

The Roman Leather Finds from No. 1 Poultry

Site code: ONE94

May 2000

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THE ROMAN LEATHER FINDS FROM NO.1 POULTRY (ONE94)

**Jackie Keily
(May 2000)**

INTRODUCTION

A large assemblage of well-preserved Roman leather was recovered from the excavations at No.1 Poultry (ONE94). The good state of preservation was largely due to the site's proximity to the Walbrook riverbed and the damp, anaerobic conditions that prevailed there. The assemblage is a mixed one with a large number of shoes, a lesser amount of non-shoe artefact fragments and a quantity of waste material. The latter is mainly the by-product of shoemaking and is in the form of off-cuts and trimmings. The shoe assemblage as a whole would appear stylistically to date to the 1st and 2nd centuries AD and all of the usual shoe types for this period are present: stitched shoes, one-piece shoes, nailed shoes and sandals. Nailed shoes are the most common found, a trend noted with assemblages both in London and elsewhere. Shoes with nailed soles were undoubtedly the main type worn during the Roman period and they occur on this site in all sizes, from child to large adult. A variety of different types of shoes had nailed soles, but since little evidence for the upper remained on any of the shoes from Poultry, it is not possible to analyse the forms of the nailed shoes in any detail. The only exception to this is soles with a heavy nailing pattern, which are traditionally associated with the military (Rhodes 1980, 113-4). The numbers of these was small, however, and overall the assemblage can be characterised as a civilian one. The non-shoe leather from Poultry is notable for its fragmentary nature and its poor condition. Significant quantities of non-shoe leather have been recovered from a number of sites on the waterfront in London (KWS94; SUF94), some of the early material is almost certainly military in origin (van Driel Murray, in prep). The present material is more limited and only a few fragments can be suggested as items that may have been associated with the military, such as tent panels. Such pieces, however, may also have originated from other large panel items of a more civilian nature, such as awnings or covers. It is interesting to note that several fragments of possible briefcase-type bag or document holders were found, indicative of administrative functions either of a civilian or military nature.

A selection of the leather was looked at briefly by Carol van Driel Marray while the site was still in progress and she also kindly commented on some individual objects during the preparation of this report. Her comments have been included in this text, with thanks. The assessment report for both the Roman and post-Roman leather was prepared by Sally Holt (formerly of MoLAS) and a number of her comments have also been incorporated in this text, with thanks. Thanks are also due to Penny MacConnoran who looked at and commented on a number of the Roman shoes.

SPECIALIST SUPPORTING DATA

Roman shoe leather

Introduction

The fragmentary remains of 150 shoes were recovered from the excavations at No.1 Poultry. After excavation the shoes were washed and 1:1 outline drawings were done prior to conservation. They were then treated by freeze-drying, a treatment which allows the leather to remain relatively supple and soft whilst minimising shrinkage (see 'Conservation' by E.Goodman).

All of the shoes can be dated stylistically to the 1st and 2nd centuries AD and bear favourable comparison with assemblages from Billingsgate Buildings (Rhodes 1980) and Suffolk House (MacConnoran, in prep). The shoes have been analysed by type and, where possible, other features have been noted, such as size, nailing pattern (where applicable) and whether left or right foot. The shoes fall into four types: nailed shoes, stitched shoes, sandals and one-piece shoes (*carbatinae*). These types were identified by Rhodes (1980) and are widely found on sites in London (Billingsgate Buildings (Rhodes, 1980); Suffolk House (MacConnoran, in prep)), elsewhere in England (Carlisle (Padley 1991); Castleford (van Driel-Murray 1998)) and on the continent (Valkenburg (Hoevenberg 1993)). The descriptive terms used in the catalogue and report are those devised by John Thornton (1973).

Cattle hide was the main type used for shoes (Hoevenberg 1993, 217) and the thickness of the sole components, as well as comparison with similar assemblages, indicates that the Poultry shoes were made from cattle hide as well. An interesting find is a fragment of discarded hide edge <5431> from shoe-making which has hair preserved on it. The hide has been identified as cattle (E.Goodman, *pers comm*). It is extremely unusual to find hair still attached to the hide and it would appear that in this case it only survived in a deep fold in the leather. Only three shoes (two nailed and one stitched) retained any evidence as to the form of their uppers and these were all very fragmentary.

Sizes

The dimensions given in the catalogue are the length of each shoe and the width at the tread and waist; incomplete dimensions are given in rounded brackets (). These measurements have been taken post-conservation. On comparison with the pre-conservation line drawings an average of around 10% shrinkage has been noted (see also MacConnoran, in prep). Other factors, however, also effect the degree of shrinkage. For example, there can be a variation in shrinkage between individual shoes and different types of shoes, depending on whether the sole is nailed and how dense the nailing patterns are. It has also been established that leather shrinks while it is buried. Experiments by John Thornton on the shrinkage of leather during burial have shown that an adult's size 5 shoe could shrink to a size 2 and that shrinkage also varies according to where on the animal the leather comes

from (Swann 1986, 3). For these reasons, modern shoe sizes have not been assigned to the shoes from this site. Where complete or near complete shoes were recovered they have been assigned the terms large adult, adult, small adult and child.

Nailing

The nailing patterns follow those devised by Rhodes (1980, 105-7): types A, B and C. Type A has a single marginal row of closely spaced nails (spaced between 10 and 15mm apart). This is often enhanced with further nailing through the middle of the sole, including patterns in the tread and seat, such as a cross, a diamond or a circle. Where these are identifiable they have been noted in the catalogue. Type B has a single marginal row of widely spaced nails (spaced 15-25mm apart). Type C is a heavily nailed pattern with two marginal rows of nails and usually, further rows down the centre of the shoe. The latter type is traditionally associated with military boots and is, therefore, usually found in quite large sizes (Rhodes 1980, 113-4).

1 Sandals

Sandal soles are made up of two or more layers, usually attached to the foot by straps. Due to their relatively lightweight nature, they are thought to have been worn mainly as indoor shoes or for outdoor wear in summer (Rhodes 1980, 121). A total of 10 sandals (including one possible sandal or stitched shoe <4511>) were found. In all cases the uppers are missing.

All the sandals are adult or small adult/child size and quite slender, indicating that they were worn by women or children; none were found in a small child or a large adult size. At both Suffolk House (MacConnoran, in prep) and Billingsgate Buildings (Rhodes 1980, 117) all the sandals recovered were either small adult (female) or child sized. The sandals from Poultry probably date to the 1st to 2nd centuries as there are no examples of the later expanded sole sandals that date to the 3rd century (MacConnoran 1986, 222). Four are stitched (<1213> and <1238> unstratified, <4423> from OA45, Period 7 and <3612> from R1, Period 8), which appears to be the earliest form of sandal (Hoevenberg 1993, 235). Four sandals have nailed soles, some also with stitching, (<2291> unstratified, <3810>, <3812> from R2, Period 18 phase 2 and <2830> from R2, Period 18 phase 3) which date to the 2nd century (ibid). Sandals <3810> and <2291> have type A nailing with a diamond of nails in the tread. This diamond arrangement in the tread is the most common pattern found in London and dates to the 2nd century AD (Rhodes 1980, 107). The only sandal from Period 10 (OA75) <4643> is stitched with a single nail in the heel. The function of this nail is uncertain but a similar feature is seen on a sandal from Valkenburg (Hoevenberg 1993, 316, no. 074.0547), which also has nailing in the toe area, and a sandal from Suffolk House, London, which also has nailing at the heel (MacConnoran, in prep).

The toe-ends of four of the soles are shaped, with the leather cut to reflect the shape of the toes. In three of the examples this shaping is limited to a rough

delineation of the large toe. On the fourth, <2291>, however, the toe-end is scalloped to reflect all five toes. Although no examples of the upper strap work survived, there is evidence from some of the soles as to how they were attached to the foot. Sole <2291> has a pair of thong slots, just below the indent for the large and second toe, indicating that it was attached by a between-the-toes strap or thong. Sole <4423> has a series of stitch holes along the right-hand edge of the waist, with another stitch hole on the opposite side, probably associated with the attachment of the upper. A similar type of upper may have been attached to <1213>, as a portion at the side of the waist is missing, possibly torn off when the upper parted from the sole. Similarly <4643> has a concentration of stitch holes along the sides of the waist. The waist area of sole <3810> is slightly squashed, also possibly indicating that the upper was attached there. This is further indicated by two nails which have been added to one edge of the waist, nailed in from the insole, probably to reinforce the area where the strap work was attached and which, therefore, was under more stress.

The insoles of sandals are frequently decorated and three of the Poultry sandals are. Sandal <2291> has a row of small horizontal linear cuts running around the edge of the sole and insole, inside the nails, a form of decoration dated by Hoevenberg (1993, 235) to the later 2nd century. Sandals <4423> and <4643> have stamped decoration on the grain surface of the insole. The former in the form of ring-and-dot, linear and circle motifs, and the latter in the form of crescents, rows of triangles and crossed lines. Ring-and-dot motifs are frequently found on sandals both in Britain and on the continent (MacConnoran, in prep).

Sole <2830> has a 'cut-and-expanded' middle sole. This feature has been noted on other sandal soles from London and is thought to be a local fashion (Rhodes 1980, 117). This feature has also, however, been noted on two middle soles from sites in the Netherlands (Hoevenberg 1993, 233).

Catalogue of sandals

<1213> [3774] P7, OA35, Group 418,90202

L 219mm, w 66mm, w 43mm. A stitched sandal left insole with marginal stitch holes and a thong slot towards the toe (w 4mm) and one in the heel (w 4mm). There is a single indent at the toe end, to indicate the shape of the foot. This is quite a narrow, slender insole with a rather pointed toe. The edge of the sole at the waist is fragmentary and this may be where part of the upper strap-work was attached. The insole may have become damaged when the upper became detached from it. Adult size.

<1238> [3782] P6, OA37, Group 859,90302

L (161mm), w 46mm, maximum surviving w 65mm. Incomplete right sole. Marginal thong slots, none of the thonging remains. The toe, forepart and part of the seat are missing. Adult size.

<2291> [7919] P0, R1, Group 173,80233 (High Street Londinium) no Period for this Group – finds too contaminated.

L 214mm, w at tread 77mm, w at waist 43mm. Complete left sole and insole. The toe end of this sandal is scalloped to reflect the five toes. The sole is nailed with pattern type A, a single row of nails around the outer edge. The central area has a diamond of nails in the tread, a line of four nails down the centre and a smaller diamond of four nails at the heel. The diamond arrangement in the tread is the most common pattern found in London and dates to the 2nd century AD (Rhodes 1980, 107). A row of small horizontal linear cuts runs around the edge of the sole and insole, inside the nails. The insole also has two impressed parallel lines running down the centre on the grain surface. There is a pair of thong slots (10mm wide) just below the indent for the big and second toe and this would have held part of the upper strap-work in place. Small adult.

<4423> [18087] P7, OA45, Group 463,120212 (High Street Londinium)
L (155mm), w (65mm), w 40mm. Incomplete right(?) insole. There are a series of marginal horizontal double thong holes running around the edge of the insole and one thong slot (4mm) centrally placed towards the back of the heel. The grain surface is decorated with two parallel impressed lines running vertically down the centre, along which are interspersed double ring-and-dot motifs, both singly and in pairs, and vertical rows of four small single circles. A series of single ring-and-dot motifs are impressed around the outer edge, most placed over the top of the stitch holes. There are four smaller stitch holes along the right hand edge at the waist and these are almost certainly associated with the attachment of the upper strap-work. A single stitch hole on the opposite side to these stitch holes may also be associated with the upper since it is aligned vertically rather than horizontally and appears to be out of synch with the other thong slots. The toe and tread are missing. Small adult

<3612> [12229] P8, R1, Group 514,10051
L (135), w at waist 42mm. Incomplete sole, middle and insole fragments. The soles are stitched with a row of marginal stitching and at least three double thong slots, two centrally placed near the foot and the third towards the forepart. The seat and the toe are largely missing. The middle sole is made up of a long, narrow fragment with one end missing and the other end roughly rounded. Three other fragments of finer leather were also found and may be more parts of the middle. They have, however, much finer, smaller rounded stitch holes and it is not clear how, exactly, they fit with the other fragments. Small adult size.

