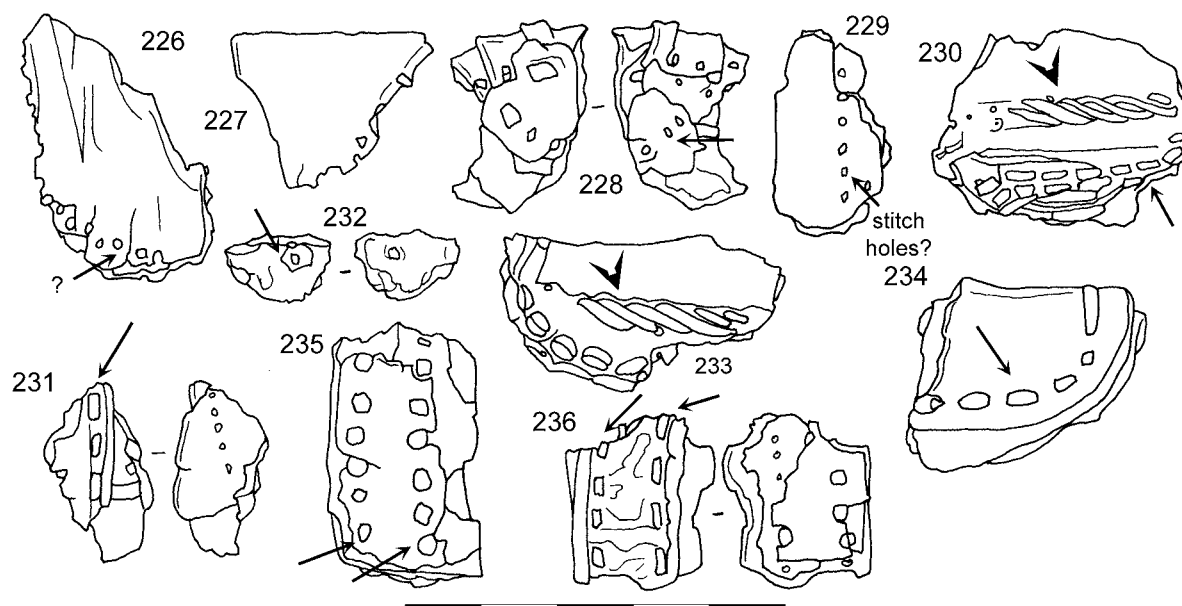
- 32 Context BE00-33.025 3512-J
 PB 48
 Spec. id. 205-218
 Measurements 205: 18x22; 206: 16x19; 207: 13x15; 208: ?; 209: 12x18; 210: ?; 211: 15x16; 212: ?; 213: ?; 214: ?; 215: 36x37; 216: ?; 217: 25x27; 218: 20x23
 Dates no date given, likely 1st c. AD
 Processed leather
 Remarks 208, 210, 212, 214 and 216 not preserved, 215 partially preserved
 Text figure 20: 217
 27: 207, 209, 210, 211, 212, 213, 214