<4643> [18079] P10, OA75, Group 836,120325
L 195, w (44mm), w 28-30mm. Incomplete right sole and insole, very slender and small with a single shaped toe. There are marginal stitch holes around the edge and a single nail at the centre of the heel. The function of the nail is uncertain but this feature is also seen on a sandal from Valkenburg (Hoevenberg 1993, 316, no. 074.0547), which also has nailing in the toe area. The stitch holes are more concentrated along the edges of the waist portion of the sole, and this may be where part of the upper strap-work was attached. The insole is decorated with finely impressed lines. The decoration takes the form of rows of small triangles near the toe. Each row is set between two parallel lines and there is a small crescent motif stamped at each point of the

triangles. Below this and covering the tread are two saltire crosses forming a large diamond in the centre. The crescent motifs are again used here, in each angle of the crossing lines and one on either side of the mid-point of each line. At the waist the rows of triangles pattern is repeated, and then below that, at the heel, second design is repeated. Child/small adult.

<3810> [12814] P18 ph2, R2, Group 945,10099

L 205mm, w 67mm, w 38mm. Incomplete left sole, middle and insole of a nailed and stitched/thonged sandal with a single indent at the toe. Just below the indent there is a vertical double thong slot, probably associated with the attachment of the upper strap work. The nailing pattern is type A with a marginal row of nails. A diamond of nails at the tread and a small cluster of nails, roughly in a diamond shape at the heel are joined by a single row of nails down the centre. The diamond arrangement in the tread is the most common pattern found in London and dates to the 2nd century AD (Rhodes 1980, 107). A faint impressed line runs around the surface of the insole, inside the nails and thong/stitch holes. An interesting feature is the presence of two nail holes on the insole side near one edge of the waist. These nails may have been associated with a reinforcement or repair to the sandal, possibly where the upper strap work was attached. The waist of this sandal is slightly squashed in and this may indicate where part of the upper strap-work was originally attached. Child/small adult.

<3812> [12814] P18 ph2, R2, Group 945,10099

L (173mm), w at waist 45mm. Incomplete right sole, middle and insole. The sole is nailed with type A nailing pattern with at least two nails in the tread, one in the middle of the lower waist and one in the seat. Since both the tread and the seat are damaged and largely missing it is impossible to identify the pattern more fully. The insole and middle are also attached by a series of marginal double thong slots. The insole has a fine incised double line running around the outer edge on its grain surface. Small adult size.

<2830> [11852] P18 ph3, R2, Group 948,10112

L (140mm), w (54mm). Part of the sole, middle and insole. The sole is very fragmentary and appears to have been nailed. The middle is 'cut-and-expanded', a feature noted on other sandal middle soles from London and thought to be a local feature (Rhodes 1980, 117). More recently, however, it has also been noted on two sandal middles from sites in the Netherlands (Hoevenberg 1993, 233). There is a row of incised slits around the edge of the sandal, at right angles to the edge. These are for the stitching/thonging which was the primary method of holding together the bottom units of the sandal. Indeterminate adult size.

Sandal?

<4511> [18089] P7, OA45, Group 463,120212

L (195), w 65mm, w 46mm. Near complete left sole with marginal stitch holes. On the flesh side there are the remains of small tunnel stitches that would have attached the insole. Two stitch holes are centrally placed towards the heel and there is one larger hole towards the toe, possibly the remains of a

thong slot. This could be a sandal or a stitched shoe. The toe is very slightly shaped and this and the presence of the hole near the toe may indicate it is a sandal. Adult size.

Sandals

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
0	-	0,90202	3774	1213	I	L	Adult		Y	Y	219mm	66mm	43mm	Big toe shaped
0	-	0,90302	3782	1238	S	R	Adult		Y		161mm+	65mm+	46mm	
0	R1	173,80233	7919	2291	S, I	L	Adult	Type A	Y		214mm	77mm	43mm	Deco. Shaped toe end.
7	OA45	463,120212	18087	4423	I	R?	Adult?		Y	Y	155mm+	65mm+	40mm	Stamped deco.
8	R1	514,10051	12229	3612	S, M, I		Small adult		Y	Y	135mm+	-	42mm	
10	OA75	836,120325	18079	4643	S, I	R	Child/ Small adult	Single nail in heel		Y	195mm	44mm+	28-30mm	Shaped toe. Stamped deco.
18	R2	945,10099	12814	3810	S, M, I	L	Child/ Small adult	Type A	Y?	Y?	205mm	67mm	38mm	Shaped toe.
18	R2	945,10099	12814	3812	S, M, I	R	Small adult	Type A	Y		173mm+	-	45mm	Double line incised on insole.
18	R2	948,10112	11852	2830	S, M, I		Adult	Y		Y	140mm+	54mm+	-	'Cut-and-expanded' middle. Fragmentary.
7	OA45	463,120212	18089	4511	S	L	Adult	?	Y	Y	195mm+	65mm	46mm	Toe very slightly shaped. Hole near toe.

One-piece shoes (carbatinae)

Carbatinae or one-piece shoes are cut from a single piece of sheet leather. They have a seam up the back of the heel and are fastened by a thong running through a series of loops on each side of the front of the foot (for example, <5312>). Fragments of 17 (including two possible) one-piece shoes (*carbatinae*) were recovered from the site, mostly too fragmentary to be able to say what size they were. The few that could be identified range in size from child to large adult. The quarters of one-piece shoes are frequently decorated with openwork designs. Of the eleven shoes that retained parts of their quarters, six were plain and solid and five were decorated. Few of those with the openwork were complete enough to be able to identify the form of the decoration, but one <4850> has the virtually complete decorated quarters remaining, decorated with rows of small triangular cut-outs.

One-piece shoes must have been quite cheaply and quickly produced. Due to their flimsy soles they would have been largely only suitable for indoor use. The fragmentary nature of all the one-piece shoes from Poultry would indicate that they had all been subjected to heavy wear and were then discarded when worn out.

Catalogue of one-piece shoes (carbatinae)

<1625> [0], unstratified

L (116mm), w at waist (excluding loops) 85mm. Complete width across the waist with part of the left side of the quarters and the heel seam remaining. The tread and forepart are missing, as is the right side quarters and the heel. The quarters are plain, solid and undecorated. The instep fastening loop remains on the left side with a small rounded tab at its base. Approximately two of the side loops remain. Small adult or child size.

<5312> [18227] P6, OA43, Group 465,120216

L (272mm), w (87mm). Part of the right side with remains of the solid quarters with heel seam and four side fastening loops. Each of the loops has a rounded tab between them. The main instep loop is incomplete and has a triangular cut-out, with a crescent end, at its base. There are three rounded tabs between the instep loop and the side loops. Large adult size.

<4661> [18172] P7, OA45, Group 463,120211

L (150mm), w (97mm). Sole fragment with part of heel, heel seam and the remains of the fastening loops and decorative openwork. The fastening loops have rounded bases and would appear to be joined. The bottom line of the openwork decoration appears to be a series of triangles. There are also three other small fragments associated with this piece. Small adult/child.

<4705> [18172] P7, OA45, Group 463,120211

L (185mm), w (97mm). Part of the right side with the remains of the instep fastening loop and two of the other fastening loops. There is a linear cut with a triangular cut above it, below the main instep fastening loop. The quarters

appear to have been plain and the loops are quite large, suggesting that this is an adult's shoe.

<4706> [18172] P7, OA45, Group 463,120211

L (53mm), w (30mm). A small, worn fragment with one complete fastening loop and the remains of another.

<4707> [18172] P7, OA45, Group 463,120211

L (93mm), w (17mm). A small fragment with the remains of the decorative openwork. The bottom row appears to be a series of triangular cut-outs.

<4708> [18172] P7, OA45, Group 463,120211

L (90mm), w (55mm). A fragmentary piece, possibly from the right side of the quarters. A small portion of both the openwork decoration and the back seam remains. Three tiny non-diagnostic fragments are associated with this piece. Possibly related to <4918>.

<4918> [18172] P7, OA45, Group 463,120211

l (47mm), w (27mm); l (65mm), w (35mm); l (77mm) w (24mm); and l (27mm), w (18mm). Four small fragments, all probably from the left side of the quarters. All of the pieces have remains of the back seam and two of the fragments have traces of the decorative openwork. Possibly related to <4708>.

<5095> [18172] P7, OA45, Group 463,120211

L (75mm), w (59mm); l (60mm), w (33mm); l (46mm), w (16mm); and l (27mm), w (17mm). Four small fragments, all with the remains of joined, elongated oval fastening loops.

<4850> [18089] P7, OA45, Group 463,120212

L (174mm), w 102mm. Four fragments of the right and left side quarters with heel seam and a complete width across the solid part of the waist (excluding loops). The quarters are decorated with a rectangular block of four rows of small triangular cut-outs. There are the remains of a second similar block on both sides but too little remains to identify the actual shape of this second block. The main instep fastening loop is quite delicate and elongated, running along the top of this decorative scheme and decorated with a cluster of small rounded tabs at the point between the two blocks of decoration below. The sole is very worn. Adult size.

<5072> [18089] P7, OA45, Group 463,120212

Maximum l (130mm), maximum w (60mm). A small fragment from the sole and side; the grin surface of the sole is worn.

<5097> [18089] P7, OA45, Group 463,120212

L (166mm), w (46mm); and l (140mm), w (50mm). Near matching fragments from the left and right quarters and sides. Part of the main instep fastening loop remains on both fragments, as well as the first few loops along the top of the upper. There is a knife-cut rounded tab between each of these loops. The quarters would appear to be plain and solid. The size of the fragments and the

loops would indicate that they come from an adult's, rather than a child's shoe.

<5232> [18089] P7, OA45, Group 463,120212

L (168mm), w (73mm). Part of the plain, solid right side quarters with the heel seam and part of the instep loop and one side loop remaining. There is a small triangular cut-out with a crescent end at the base of the instep loop. Probably small adult size.

<5336> [18212] P7, OA45, Group 478,120318

L (68mm), w (46mm); and l (60mm), w (24mm). Two fragments of incomplete fastening loops, each with a rounded tab at the base of the loop. There are also three further very small fragments of loop.

<4645> [18071] P10, OA75, Group 482,120328

L (183mm), w (70mm). Part of the left side of the quarters with an upright heel seam and part of the sole. The quarters are of a plain, solid design with no decorative openwork. The very bottoms of two of the fastening loops remain. Part of the leather has de-laminated into two layers. The size of the fragment would indicate that it comes from an adult's shoe.

One-piece shoes?

<5096> [18172] P7, OA45, Group 463,120211

Maximum l (40mm), maximum w 20mm. One layer of a de-laminated small loop, possibly the fastening loop from a one-piece shoe.

<4303> [12968], P18 ph2, R1, group 924,10065

Two worn and scrappy fragments; possibly from the heel seam; one edge has a row of fine stitch holes.

(i) maximum l (100mm) x maximum w (50mm).

(ii) maximum l (45mm) x maximum w (30mm).

One-piece shoes or carbatinae

Period	LU	Group	Context	Acc. No.	Size	L	Width	Comments
0	-	Unstratified	0	1625	Small adult/child	116mm +	85mm	Width at waist (excluding loops).
6	OA43	465,120216	18227	5312	Large adult	272mm +	87mm+	
7	OA45	463,120216	18172	4661	Small adult/child?	150mm +	97mm+	
7	OA45	463,120211	18172	4705	Adult	185mm +	97mm+	
7	OA45	463,120211	18172	4706		53mm+	30mm+	
7	OA45	463,120211	18172	4707		93mm+	17mm+	
7	OA45	463,120211	18172	4708		90mm+	55mm+	Related to <4918>?
7	OA45	463,120211	18172	4918				Four small fragments, possibly related to <4708>?
7	OA45	463,120211	18172	5095				Four small fragments.
7	OA45	463,120212	18089	4850	Adult	174mm +	102mm +	
7	OA45	463,120212	18089	5072		130mm +	60mm+	Sole and side.
7	OA45	463,120212	18089	5097	Adult	166+/14	46+/50	

						0mm+	mm+	
7	OA45	463,120212	18089	5232	Small adult	168mm +	73mm+	
7	OA45	478,120318	18212	5336				Fastening loop fragments.
10	OA75	482,120328	18071	4645	Adult	183mm +	70mm+	

Possible one-piece shoes or *carbatinae*?

Period	LU	Group	Context	Acc. No.	Comments
7	OA45	463,120211	18172	5096	Parts of a small loop, possibly a fastening loop.
18	R1	924,10065	12968	4303	Possible fragments from heel seam.

Stitched shoes

A total of twenty-eight stitched shoes and one possible stitched shoe were found, all in a fragmentary state. Most are quite slender with a pointed toe and are of small adult size. Stitched shoes from London (Billingsgate (Rhodes 1980, 116); Suffolk House (MacConnoran, in prep)) and elsewhere (Carlisle (Padley 1991, 233); Valkenburg (Hoevenberg 1993, 239)) are consistently found in small adult and child sizes. Stitched shoes were almost certainly used for indoor wear since their soles were relatively flimsy but, similarly to sandals, they could have been worn outdoors in dry conditions. The shoe is made without any nails and is usually made up of a sole and an insole, sometimes with the addition of middle soles in between. These components and the upper are then stitched together. The upper can be either of a type which completely encloses the foot or may just cover the front of the foot, similar to a slip-on mule or slipper.

Stitched shoes <2562> and <2563> are of particular interest since they are almost certainly a pair. Both are the insoles for small adult or child sized shoes. It is very rare to find pairs of shoes from any period in the archaeological record, but particularly from the Roman period. It is possible that the insoles were removed with the intention of reusing them. Another shoe of interest is <2368> an adult's sole and insole with part of the upper remaining. The upper fragment is quite small but is enough to indicate that the shoe enclosed all of the foot rather than being a slip-on type slipper or mule. There are the remains of the closing seam on the inner side of the foot and there is incised linear decoration on the grain surface of the upper.

Stitched shoes appear to have been in use throughout the Roman period (Rhodes 1980, 116-7; MacConnoran 1986, 223-5). The majority of the stitched shoes from Poultry came from Periods 6 and 7.

2 Catalogue of stitched shoes

<1214> [3774] P7, OA35, Group 418,090202

L (92mm), w (70mm). Part of the toe and seat of a right stitched shoe, with marginal stitching and a central double thong slot with the thong still *in situ*. The insole and middle survive, still thonged together.

<2562> [8772] P6, B29, Group 445,80304 (with <2563>) (High Street Londinium)

L 180mm, w 54mm, w 30mm. Near complete left foot insole; part of the heel is missing. A small, slender shoe with a pointed toe. This appears to be a pair with <2563> [8764] and has the same features as it: a marginal row of tunnel stitching on the flesh side and over stitching around the edge. Child/small adult size.

<2563> [8764] P6, B29, Group 445,80306 (with <2562>) (High Street Londinium)

L (127mm), w at tread 52mm, w at waist 32mm. Right foot insole; heel and seat missing. Part of quite a small, slender shoe with a pointed toe. There is a marginal row of tunnel stitching on the flesh side, which would have attached the insole to the middle and/or sole and fine over stitching around the edge. This finer stitching probably helped to attach the upper to the insole. This shoe appears to be a pair with <2562> [8772]. Child/small adult size.

<2020> [8501] P6, OA33, Group 374,80416

L (232mm), w 68mm, w 46mm. A fragmentary left sole; only the toe, tread and part of the waist remain; marginal tunnel stitching. Adult size.

<5330> [18300] P6, OA44, Group 467,120226

L 250mm, w 68mm, w 43mm. Complete right sole and insole. The heel end of the sole has de-laminated into two layers. The two soles are tunnel stitched together. The flesh surfaces show the criss-cross impressions of reinforcing threads. A row of marginal stitching would have held the lasting margin of the upper in place. Adult size.

<6555> [1113] P6, S21, Group 494,120242

L (169mm), w (50mm), w 34mm. A right insole with the heel and part of the tread missing. The flesh surface has a marginal row of horizontal tunnel stitch holes. There is also an occasional vertical tunnel stitch hole between these stitches and the outside edge. This insole appears to have been cut diagonally across the lower waist. Child/small adult size.

<2024> [7558] P7, B24RMB, Group 379,80424

L (173mm), w 55mm, w 39mm. One layer of a right sole with a marginal row of tunnel stitching. The heel, the end of the toe and part of the waist are missing. There is a small fragment of a patch or insert which appears to have been nailed in place at the inside tread.

<2534> [8727] P7, OA40, Group 450,80308

L (165mm), w 49mm, w 33mm. Near complete left insole from a child's shoe. There is a double thong slot in the centre of the tread and another towards the heel. In addition a series of double thong slots run around the margin of the sole. The length is almost complete. Slender shape, with quite straight sides that taper gradually towards the heel.

<4644> [18117] P7, OA45, Group 463,120211

L (78mm), w 65mm. Only the toe and part of the tread remain of this left foot sole and insole. There is widely spaced tunnel stitching on the sole that would have attached it to the insole and smaller tunnel stitched on the flesh side of the insole, indicating where the lasting margin of the uppers was attached. Small adult size.

<4447> [18087] P7, OA45, Group 463,120212

L 210mm, w 69mm, w 42mm. Complete left insole with a marginal row of horizontal tunnel stitch holes on the flesh side. There is also a series of vertical stitch holes on the outer edge of the waist area. Adult size.

<4451> [18087] P7, OA45, Group 463,120212

L 223mm, w 68mm, w 48mm. Complete right sole and insole. Marginal tunnel stitching and stitching around sole, with traces of over stitching around the edge of the insole. There are impressions of the criss-cross reinforcing thongs on the flesh sides of both sole and insole. Adult size.

<5090> [18089] P7, OA45, Group 463,120212

L (202mm), w 63mm, w 46mm. Near complete right sole with marginal tunnel stitching; stitch holes are also visible around the heel. Small adult size.

<5187> [18089] P7, OA45, Group 463,120212

L (153mm), w (53mm), w 38mm. Left sole with toe and part of tread and heel missing. Marginal tunnel stitching with additional stitching between it and the edge. This additional stitching runs from the waist on the right hand side, around the heel and appears to run along the full length of the left side. Child/small adult size.

<6252> [18089] P7, OA45, Group 463,120212

L (191mm), w (47mm), w (25mm). A near complete right insole with marginal tunnel stitching on the flesh side. The edges are rather frayed. Adult/small adult size.

<4739> [18094] P7, OA45, Group 463,120212

L (145mm), w 70mm, w 41mm. Right insole fragment, waist and tread. There is a row of marginal stitch holes. On the flesh side there is marginal row of horizontal tunnel stitch holes running inside the other stitch holes. Also on the flesh side there is the faint impression of a thong or thread running diagonally across. Adult size.

<6557> [3204] P9, OA55, Group 624,90609

L (70mm), w (53mm). A small, worn insole toe fragment. There are the remains of a marginal row of tunnel stitching on the flesh surface.

<5313> [18182] P7, OA57, Group 628,120310

L (148mm), w (45mm), w 38mm. Part of a right insole with the toe end missing. There is a double thong slot near the waist on the grain side; marginal tunnel stitching is visible on the flesh side. This sole is very slender. Small adult size.

<5331> [18182] P7, OA57, Group 628,120310

L 234mm, w 56mm, w 37mm. Complete right sole with marginal tunnel stitching. There is a row of marginal stitch holes around the edge of the toe and tread, with a double row at the end of the toe, possibly indicating a repair. This stitching may also be where the upper was attached, indicating that only the front of the foot was covered with the upper. There are criss-cross impressions of the bracing threads on the flesh side. Adult size.

<5332> [18182] P7, OA57, Group 628,120310

L (190mm), w 55mm, w (38mm). Near complete left insole with remains of marginal tunnel stitching on the flesh side. Adult/small adult size.

<5333> [18182] P7, OA57, Group 628,120310

L (194mm), w (57mm), w 46mm. A fragmentary left sole with marginal tunnel stitching. The grain surface is in poor condition and is laminating. Adult size.

<4701> [18161] P11, OA76, Group 839,120507

L (222mm), w 57mm, w 37mm. A near complete left sole with marginal tunnel stitching. There is additional marginal stitching around the tread and toe end. Slender shoe; adult size.

<1335> [18027] P11, OA77, Group 854,120513

L (158mm), w 70mm. Part of a fragmentary right sole with marginal tunnel stitching. There is an additional row of stitching between the tunnel stitching and the outer edge on the right hand side of the sole. Adult size.

<1931> [8175] P18 ph3, R1, Group 678,81123

L (192mm), w (73mm), w 48mm. Part of a left sole with marginal double stitch holes, the toe and heel are missing. Adult size.

<6556> [8175] P18 ph3, R1, Group 678,81123

L 205mm, w 65mm, w 35mm. Near complete insole with some fraying around the toe. There is a diagonal slit cut from the edge into the tread. The flesh surface is very rough but there are remains of some tunnel stitch holes. Small adult size.

<3767> [12631] P18 ph2, R2, Group 945,10099 (High Street Londinium)

Incomplete; l (180mm), w 62mm, w 42mm. A near complete right insole, in two fragments. The heel and part of the waist are missing. Horizontal and diagonal tunnel stitch holes are visible running around the shoe on the flesh surface. A guide line for cutting out the shape of the shoe is visible on one side of the grain surface. There are two inscriptions in the grain surface of the insole. These are both stamped inscriptions, DOSCIOS in the seat of the sole and, in larger letters, PIC across the tread. The inscription identifications are by Mark Hassel and there is further discussion of them in the section below on markings on leather. Small adult.

<2352> [4909] P21, OA68, Group 767,30328

L (80mm), w 72mm. Probably an insole fragment, with zig-zag thonging on the flesh side.

<2368> [4909] P21, OA68, Group 767,30328

L 250mm, w 87mm, w 72mm. Virtually complete right sole and insole with fragmentary remains of the upper. There are three thong slots down the middle of the insole, from heel to waist, joining the insole to the middle sole. The sole is tunnel stitched. The lasting margin is attached to the flesh side of the insole by thonging that criss-crosses it. Part of the very fragmentary upper remains, sandwiched between the sole and insole. A portion, still *in situ*, at the instep shows the remains of a roughly triangular reinforcement which is thonged to the upper seam at that point. Above this triangle the two sides of the upper would have joined by means of quite a finely stitched seam. The upper fragments have roughly rectangular holes (approximately 3mm x 1mm) along their top edge, which may have been suitable for thonging. There are also the remains two parallel incised lines which curve to meet at the side seam a matching pair. The lasting margin runs all the way around the shoe and this, together with the fragments of upper, would indicate that this was an enclosed shoe rather than a mule or slipper. Adult size.

3 Stitched shoe?

<4998> [18089] P7, OA45, Group 463,120212

Incomplete; l (208mm), w (56mm), w (34mm). Left insole with what appears to be a nail hole in the pointed toe. There are the remains of thong or thick thread stitch holes around the edge. On the flesh side there is a marginal row of small tunnel stitches inside the other stitch holes. Small adult size.