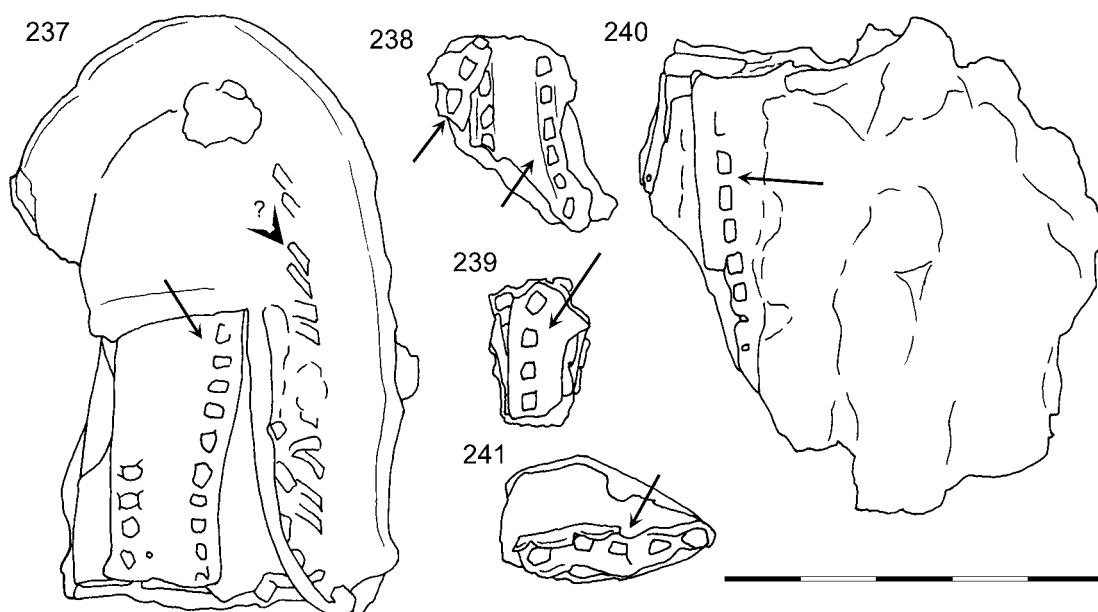
33	Context	BE00-33.026 2650-J
	PB	37
	Spec. id.	219-225
	Measurements	219: 14x20; 220: 13x16; 221: 13x19; 222: 26x31; 223: 31x36; 224: 31x49; 225: 17x23
	Dates	no date given, likely 1 st c. AD
	Processed	leather
	Remarks	220 broken in three parts; not illustrated
	Text figure	27: 219, 221, 225



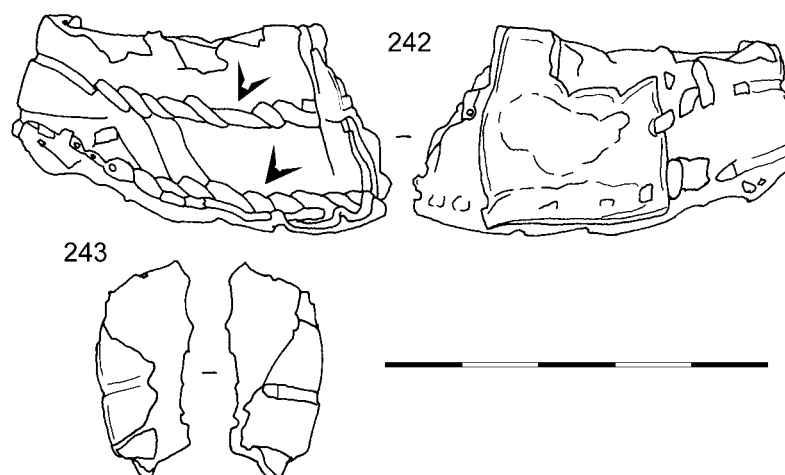
34	Context	BE00-33.033 3837-J
	PB	50
	Spec. id.	226-236
	Measurements	226: 24x37; 227: 21x27; 228: 19x25; 229: 16x27; 230: 26x34; 231: 13x23; 232: ?; 233: 21x39; 234: 25x34; 235: 20x32; 236: ?
	Dates	mid-late 1 st c. AD
	Processed	leather
	Remarks	232 and 236 not preserved, 233 partially preserved



- 35 Context BE00-33.nbt 5302-J
 PB 71
 Spec. id. 237-241
 Measurements 237: 59x79; 238: 18x31; 239: ?; 240: 58x66; 241: 17x27
 Dates no date given, likely 1st c. AD
 Processed leather
 Remarks 239 is not preserved



- 36 Context BE00-33.ebt 5469-J
 PB 73
 Spec. id. 242-243
 Measurements 242: 27x49; 243: ?
 Dates no date given, likely 1st c. AD
 Processed leather
 Remarks 243 is decayed



37	Context	BE00-37.029 6452-J
	PB	98
	Spec. id.	244
	Measurements	12x12
	Dates	5 th c. AD plus
	Processed	leather
	Text figure	21: 244

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