Stitched shoes

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Thong	Stitch	L	Tread W	Waist W	Comments
0	-	0,090202	3774	1214	M, I	R	Adult/ small	Y	Y	92mm+	70mm+	-	Thong still <i>in situ</i> .
6	B29	445,80304	8772	2562	I	L	Child/ small adult		Y	180mm	54mm	30mm	Pointed toe. Possible pair with <2563> [8764]
6	B29	445,80306	8764	2563	I	R	Child/ small adult		Y	127mm +	52mm	32mm	Pointed toe. Possible pair with <2562> [8764]
6	OA33	374,80416	8501	2020	S	L	Adult		Y	232mm +	68mm	46mm	
6	OA44	467,120226	18300	5330	S, I	R	Adult		Y	250mm	68mm	43mm	
6	S21	494,120242	1113	6555	I	R	Child/ small adult		Y	169mm +	50mm+	34mm	Insole cut diagonally across lower waist.
7	B24R MB	379,80424	7558	2024	S	R			Y	173mm +	55mm	39mm	Insert nailed in at inside tread.
7	OA40	450,80308	8727	2534	I	L	Child	Y	Y	165mm +	49mm	33mm	Slender shape.
7	OA45	463,120211	18117	4644	S, I	L	Small adult			78mm+	65mm	-	
7	OA45	463,120212	18087	4447	I	L	Adult		Y	210mm	69mm	42mm	Guidelines visible.
7	OA45	463,120212	18087	4451	S, I	R	Adult		Y	223mm	68mm	48mm	
7	OA45	463,120212	18089	5090	S	R	Small adult		Y	202mm +	63mm	46mm	
7	OA45	463,120212	18089	5187	S	L	Child/ small adult		Y	153mm +	53mm+	38mm	
7	OA45	463,120212	18089	6252	I	R	Adult/ small adult		Y	191mm +	47mm+	25mm+	
7	OA45	463,120212	18094	4739	I	R	Adult	Y?	Y	145mm +	70mm	41mm	
7	OA57	628,120310	18182	5313	I	R	Small adult	Y	Y	148mm +	45mm+	38mm	Very slender.
7	OA57	628,120310	18182	5331	S	R	Adult		Y	234mm	56mm	37mm	Possible repair.
7	OA57	628,120310	18182	5332	I	L	Adult/ small adult		Y	190mm +	55mm	38mm+	
7	OA57	628,120310	18182	5333	S	L	Adult		Y	194mm +	57mm+	46mm	

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Thong	Stitch	L	Tread W	Waist W	Comments
9	OA55	624,90609	3204	6557	I				Y	70mm+	53mm+	-	Small worn toe fragment.
11	OA76	839,120507	18161	4701	S	L	Adult		Y	222mm+	57mm	37mm	Slender.
11	OA77	854,120513	18027	1335	S	R	Adult		Y	158mm+	70mm	-	
18	R1	678,81123	8175	1931	S	L	Adult		Y	192mm+	73mm+	48mm	
18	R1	678,81123	8175	6556	I	?	Small adult		Y	205mm	65mm	35mm	Diagonal cut from edge into tread.
18	R2	945,10099	12631	3767	I	R	Small adult		Y	180mm+	62mm	42mm	Inscriptio x 2: DOSCIOS & PIC
21	OA68	767,30328	4909	2352	I				Y	80mm+	72mm	-	
21	OA68	767,30328	4909	2368	S, I, U	R	Adult	Y	Y	250mm	87mm	72mm	Fragmentary upper indicates an enclosed shoe.
33	B161	1076,10909	9167	3601	S				Y	85mm+	42mm+	-	Small fragment.
7	OA45	463,120212	18089	4998	I	L	Small adult		Y	208mm+	56mm+	34mm+	Single possible nail hole in toe end.

Nailed shoes

Nailed shoes are made up of a sole and insole, sometimes with the addition of one or more middle soles, the upper and sometimes a heel-stiffener. The primary method of attaching all of these pieces together is nailing (for a detailed discussion of the construction of nailed shoes see Rhodes 1980, 103-15 and Hoevenberg 1993, 219-224, figs 2 & 3). The remains of ninety-four nailed shoes were recovered, ranging in size from child to large adult. All are either complete or fragmentary soles, with very little evidence for the uppers. A number of different types of shoe with nailed soles have been identified from the Roman period (Rhodes 1980, 113). Due to the lack of uppers it was impossible to identify any of the different types amongst the Poultry assemblage, with the exception of *caligae* which can be identified from their heavily nailed soles (nailing pattern type C). *Caligae* are traditionally associated with the military (ibid, 113-4) and are usually found in large adult sizes. It is possible that some of the large adult size soles with less dense nailing, i.e. nailing patterns A and B, may also come from *caligae*. In addition it is known that *caligae*-type shoes were also worn by the civilian population, since they have been found in both small adult/female and child sizes (ibid, 114). At Poultry, however, the ten shoes with type C nailing pattern are all in adult/large adult sizes and are, therefore, assumed to be probably military. The majority of the other shoes are probably *calcei*, the enclosed shoe worn by the majority of the civilian population (Hoevenberg 1993, 219). As mentioned above, however, the lack of surviving uppers means that these cannot be identified for certain.

Nailing

The most common nailing pattern was type A (42 shoes). This is a similar pattern to the assemblage from Billington Buildings (Rhodes 1980, 107), where approximately half of all the nailed shoes had this nailing pattern. It is often accompanied by various other nailed designs in the central area of the sole and in the tread and seat. In the majority of cases too little was left of the sole or the nails were too corroded to be able to identify the other patterns. Five soles have a diamond of nails in the tread (sometimes with one in the seat too), this is the commonest form found in London and dates to the 2nd century (Rhodes 1980, 107). Five have variations on a straight vertical line of nails in the middle and two have two vertical lines. Other designs recognised by Rhodes (1980, 105-7) are also present: a dice five (one sole), a vertical cross (one sole) and a circle with central nail (one sole). Variants of pattern A include a sole with an extra row of nails around the outer edge of the toe and a sole with a single row of nails down one side and a double row down the other (<4995> Fig RL39). Eleven soles were found with type B nailing pattern and ten with type C, the type associated with the military.

Construction

Although hardly any of the shoes retained their uppers many showed evidence for their construction. On a number of the insoles it is possible to see

faint incised lines, close to the outer edge. These are the guidelines drawn onto the sheet of leather when the sole was being cut out. A number of the shoes have evidence of a variety of middle soles, usually slender pieces of leather which were set within the space delimited by the lasting margin edges of the upper. Some of the nailed shoes had no middle soles and were just made up of a sole and insole, whilst others had several (for example <1644> has at least three middle soles). Shoe <3101> has a number of irregularly shaped fragments of finer leather between the sole and insole. Twenty-nine of the shoes had double thong-slots running in the centre of the seat and tread and sometimes also in the waist area. These may have been used to hold the various sole pieces in place whilst the shoe was being assembled (MacConnoran, in prep) but have also been associated with the attachment of one-piece moccasin-type uppers (Rhodes 1980, 107-9). The only nailed shoe uppers found at Poultry were not of this construction but were attached by lasting margins.

Uppers

A number of shoes were recovered with the heel stiffener still attached (<3850>). This is a strip of leather attached to the shoe, grain surface against the foot, to stiffen the heel area. Only two nailed shoes were found with the remains of uppers (<1644> and <2351>). Both of these are very fragmentary but have the edges of looped fastenings, which would indicate that they were enclosed uppers. Sole <2351> (Period 21) has nailing pattern type B and is small adult size. The upper is attached by a lasting margin which is tunnel-stitched with thonging (the thong is still *in situ*) to the sole and insole. The surviving upper fragment is on the inside edge of the instep and has the remains of a curving cut edge, almost certainly the bottom of a fastening loop. The loop is quite low on the foot and may indicate an upper similar to the *caligae* uppers, which have a series of elongated loops on both sides closing over the front of the foot (van Driel Murray 1998, 297, fig 130, no. 7 and 298, fig 131, no. 10). The other shoe with a fragment of upper (<1644> (unstratified)) is adult sized with type B/C nailing. There is a double row of marginal nailing along the outer edge of the foot and around the toe. The inner edge, from the tread down towards the heel (which is missing) appears to only have a single row of marginal nailing. The fragment of upper comes from the outer edge of the tread area and has the remains of the bottom of two fastening loops. The upper was attached by a lasting margin, although the heavy nailing on that side makes it impossible to investigate this any further.

Patches and repairs

Shoes were also found which showed evidence of having been altered or repaired. As shoes wore out, usually in the toe/tread area, patches could be inserted. Similarly pieces of leather could be inserted to reinforce an area of discomfort, such as a very heavily nailed area. Sole <3851> has a triangular patch in heel area, nailed in place between the sole and insole, possibly to even up a reused sole. A type C sole <3530> has a patch on the grain surface of the insole, secured with two nails. Since the nails were nailed in from the grain surface this must have made the shoe uncomfortable to wear.

Examination of the flesh side of the insole shows no hole and only a small tear, which may well have happened after the patch was inserted. It must, therefore, be assumed that the patch was put in place either to cushion the heavy nailing or as an insert in an area which may have subsided slightly with wear. A child's sole with type B nailing <3756> has no nailing at the toe end. On the inside of this end there are traces of where a patch or reinforcement may have been sewn in place. Another shoe <1215> also has evidence for a patch in the toe/tread area, with stitch holes across the tread and around the toe indicating where the patch was.

Insole <4361> has been cut across the insole with a blade but that the insole is still attached to the complete sole by the nailing. It must be assumed that this cut was made in preparation for patching or reusing the shoe. Shoe <3811> is the toe and tread part of an insole which has been cut diagonally across the lower tread and may have been intended to be reused as a repair piece.

4 Catalogue of nailed shoes

<1626> [+], unstratified

L (212mm), w 69mm, w 47mm. Near complete right insole and very fragmentary remains of the heel area of the sole. Possibly type A nailing pattern but too little remains to identify it for certain. There appears to be a single marginal row of nails with a double vertical line in the tread and a single row down the seat. Small adult size.

<1630> [+], unstratified

L 240mm, w 77, w 48mm. A near complete left sole, middle and insole. Type A nailing pattern, a single marginal row with two extra nails in the toe end, presumably for reinforcement. There are two nails in the seat and five nails in the tread: four forming a square with one in the centre. Adult size.

<1644> [+], unstratified

L (180mm), w 95mm, w 60mm. Left sole, insole and approximately three middle soles. The seat and heel are missing and there is some damage to the tread. The nailing pattern appears to be a combination of types B and C. There is a closely spaced double row of nails running up the outer edge of the sole and around the toe. The row runs down the inner edge, where it appears to peter out (however, this edge is also damaged). A double row of nails runs horizontally across the forepart between, and joining, the outer rows. Part of the upper remains; originally attached at the tread, it has now become detached. It has an incomplete scalloped edge, the bottom of two fastening loops, which would indicate that this is part of an enclosed shoe. The upper was attached by a lasting margin, although the heavy nailing on that side makes it impossible to investigate this any further. Adult size.

<1671> [+], unstratified

L (110mm), w 61mm. Part of a sole waist with a row of marginal nailing, indicating a type A nailing pattern. There are two centrally placed nails, one near each incomplete edge. Adult size.

<1215> [3782] P6, OA37, Group 859,90302

L (155mm), w 76mm, w 55mm. A left foot insole and fragments of the sole. Marginal nailing, type A, with what appears to be a diamond of four nails in the middle of the tread. There is a marginal row of double thong slots. A series of stitch holes runs horizontally across the tread just above the waist and then around the toe, probably where a patch or reinforcement was put in. Adult size.

<1237> [3782] P6, OA37, Group 859,90302

L 195mm, w (68mm), w (46mm). Virtually complete left foot insole and fragmentary sole. Type A nailing, with a single marginal row and a small cluster of nails in the middle of both the tread and the seat. There are three double thong slots down the middle of the insole. Child/small adult.

<1243> [3782] P6, OA37, Group 859,90302

L (60mm), w (41mm). A small worn and fragmentary piece, with the remains of two possible nail holes.

<1244> [3782] P6, OA37, Group 859,90302

L (43mm), w 80mm. A small, worn fragment from the toe or heel of a sole or insole. There are the remains of approximately four holes, two of which are probably nail holes and two which may be thong or stitch holes. Adult size.

<2533> [7919] P0, R1, Group 173,80233

L (122mm), w 50mm. Part of an insole with two middle soles; the toe, tread and part of the waist are missing. There are double thong slots in the middle of the waist and in the centre of the seat where the insole and middles were thonged together. The nailing pattern would appear to be type A, with a single marginal row of nails and a single vertical row of nails down the middle of the waist, towards the heel. The middle sole immediately below the insole mirrors it but the other middle is much smaller and narrower (w 18-32mm). Adult size.

<1211> [0/165/340], unstratified

L (190), w (68mm), w 53mm. Incomplete right foot insole, toe missing. There is a double thong slot in the middle of the tread and one in the seat, both of which still contain fragments of the thongs used to attach the insole to the middle. There is a row of marginal nail holes with a cluster of nail holes in the tread and a vertical row from the waist to the toe. Overall the nailing pattern is type A, although it is difficult to identify the design further due to the fragmentary nature of parts of this insole. Adult size.

<4244> [12878] P2, OA19, Group 223,10016

L 154mm, w 51mm, w 44mm. A near complete left insole, middle and rather fragmentary sole. The sole has type A nailing pattern with a vertical cross of nails in the tread and a short vertical line of nails in the seat. This pattern is also seen on <4996> (Fig RL38), a small adult size shoe from this site and at

Billingsgate Buildings (Rhodes 1980, 104, fig 59, no. 532). The insole is smaller and more complete and is held in place by the nailing. Parts of the middle are visible at the edges, sandwiched between the sole and insole. Child size.

<536> [1451] P15, R1, Group 675,81115

L (225mm), w (78mm), w 53mm. Fragmentary right sole with type A nailing pattern. There is a marginal row of nails with four nails in the tread forming a diamond. The diamond arrangement in the tread is the most common pattern found in London and dates to the 2nd century AD (Rhodes 1980, 107). There is one nail in the centre of the waist and two placed vertically in the middle of the seat. Most of the nails are missing from this sole. Small adult size.

<1960> [8501] P6, OA33, Group 374,80416

L (77mm), w (60mm). A fragment of sole with a marginal row of nail holes and another parallel row approximately 20mm inside. The fragment is too small to be able to identify the nailing pattern. Adult size.

<2021> [8501] P6, OA33, Group 374,80416

L (180mm), w 82mm, w 58mm. Fragmentary left sole, middle and insole, the heel and seat are missing. Type A nailing pattern with a single marginal row and a single line of nails running vertically down the centre of the tread from the toe. The middle and insole are joined by widely spaced, marginal, double thong slots. There is also a double thong slot in the centre of the tread. Adult size.

<5358> [18260] P6, OA44, Group 467,120226

L (75mm), w (30mm); and I (75mm), w (43mm). Very small and scrappy sole and insole fragments.

<2692> [9010] P5, OA24, Group 690,81222

L (74mm), w (45mm), w 60mm. Very fragmentary right foot sole and insole. Type C nailing pattern with a double marginal row of nailing. The insole has a double thong slot in the middle of the waist with the thong still *in situ*. Adult size.

<2740> [9010] P5, OA24, Group 690,81222

Dimensions of insole: l 243mm, w 73mm, w 38mm. Near complete left foot sole and complete insole with fragmentary heel stiffener. Type A nailing pattern with a single closely spaced marginal row of nails. There is a cluster of nails in the tread, a smaller cluster at the top of the waist and a vertical line of nails from the middle of the waist to the heel. Due to corrosion and some missing nails it is impossible to see what pattern the clusters of nails form. There are also stitch holes running around the edge of the sole on the flesh side. The flesh side of the insole has a marginal row of small tunnel stitch holes. The heel stiffener has over stitching holes along its edge and was probably connected by the tunnel stitching to the insole. Adult size.

<533> [1113] P6, S21, Group 494,120242

L (212mm), w 78mm, w 51mm. Incomplete and fragmentary right foot sole and insole. The seat and heel of both are missing as well as the tread and toe of the sole. The nailing pattern is type A with a marginal row of nails and what appears to be a further short vertical row down the tread. There is also a central double thong slot in the tread of the insole and another in the centre of the waist. Adult size.

<2390> [8722] P7, OA40, Group 450,80324

L (145mm), w (50mm). A very fragmentary nailed sole with part of the insole and heel stiffener remaining. Too little remains to identify the nailing pattern. Adult size.

<2445> [8686] P7, OA40, Group 486,80337

L (220mm), w 81mm, w 56mm. A near complete left foot insole and part of the middle. The nailing pattern is unclear but may be type C as there is a double marginal row of nailing visible in places. There are three double thong slots, all centrally placed, one each in the seat, the top of the waist and the forepart near the toe. The narrower middle sole was attached by the central thongs and also by the nailing. Adult size.

<4737> [18118] P7, OA45, Group 463,120211

L (140mm), w (53mm), w 45mm. Lower tread and waist of a right foot insole. It is impossible to identify the nailing pattern except that it is either A or B. There is a double thong slot in the middle of the lower waist and also a marginal row of double thong slots. Adult size.

<4662> [18172] P7, OA45, Group 463,120211

L 223mm, w 73mm, w 46mm. Right foot insole with double thong slots in the forepart, the waist and the seat. The nailing is type B with widely spaced marginal nails. There are three nails in a vertical line from the toe to the top of the tread and three more from the waist to the heel. There is a faint guideline around the outline of the sole on both the flesh and grain sides. Adult size.

<4702> [18172] P7, OA45, Group 463,120211

L 242mm, w 82mm, w 56mm. Right sole with type B nailing pattern. There is a single marginal row of widely spaced nails with three nails in a vertical row in the forepart and four nails in a vertical row from the waist to the heel. There is a marginal row of stitch holes between the nailing and the outer edge. Adult size.

<4711> [18172] P7, OA45, Group 463,120211

L (172mm), w (72mm). Part of a left sole; the heel and part of one side are missing. Type B nailing pattern with a widely spaced marginal row of nailing and a small vertical cross of nails in the forepart and tread. There are stitch holes around the nailed margin also. Small adult size.

<4794> [18172] P7, OA45, Group 463,120211

L (170mm), w (80mm), w 58mm. Left foot fragments of insole and middle; the seat, heel, forepart and toe are all missing. Probably type A nailing pattern. The middle is an elongated tongue of leather that sits to one side of the waist

and seat. There are stitch holes as well as nail holes in its outer edge, presumably where the lasting margin of the upper was attached. Adult size.

<4861> [18172] P7, OA45, Group 463,120211

L (165mm), w 70mm. The seat, waist and lower tread of a fragmentary sole and insole. Type B nailing pattern with a single marginal row of widely spaced nails. There is a single nail in the middle of the lower waist. There are stitch holes outside the marginal nailing which would have attached the sole to the insole and also to the upper. Adult size.

<4862> [18172] P7, OA45, Group 463,120211

L (70mm), w (45mm). A very small fragment of insole.

<4448> [18087] P7, OA45, Group 463, 120212

L (177mm), w 66mm, w 45mm. The forepart and waist of a left insole and the waist and lower tread of the rather worn sole. Type A nailing pattern with a single marginal row of nails, a short vertical row from the toe to the lower tread, and a single central nail in the lower waist. There is an outline guideline near the edge of the grain side of the insole. Both the flesh sides of the insole and the sole have tunnel stitch holes. Adult size.

<4501> [18087] P7, OA45, Group 463, 120212

L (70mm), w (65mm). A fragment of the forepart of a left sole. Type A nailing pattern with a single marginal row of nailing and a vertical row running from the middle of the toe.

<4422> [18089] P7, OA45, Group 463,120212

L (142mm), w (43mm), h from sole (33mm). Part of a heel stiffener with lasting margin. The latter shows signs of having been attached by means of thonging or a thick cord or thread.

<4512> [18089] P7, OA45, Group 463,120212

L (125mm), w (52mm). Part of a very fragmentary insole, in two pieces, with two central perforations, possibly nail holes or the remains of thong slots. The leather has torn across these holes and it is impossible to identify their original purpose. The ragged edge appears to have torn around nail holes and the only remaining curving edge, possibly the heel, has stitch holes parallel to it.

<4992> [18089] P7, OA45, Group 463,120212

L (190mm), w 66mm, w (45mm). Possible left insole; heel and toe missing. Type B nailing pattern with a widely spaced marginal row of nails. The rest of the nailing pattern is impossible to identify since parts of the insole are quite fragmentary. There is a double thong slot in the middle of the waist and another near the middle of the tread. It is difficult to identify whether this is the left or right foot since the sides are very straight and taper towards the heel. Adult size.

<4994> [18089] P7, OA45, Group 463,120212

L (125mm), w 38mm. A very fragmentary, thin piece, possibly middle sole. There are possible stitch holes along one edge and the remains of what are

probably nail holes along the centre. There are criss-cross thong impressions across the flesh side.

<4995> [18089] P7, OA45, Group 463,120212

L (250mm), w 85mm, w 65mm. Part of a left sole and two middle soles; most of the heel and forepart are missing. The nailing pattern is type A with variations. There is a marginal row of closely spaced nails along the inner edge and a double row down the outer edge. There is a cluster of nails in the forepart but it is impossible to identify their pattern due to the fragmentary nature of this area. The middle sole is kept in place by the nailing and also has impressions of diagonal thongs or threads across its centre on the flesh side. Along the outer, double-nailed, edge is another and only partial middle sole. This is a long cut strip of leather that covers the area with the double row of nails. Too little remains of the other side, with the single row of nails, to be able to see if this secondary middle ran all the way around the sole. It may have been intended only as a supplementary cushioning device along the edge with the heaviest nailing. Adult size.

<4996> [18089] P7, OA45, Group 463,120212

L 227mm, w 78mm, w 59mm. Near complete right foot sole and insole. The nailing pattern is type A with a closely spaced marginal row of nails, a vertical cross of nails in the top of the tread and a short vertical row of nails running from the middle of the waist to the heel. A similar example came from Billingsgate Buildings (Rhodes 1980, 104, fig 59, no. 532) and the pattern is also on the child's shoe <4244>. The insole is attached mainly by the nails but there is also a double thong slot in the centre of the tread and another towards the toe end. It is interesting to note that there are also two double thong slots running vertically across the top of the toe end above the other slots. These are possibly associated with the attachment of the upper. In the toe area, where the sole is partly missing, the imprint of a pointed middle sole can be seen in the flesh side of the sole. Small adult size.

<4997> [18089] P7, OA45, Group 463,120212

L (147mm), w (42mm), h from sole (35mm). Near complete heel stiffener. The lasting margin is very fragmentary; there are the remains of one nail hole and of thonging or over stitching on the edge.

<4999> [18089] P7, OA45, Group 463,120212

L 262mm, w 80mm, w 64mm. Incomplete left sole, middle and insole. Nailing pattern type A with a single marginal row of nailing, six nails in a vertical row from the toe to the lower tread and three vertical nails through the seat to the heel. There is also a marginal row of tunnel stitching presumably associated with the attachment of the lasting margin of the upper. The middle is a long narrow strip of leather placed in the centre of the shoe with a pointed end at the toe and a rounded end at the heel. It is kept in place by the central nails. The insole is quite fragmentary with most of the waist and all of the seat and heel missing. The flesh side has a marginal row of small diagonal tunnel stitches. The sides of this shoe are quite straight. Adult size.

<5091> [18089] P7, OA45, Group 463,120212

L (205mm), w 70mm, w 44mm. Part of a left insole with the toe area missing. Type B nailing pattern with a single marginal row of widely spaced nails. The flesh side has a row of tunnel stitching around the edge inside the nail holes. There are also impressions of criss-cross thongs on the flesh side. Adult size.

<5092> [18089] P7, OA45, Group 463,120212

L (150mm), w (45mm). Part of the waist and tread of an insole. The nailing pattern would appear to be type A, as there is a single marginal row of nails on the one remaining long edge. Adult size.

<5100> [18089] P7, OA45, Group 463,120212

L (200mm), w 80mm, w 58mm. Right sole with heel and part of toe missing. Type A nailing pattern with a single marginal row of nails and three nails in a vertical row from the waist to the heel. There is one nail hole in the upper tread. Part of a middle sole is attached to the flesh side of the sole. It is a small fragment with a rounded top and a diagonal end, which fits in the tread of the sole and would have been kept in place by the nail in the upper tread. The flesh side of the sole also has the impressions of the lasting margin and of thonging in the seat area. A row of tunnel stitching runs around the marginal nailing. Adult size.

<5185> [18089] P7, OA45, Group 463,120212

L (170mm), w 26mm, h (15mm). A rather squashed heel stiffener with nail holes in the lasting margin and some over stitching along the inner edge.

<5186> [18089] P7, OA45, Group 463,120212

L (185mm), w (70mm), w 56mm. Part of a left foot sole with the toe, tread and heel missing. Type B nailing pattern with a widely spaced marginal row of nails. There are long tunnel stitches running parallel to the edges of the sole on the flesh side. One part of the sole has de-laminated into two layers. Adult size.

<5188> [18089] P7, OA45, Group 463,120212

L (75mm), w (41mm). A fragment of sole, probably from the tread/waist area. There is a marginal row of nail holes on the one remaining edge with some small stitch holes between the nail holes. The nail holes are approximately 20mm apart, indicating that this sole may have had type B nailing pattern.

<5189> [18089] P7, OA45, Group 463,120212

L (170mm), w 73mm, w 51mm. Left insole with seat and heel missing and part of middle sole. The insole has a central double thong slot near the toes, another in the lower tread and a third in the middle of the waist. The middle sole is made up of a strip of leather secured by the marginal nailing. The nailing pattern is type A with a single marginal row of nails, a further double row in the tread and a single row running vertically down the waist. Adult size.

<5231> [18089] P7, OA45, Group 463,120212

L (70mm), w (60mm). Part of a sole, probably from the heel. The sole would appear, from this limited evidence, to have a type A nailing pattern. There is a single marginal row of nails with two more nails in the centre. A fragment of

middle is still attached to the flesh side. It is smaller than the sole and is attached by the central nails. Probably an adult size.

<5233> [18089] P7, OA45, Group 463,120212

L (78mm), w 55mm. Seat fragment of insole with remains of type A nailing pattern; a single row of marginal nails with two nails in the centre of the seat. The size of the fragment would indicate that it comes from an adult size shoe.

<5280> [18089] P7, OA45, Group 463,120212

L (183mm), w (70mm), w 53mm. Part of an insole, de-laminated into two layers. The toe and heel are missing and the piece is too fragmentary to identify the nailing pattern or whether it is for a left or right foot. Adult size.

<5282> [18089] P7, OA45, Group 463,120212

L 160mm, w 35mm, h from sole 23mm. A near complete heel stiffener. The lasting margin has the remains of a marginal row of nails and there are stitch holes along the very edge where it was attached to the soles.

<5311> [18089] P7, OA45, Group 463,120212

L (147mm), w 27mm. Part of a narrow strip, probably part of a lasting margin. There are the remains of a row of nail holes with a stitch holes between the nail holes and one edge. On the grain surface the area with stitch holes is quite smooth and shiny, whereas the rest of the leather is more worn. The shiny surface was presumably sandwiched between the sole and insole.

<5357> [18089] P7, OA45, Group 463,120212

L (148mm), w (51mm), w 40mm. Part of the tread, waist and seat of an insole. There are the remains of possible thong slots towards the heel, traces of what appears to be over stitching along one edge and tunnel stitching on the flesh side. Small adult.

<3851> [12830] P7, OA47, Group 561,10083

L (168mm), w 63mm, w 47mm, h of heel stiffener from sole 19mm. Right sole, insole and heel stiffener; the forepart and toe are missing. Type A nailing pattern with a marginal row of closely spaced nails and the edge of a cluster of nails in the tread. There are three nails in the seat forming a triangle. Another nail has been placed between this triangle and the outer row of nails and this holds a roughly triangular patch in place in the heel, between the sole and insole. Since the outer row of nails also go through this patch it can be surmised that it was put in place when the shoe was originally made. This may be due to the sole leather being thinner at that point or to correct an individual imbalance in the foot, but it would seem most likely that the sole may have been a reuse of an old sole and the patch was required to even up a worn area. The sole has worn through, in places, thereby exposing parts of the patch to external wear. The heel stiffener is nailed in place over this patch and then the insole is attached on top of that. The heel stiffener also has over stitching along its edge to attach it to the sole. There is marginal tunnel stitching on the flesh side of the insole indicating where it was attached to the sole prior to nailing. The flesh surface of both the sole and insole has criss-cross diagonal thong or thread impressions. Small adult size.

<3756> [12331] P8, R1, Group 511,10049

L 183mm, w 60mm, w 45mm. A virtually complete left foot sole. The nailing pattern is type B. It is interesting that the marginal nailing runs all the way around the shoe up to the forepart where it stops on both sides. There is one central nail at this point but no nails in the toe area. Instead the toe area has marginal stitch holes and a faint line runs horizontally across the forepart, on the flesh side, above the nails and below the stitching indicating that some sort of patch or reinforcement was originally there. Tunnel stitching runs all the way around the sole, visible on the flesh side, outside the nailing where the nailing occurs. Child's shoe.

<3191> [12217] P8, R1, Group 515,10052

L (195mm), w (78mm), w 52mm. Fragmentary right foot insole. The nailing pattern is type A with a marginal row of nails, supplemented by a second row around the outer edge of the toes. The toe area is fragmentary and the lower part of the waist and all of the seat and heel are missing. There are the remains of two double thong slots, one near the toe end and the other in the middle of the tread. A fine line has been scored vertically down the middle of the grain side of the insole and more lines cross it diagonally towards the middle. These would appear not to be decorative but rather either accidental or done when the shoe had been discarded. Small adult size.

<3101> [12229] P8, R1, Group 514,10051

L 225mm, w at waist 43mm, maximum w at tread 69mm. Sole, middle and insole, with a pointed toe. The sole is nailed with a single marginal row of nails and none in the centre, nailing pattern type A. The middle fragments and insole are stitched around the edge and also thonged. The middle is made up of a number of irregularly cut fragments of finer leather, possibly goat, which have been thonged and stitched in place. The stitching on these fragments is very fine with small oval stitch holes. Adult size.

<3852> [12833] P8, R2, Group 517,10096

L 235mm, w 79mm, w 61mm. Right foot sole, insole and middle. The sole is missing the seat and heel. The nailing pattern is type A with a row of marginal nailing and two vertical rows from the toe to the top of the waist. There is a single centrally placed nail at the waist and another further towards the heel. Some very small fragments of leather protruding out from the edges between the sole and insole may be parts of the lasting margin and upper but too little remains to be able to identify them. Three double thong slots evenly placed along the middle of the insole attach it to the middle. The toe is rather pointed. The small middle sole used at the heel has worked loose and it is possible to see the stitch holes that would have attached it to the insole. Adult/small adult size.

<4304> [18081] P10, OA75, Group 482,120326

L (147mm), w 70mm, w 54mm. The tread and forepart of a left sole and insole. The nailing pattern is type A; the centre of the tread is very worn and it is impossible to identify the nailing pattern in the centre. The insole has a

central double thong slot in the middle of the tread and the remains of another one towards the toe. Small adult/child size.

<4361> [18081] P10, OA75, Group 482,120326

L (190mm), w 73mm, w 53mm. Incomplete right insole with the toe area missing. The sole is even more fragmentary, lacking the forepart and toe end and the seat and heel end. Type A nailing pattern with a single marginal row of nailing and a short vertical row of nails from the lower waist to the heel. There are marginal stitch holes at intervals between the nails and the edge. The insole has been cut across the upper end of the waist but the fragments are held together by the sole nailed to them underneath. It is not clear why this has been done. Guidelines are visible along part of the edge of the grain side of the insole. Adult size.

<1315> [18027] P11, OA77, Group 854,120513

L 205mm, w 63mm, w 45mm. A complete left insole with parts of the sole and heel stiffener still attached by nails. The nailing pattern is type A with a single marginal row of nails. There is a cluster of nails in the tread but since the sole and nails are now missing from this area it is impossible to identify the exact pattern. There is a short vertical line of nails from the lower waist to the seat. The heel stiffener is attached by the marginal row of nails. There are double thong slots in the middle of the toe area, the centre of the tread and the middle of the lower waist. Small adult size.

<2294> [8290] P15, R1, Group 675,81117

L (130mm), w (60mm). Insole and middle sole fragments. There is a double thong slot in the middle sole and another through the insole. Adult size.

<2961> [11923] P15, R1, Group 877,10060

L 212mm, w 62mm, w 43mm. Virtually complete right foot insole and middle sole. The middle mirrors the shape of the insole but is much narrower. Both have a pointed toe. The middle is attached to the insole by thonging through the centrally placed double thong slots. It is difficult to identify which nailing pattern this shoe would have had but a marginal row is visible in places and so type A or B can be postulated. There is also a small fragment of lasting margin and upper, although it is impossible to identify where this would have been on the shoe. Small adult size.

<3610> [11922] P15, R1, Group 878,10073

L (125mm), w 55mm. The heel, seat and part of the waist of a nailed shoe consisting of the sole, insole and at least one middle. The nailing pattern is very heavy and belongs to type C, consisting of a double row of marginal nailing, with further nailing in the middle of the seat. The exact layout of these nails is impossible to see due to the heavy corrosion deposits. Adult size (interestingly, not a very large heel).

<1930> [8175] P18 ph3, R1, Group 678,81123

L (235mm), w 83mm, w 60mm. A near complete left sole and insole, sandwiching some long, rather scrappy fragments which make up the middle sole. The very end of the toe is missing. The nailing pattern is type A with a

single marginal row of nails; a diamond of four nails near the heel is connected by a vertical row of nails to a larger diamond of nine nails in the tread. The diamond arrangement in the tread is the most common pattern found in London and dates to the 2nd century AD (Rhodes 1980, 107). There are no signs of any thong slots or stitching and these layers appear to have been held together by the nailing. Adult size.

<2350> [8175] P18 ph3, R1, Group 678,81123

L (107mm), w65mm. Five insole fragments; the dimensions for the largest fragment are given. The nailing pattern is type A and there is a marginal row of small double thong holes running inside the nailing. Indeterminate adult size.

<3699> [12572] P18 ph2, R1, Group 918,10125

L 140mm, w 54mm, 35mm. A complete right insole. There is a marginal row of nails and the nailing pattern is type B. Child's size.

<4243> [12572] P18 ph2, R1, Group 918,10125

Middle sole: l (85mm), w 27mm; upper fragment: l (150mm), w 40mm). Two fragments, almost certainly from the same shoe. Part of a narrow middle sole with a very fragmentary piece of insole attached to it by a thong through a double thong slot near the heel. The thong is still *in situ* knotted on the grain side of the middle. There is another double thong slot towards the waist of the middle and elongated marginal stitch holes around the edge. The upper is very fragmentary and gives no indication of the form it might have taken. The lasting margin, where it remains, has ragged nail holes perforating it.

<3850> [12829] P18 ph2, R1, Group 921,10129

L 265mm, w 85mm, w 57mm. Complete bottom unit comprising sole, middle, insole and heel stiffener. The nailing pattern is type C with a double marginal row of nails around most of the sole. A row of closely spaced nails also runs down the centre of the tread; there are two nails in the centre of the waist and then a short row down the middle of the seat. The toe is quite pointed. The insole is also attached to the other soles by thonging through three centrally placed double thong slots that run down the length of the shoe. The heel stiffener is still attached between the sole and the insole at one side. Parts of what are probably the lasting margin and upper are visible at the edges. The size and the heavy nailing pattern would indicate that this was an adult's shoe, probably a man's.

<3530> [12882] P18 ph2, R1, Group 921,10129

L (275mm), w 95mm, w 70mm. A virtually complete left sole, middle, insole and heel stiffener. The tread and toe of the sole are missing. The nailing pattern is type C, with a double marginal row and two inner vertical rows in the tread and a single row down the waist and seat. The middle is made up of at least two narrower fragments of leather, cut to mirror the overall shape of the sole, with at least two double thong slots. They are now largely kept in place by the heavy nailing pattern. The imprint of the lasting margin is visible on the flesh side of the sole and insole. The thonging from the middle is visible in the grain surface of the insole. The most interesting feature of this insole is a

rather crude patch that has been attached to the toe end of the insole. The patch mirrors the outer edge of the sole but ends approximately 8mm from the inside edge. Two small holes in the centre of the patch may have been for thonging it in place but it is mainly held in place by two nails at the base of the patch on the tread. Interestingly these nails have been driven in from the inside of the shoe meaning that the nail heads are left on the surface of the insole and, presumably, making it a very uncomfortable fit. Examination of the flesh side of the insole shows no hole and only a small tear, which may well have happened after the patch was inserted. It must, therefore, be assumed that the patch was put in place either to cushion the heavy nailing or as an insert in an area which may have subsided slightly with wear. Large adult size.

<3671> [12617] P18 ph3, R2, Group 922,10127

L (195mm), w (70mm), w 52mm. Left foot insole, with toe and part of tread missing. Only the seat and heel portions of the sole remain, with part of a middle sole and the heel stiffener. The nailing pattern is type A, but due to the fragmentary nature of the tread it is impossible to identify what pattern the nails in that area were set out in. The insole has a double thong slot in the middle of the heel area, one at the waist and two more possible examples at the middle of the waist and at the base of the tread. The heel stiffener was nailed in place between the sole and insole. The middle is a small tongue of leather placed in the heel and kept in place by the thonging, the nail holes and also by a number of stitch holes. Adult size.

<3672> [12617] P18 ph3, R2, Group 922,10127

L 232mm, w 73mm, w 45mm. Left insole with a pointed toe. There are four double thong slots interspersed down the middle of the sole. The nailing pattern is type A with a marginal row of nails and a cluster of nails in the tread. Three single nails run down the middle of the waist and seat. Small adult size.

<3698> [12617] P18 ph3, R2, Group 922,10127

L (140mm), w 65mm. Very fragmentary piece of insole, too little remains to be able to identify the nailing pattern. Adult size.

<3765> [12617] P18 ph3, R2, Group 922,10127 (High Street Londinium)

Incomplete; l (166mm), w 57mm, w 40mm. A near complete right insole with three centrally placed double thong slots, in the forepart, the lower waist and the seat. The remains of a type A nailing pattern are visible, with a single marginal row of nails. The very tip of the toe end is missing. There is a fine impressed line running down the length of the sole, parallel to and near the inner edge. This is a guideline from when the insole was being cut out from the sheet of leather. Child's shoe.

<3766> [12617] P18 ph3, R2, Group 922,10127

Four fragments, possibly not from the same shoe. All would appear to be from adult size shoes.

(i) Heel stiffener; l 167mm, maximum w 31mm. Quite a stiff, thick crescent of leather.

(ii) Sole; l (93mm), w 55mm. Part of the waist of a sole with type A nailing. There is a marginal row of nails, with a single nail in the middle towards the

top of the waist and another in the middle towards the seat. One of the nails is in quite good condition and has a convex head, 6mm in diameter and a square section shaft, 1.5mm wide.

(iii) Lasting margin; l (54mm), w 21mm. A small fragment of a lasting margin with thong slots for the thonging that would have kept it in place.

(iv) Middle or insole; l (80mm), w (38mm). A fragment of quite thick leather with one cut edge. There are the remains of possible stitch holes near the cut edge and three nail holes approximately 20mm in from the edge.

<5369> [8450] P18 ph3, R1, Group 926,10398 (Mercury contamination)

L (210mm), w (80mm), w 70mm. Part of the sole, middle, insole and heel stiffener; toe and part of tread missing. Nailing pattern is type C with two marginal rows of nails, a short row in the middle of the seat, one nail in the centre of the waist and two, increasing to three, middle rows in what remains of the tread. There is a double thong slot in the heel of the insole, and another in the middle of the waist. There may have been a third one in the seat. The thongs still remain in the two extant double thong slots, attaching the insole to the middle. The middle is made up of at least two narrow pieces of leather and the thong is still visible running along the surface of one of them. The heel stiffener was attached by the outer row of marginal nailing, sandwiched between the sole and the insole. A series of widely spaced stitch holes run around the edge of the heel stiffener, possibly indicating where it was held in place in the shoe during the nailing process. Adult/large adult size.

<3853> [12834] P18 ph1, R2, Group 943,10093

L (35mm), w (60mm). A small fragment from the heel of a sole. Possibly nailing pattern type C, as there are the remains of two marginal rows of nailing. Adult size.

<3757> [12575] P18 ph1, R2, Group 944,10095

L (74mm), w (42mm); and l (95mm), w 44mm). Two fragments of sole. Nailing pattern is type A or C but too little remains to be able to identify which.

<3758> [12391] P18 ph1, R2, Group 944,10101

L (230mm), w 93mm, w 63mm. A fragmentary and incomplete left sole with a type C nailing pattern. A double row of nails runs around the edge of the sole with a further row down the middle from the toe to the bottom of the tread. There is one nail in the middle of the waist and then a further cluster of nails towards the seat, most of which is missing. Unusually three of the nails are not very corroded and have head diameters of 8mm. Large adult size.

<3192> [12360] P18 ph1, R2, Group 944,10103

L (268mm), w 97mm, w 59mm. Right insole and part of the middle sole. Nailing pattern is type C with a double marginal row of nailing. There is a further vertical row in the middle of the seat and two more vertical rows in the tread. There are two double thong slots, one at the waist and one in the seat, which attach the middle sole to the insole. The middle is a tongue of leather that sits within, and is smaller than, the heel and seat area. The thong that holds it in place is still *in situ*. There are occasional stitch holes near the edge

of the middle sole which are possibly associated with the attachment of the upper. The toe is slightly pointed. Large adult size.

<3760> [12360] P18 ph1, R2, Group 944,10103

Approximately 12 very small fragments of nailed shoe sole and insole.

<3768> [12631] P18 ph2, R2, Group 945,10099

L (92mm), w (65mm); I (65mm), w (48mm); and I (53mm), w (55mm). Two sole fragments and one insole fragment, as well as 7 very small fragments, one of which may come from a middle sole. The size of the fragments would indicate that they came from an adult's size shoe.

<3811> [12814] P18 ph2, R2, Group 945,10099

L (108mm), w (52mm). Part of the toe and tread of an insole. The leather appears to have been cut diagonally across the lower tread and therefore the fragment may be a repair piece. There are nail holes around the edge indicating a type A nailing pattern. There is also a row of marginal stitches, probably for a thong or thick thread. Adult size.

<2890> [11835] P18 ph3, R2, Group 950,10117

L (145mm), w 62mm, w 47mm. A right sole with type A nailing pattern. There is a single marginal row of nails and a single nail in the middle of the tread, one in the middle of the waist and two in the lower waist/seat area. The toe end and the heel end are both missing. Child's size.

<2891> [11835] P18 ph3, R2, Group 950,10117

L (75mm), w (26mm); I (87mm), w (25mm). Two fragments from the heel of a sole, probably from the same shoe. The shorter fragment has the remains of a marginal row of nails, with an occasional widely spaced nail on the inner side of this row, indicative of a type A nailing pattern.

<3769> [12666] P18 ph2, R2, Group 946,10106

L (60mm), w 69mm. Part of the heel and seat of a sole. The nails are all missing but the nail holes indicate that this sole had a type C nailing pattern, with two marginal rows of nails and a vertical central row. Adult size.

<3611> [11929] P18 ph3, R2, Group 947,10116

L (63mm), w 65mm. Part of the waist area of a sole. The nailing pattern is type A. Adult size.

<3193> [12511] P18 ph3, R2, Group 947,10124

L 235mm, w 83mm, w 57mm. Near complete right sole, insole and heel stiffener. Type A nailing pattern with a marginal row of nails, a cluster of nails in the seat and two single nails in the waist. There is a further cluster of nails in the tread that take the form of a circle with a single nail in the centre. There is also a small cluster of nails in the toe. Identification of the nailing pattern is difficult since the nails are heavily corroded and they have disintegrated in places. The insole has a double thong slot in the middle of the waist and another in the seat; both with the thonging *in situ*. The heel stiffener is still in place to a maximum height of 20mm from the insole. Adult size.

<2802> [11852] P18 ph3, R2, Group 948,10112

Incomplete; heel stiffener: l (160mm), w 50mm, h 38mm; fragment of middle or insole: l 75mm, w (45mm). A near complete heel stiffener with parts of the lasting margin with nail holes still remaining. The middle sole or insole is incomplete and appears to be a small insert to sit in the seat of the shoe. There is a single row of marginal nail holes. Adult size.

<3149> [11852] P18 ph3, R2, Group 948,10112

L (45mm), w (20mm); and l (37mm), w (43mm). Two very small and fragmentary pieces of sole or insole.

<3602> [11851] P18 ph3, R2, Group 948,10113

L (58mm), w (35mm). A small fragment with nail holes along one edge and another edge cut diagonally. This fragment may come from a heel stiffener. Three other very small fragments also found, one with the remains of a double thong slot.

<2691> [11713] P18 ph3, R2, Group 953,10144

L (101mm), w (45mm); and l (55mm), w (22mm). Two small, undiagnostic fragments of sole.

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<2351> [4909] P21, OA68, Group 767,30328 Fig RL41

L (219mm), w 82mm, w 60mm. Nearly complete right insole with fragmentary sole, part of the lasting margin and a small fragment of upper. The sole and insole are nailed together with a type B nailing pattern. A vertical row of widely spaced nails runs down the centre of the sole, with a marginal row of widely spaced nails. Only one half of the heel and seat survives and here the marginal nailing appears to be closer. The only fragment of upper to survive remains between the waist and the tread on the inside edge of the shoe. It would have been attached by the lasting margin, which itself is attached by thonging to the sole and insole. The outer edge of the upper fragment has been cut in a curve, probably part of a fastening loop, which would indicate that this shoe had an enclosed upper with long fastening loops, similar to those found on *caligae*-type shoes (van Driel Murray 1998, 297, fig 130, no. 7 and 298, fig 131, no. 10). Small adult size.

<1060> [7413] P22, OA70, Group 771,82910

L (220mm), w 71mm, w 45mm. Near complete left sole and insole with a small fragment of heel stiffener. The sole has type A nailing pattern with a marginal row of nails. There is a diamond pattern in the tread made up of 12 nails with one in the middle and two at one end. There is a single nail in the middle of the waist and a short vertical line of four nails in the seat and heel area. A diamond pattern in the tread is the most common form found in London and dates to the 2nd century AD (Rhodes 1980, 107). There is a double thong slot in the middle of the seat area of the insole and a row of stitch holes around the heel. The latter may have been to aid the attachment of the upper or a reinforcement. The fragment of heel stiffener (l (117mm), w (22mm)) is

incomplete and fairly undiagnostic. There are no nail or stitch holes visible. Adult size.

<2540> [11606] P22, OA83, Group 965,10374

L (110mm), w 70mm. Part of the waist and tread of a sole with type A nailing pattern. There is a single marginal row of closely spaced nails with two nails centrally placed towards the top of the tread and what appears to be a horizontal line of nails across the sole towards the seat. Quite a broad sole. Adult size, possibly large adult.

<2580> [11634] P22, OA83, Group 965,10374

L (170mm), w 77mm, w 63mm. The heel, waist and lower tread of a left foot insole. There is a small portion of middle attached to it. A fragment of heel stiffener, which is unattached, probably comes from the same shoe. There is a double thong slot with the thong still *in situ* in the lower tread/upper waist of the insole and another in the centre of the seat. Type A nailing pattern with a single marginal row of nails and some nails in the seat. The middle portion is very small and was attached to the insole by the thonging. There are a series of stitch holes around its edge, presumably to aid the attachment of the lasting margin of the upper. The heel stiffener fragment is fairly undiagnostic and is missing virtually all its lasting margin. Adult size.

Nailed shoes

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
0	-	Unstratified	0	1626	S, I	R	Small adult	Type A?			212mm +	69mm	47mm	
0	-	Unstratified	0	1630	S, M, I	L	Adult	Type A			240mm	77mm	48mm	Two extra nails in toe; possibly for reinforcement.
0	-	Unstratified	0	1644	S, 3M, I, U	L	Adult	Types B/C			180mm +	95mm	60mm	Part of upper with a scalloped edge – <i>caliga</i> ?
0	-	Unstratified	0	1671	S		Adult	Type A			110mm +	-	61mm	
0	-	0,90302	3782	1215	S, I	L	Adult	Type A	Y	Y	155mm +	76mm	55mm	
0	-	0,90302	3782	1237	S, I	L	Child/ small adult	Type A	Y		195mm	68mm+	46mm+	
0	-	0,90302	3782	1243							60mm+	41mm+	-	Small, worn fragment.
0	-	0,90302	3782	3782	S/I?				Y?	Y?	43mm+	80mm*	-	Toe or heel fragment; maximum extant width given.
0	R1	173,80233	7919	2533	2M, I		Adult	Type A?	Y		122mm +	-	50mm	
0	-	Unstratified	0/165/340	1211	I	R	Adult	Type A	Y		190mm +	68mm+	53mm	Thong still <i>in situ</i> .
2	OA19	223,10016	12878	4244	S, M, I	L	Child	Type A			154mm	51mm	44mm	Vertical cross of nails in tread.
2	R1	675,81115	1451	536	S	R	Small adult	Type A			225mm +	78mm+	53mm	
6	OA33	374,80416	8501	1960	S		Adult				77mm+	60mm+		
6	OA33	374,80416	8501	2021	S, M, I	L	Adult	Type A	Y		180mm +	82mm	58mm	
6	OA44	467,120226	18260	5358	S, I						75mm+	30/43mm +	-	Small fragments; maximum widths given.
6	OA24	690,81222	9010	2692	S, I	R	Adult	Type C	Y		74mm+	45mm+	60mm	Thong still <i>in situ</i> .
6	OA24	690,81222	9010	2740	S, I, HS	L	Adult	Type A		Y	243mm	73mm	38mm	

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
6	S21	494,120242	1113	533	S, I	R	Adult	Type A	Y		212mm +	78mm	51mm	
7	OA40	450,80324	8722	2390	S, I, HS		Adult				145mm +	50mm+	-	Very fragmentary.
7	OA40	486,80337	8686	2445	M, I	L	Adult	Type C?	Y		220mm +	81mm	56mm	
7	OA45	463,120211	18118	4737	I	R	Adult	Type A/B?	Y		140mm +	53mm+	45mm	
7	OA45	463,120211	18172	4662	I	R	Adult	Type B	Y		223mm	73mm	46mm	
7	OA45	463,120211	18172	4702	S	R	Adult	Type B		Y	242mm	82mm	56mm	
7	OA45	463,120211	18172	4711	S	L	Small adult	Type B		Y	172mm +	72mm+	-	Small vertical cross of nails in forepart and tread.
7	OA45	463,120211	18172	4794	M, I	L	Adult	Type A?		Y	170mm +	80mm+	-	
7	OA45	463,120211	18172	4861	S, I		Adult	Type B		Y	165mm +	70mm	-	
7	OA45	463,120211	18172	4862	I						70mm+	45mm+	-	Very small fragment.
7	OA45	463,120212	18087	4448	S, I	L	Adult	Type A		Y	177mm +	66mm	45mm	
7	OA45	463,120212	18087	4501	S	L		Type A			70mm+	65mm+	-	
7	OA45	463,120212	18089	4422	HS				Y?	Y?	142mm +	-	-	Heel stiffener with lasting margin. Width 43mm+; height from sole 33mm+.
7	OA45	463,120212	18089	4512	I					Y	125mm +	52mm+	-	Very fragmentary.
7	OA45	463,120212	18089	4992	I	L?	Adult	Type B	Y		190mm +	66mm	45mm+	Sides very straight and taper towards heel.
7	OA45	463,120212	18089	4994	M?				Y	Y?	125mm +	38mm	-	Fragmentary.
7	OA45	463,120212	18089	4995	S, 2M	L	Adult	Type A		Y?	250mm +	85mm	65mm	
7	OA45	463,120212	18089	4996	S, I	R	Small adult	Type A	Y		227mm	78mm	59mm	Vertical cross of nails in top of tread.

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
7	OA45	463,120212	18089	4997	HS				Y?	Y?	147mm +			Heel stiffener with fragmentary lasting margin. Width 42mm+; height from sole 35mm+.
7	OA45	463,120212	18089	4999	S, M, I	L	Adult	Type A		Y	262mm	80mm	64mm	Sides quite straight.
7	OA45	463,120212	18089	5091	I	L	Adult	Type B	Y	Y	205mm +	70mm	44mm	
7	OA45	463,120212	18089	5092	I		Adult	Type A?			150mm +	-	45mm+	
7	OA45	463,120212	18089	5100	S, M	R	Adult	Type A	Y	Y	200mm +	80mm	58mm	
7	OA45	463,120212	18089	5185	HS					Y	170mm +			Heel stiffener with lasting margin. Width 26mm; height from sole 15mm+.
7	OA45	463,120212	18089	5186	S	L	Adult	Type B		Y	185mm +	70mm+	56mm	
7	OA45	463,120212	18089	5188	S			Type B?		Y	75mm+			Max w 41mm+. Tread/waist fragment.
7	OA45	463,120212	18089	5189	M, I	L	Adult	Type A	Y		170mm +	73mm	51mm	
7	OA45	463,120212	18089	5231	S, M		Adult?	Type A?			70mm+			Max w 60mm+. Heel or toe fragment.
7	OA45	463,120212	18089	5233	I		Adult	Type A			78mm+		55mm	
7	OA45	463,120212	18089	5280	I		Adult				183mm +	70mm+	53mm	
7	OA45	463,120212	18089	5282	HS					Y	160mm			Heel stiffener with lasting margin. Width 35mm; height from sole 23mm.
7	OA45	463,120212	18089	5311	?				Y?	Y?	147mm +			Max w 27mm. Part of a lasting margin.
7	OA45	463,120212	18089	5357	I		Small adult		Y	Y	148mm +	51mm+	40mm	

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
7	OA47	561,10083	12830	3851	S, I, HS	R	Small adult	Type A	Y?	Y	168mm +	63mm	47mm	Height of heel stiffener from sole 19mm. Patch in edge of tread.
8	R1	511,10049	12331	3756	S	L	Child	Type B		Y	183mm	60mm	45mm	
8	R1	514,10051	12229	3101	S, M, I	L	Adult	Type A	Y	Y	225mm	69mm	43mm	Middle – finer leather – goat?
8	R1	515,10052	12217	3191	I	R	Small adult	Type A	Y		195mm +	78mm+	52mm	
8	R2	517,10096	12833	3852	S, M, I	R	Adult/sm all adult	Type A	Y	Y	235mm	79mm	61mm	Some very small fragments of uppre/lasting margin.
10	OA75	482,120326	18081	4304	S, I	L	Small adult/child	Type A	Y		147mm +	70mm	54mm	
10	OA75	482,12036	18081	4361	S, I	R	Adult	Type A		Y	190mm +	73mm	53mm	Insole cut across but still attached to sole by nailing.
11	OA77	854,120513	18027	1315	S, I, HS	L	Small adult	Type A	Y		205mm	63mm	45mm	Heel stiffener and sole very fragmentary.
12	R1	675,81117	8290	2294	M, I		Adult		Y		130mm +	60mm+		
12	R1	877,10060	11923	2961	M, I	R	Small adult	Type A/B	Y		212mm	62mm	43mm	Pointed toe. Fragments of upper/lasting margin.
12	R1	878,10073	11922	3610	S, M, I		Adult	Type C			125mm +		55mm	
18	R1	678,81123	8175	1930	S, M, I	L	Adult33	Type A			235mm +	83mm	60mm	
18	R1	678,81123	8175	2350	I		Adult	Type A	Y		107mm +			Width of largest fragment 65mm.
18	R1	918,10125	12572	3699	I	R	Child	Type B			140mm	54mm	35mm	
18	R1	918,10125	12572	4243	S, M				Y	Y	85mm+		27mm	An upper fragment 150mm by 40mm is probably part of the same shoe.

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
18	R1	921,10129	12829	3850	S, M, I, HS		Adult	Type C	Y		265mm	85mm	57mm	Traces of upper and lasting margin at edges.
18	R1	921,10129	12882	3530	S, M, I, HS	L	Large adult	Type C	Y		275mm +	95mm	70mm	Small patch in toe.
18	R2	922,10127	12617	3671	S, I, M, HS	L	Adult	Type A	Y	Y	195mm +	70mm+	52mm	
18	R2	922,10127	12617	3672	I	L	Small adult	Type A	Y		232mm	73mm	45mm	Pointed toe
18	R2	922,10127	12617	3698	I		Adult				140mm +	65mm		
18	R2	922,10127	12617	3765	I	R	Child	Type A	Y		166mm +	57mm	40mm	Near complete; guidelines
18	R1	926,10398	8450	5369	S, M, I, HS		Adult/large adult	Type C	Y	Y	210mm +	80mm+	70mm	
18	R2	943,10093	12834	3853	S		Adult	Type C?			35mm+		60mm+	Small fragment of heel
18	R2	944,10095	12575	3757	S			Type A/C						Two small fragments
18	R2	944,10101	12391	3758	S	L	Large adult	Type C			230mm +	93mm	63mm	
18	R2	944,10103	12360	3192	M, I	R	Large adult	Type C	Y	Y	268mm +	97mm	59mm	Toe slightly pointed.
18	R2	945,10099	12631	3768	S, M?, I		Adult							Seven small fragments.
18	R2	945,10099	12814	3811	I		Adult	Type A	Y?	Y?	108mm +	52mm+		Cut diagonally across lower tread – possibly a repair?
18	R2	950,10117	11835	2890	S	R	Child	Type A			145mm +	62mm	47mm	
18	R2	950,10117	11835	2891	S			Type A						Two heel fragments
18	R2	946,10106	12666	3769	S		Adult	Type C			60mm+		69mm	Heel
18	R2	947,10116	11929	3611	S		Adult	Type A			63mm+		65mm	
18	R2	947,10124	12511	3193	S, I, HS		Adult	Type A	Y		235mm	83mm	57mm	Maximum height of heel stiffener from insole 20mm.

Period	LU	Group	Context	Acc. No.	Parts present	L/R foot	Size	Nailing	Thong	Stitch	L	Tread W	Waist W	Comments
18	R2	948,10112	11852	2802	M/I, HS		Adult	Y			75mm	45mm		Maximum length of heel stiffener 160mm (incomplete); width 50mm; height from insole 38mm.
21	OA68	767,30328	4909	2351	S, I	R	Small adult	Type B	Y		219mm +	82mm	60mm	Small fragments of upper/lasting margin survive.
22	OA70	771,82910	7413	1060	S, I, HS	L	Adult	Type A	Y	Y	220mm +	71mm	45mm	Incomplete heel stiffener.
22	OA83	965,10374	11606	2540	S		Adult	Type A			110mm +	70mm		Possibly large adult size as quite a broad sole.
22	OA83	965,10374	11634	2580	M, I	L	Adult	Type A	Y		170mm +	77mm	63mm	Separate heel stiffener fragment probably from same shoe.
36	OA14 4	1425,10751	11897	3148	M				Y	Y	77mm	36mm		Small tapering middle sole.

The Roman non-shoe leather from No. 1 Poultry

The non-shoe leather assemblage from Poultry is quite limited. Relatively few pieces were recovered, all very fragmentary, and many in poor condition. It has been possible to identify a number as coming from sheet or panel-type objects, some possibly from tent panels. The seams of such fragments have been analysed with comparison to the assemblages from Carlisle (Winterbottom 1991, 244-317) and Castleford (van Driel Murray 1998, 303-328), where tent panels and other identifiable objects were found. The fragmentary nature of the Poultry material, however, has allowed little of it to be identified for certain. Some of the most interesting finds are a number of fragments of possible briefcase-type bags, identified by Carol van Driel Murray, and the fragmentary remains of possible furnishing or wall coverings.

A number of sheet fragments were found, some complete with bindings (although no longer attached) and probably from panels, such as those used in tents or items such as awnings or covers. Many of the panel fragments are in such poor condition because they have been cut up for reuse. Panels, in particular, were sources of relatively large areas of leather which could be reused; what remains is usually the discarded edges or other pieces which were deemed unusable (van Driel Murray 1998, 286). An unidentifiable fragment of a panel <3854> has four parallel rows of stitch holes, running parallel to one long edge and down one side. The other long edge of this piece is torn. A number of the fragments found are almost certainly parts of tent panels. An unstratified piece <5849>, from Area 12, is a corner fragment with binding along one edge and a small, roughly triangular reinforcement patch <5281>, which fits in the corner. The edge hem is of a type (IVb) identified on similar tent fragments from Carlisle (Winterbottom 1991, fig 228, no. 6). Another probable tent panel fragment is <3555> (OA19, Period 2) which has a seam with two types of stitching along it. Only the lower part of the seam and part of a reinforcement strip remain. The seam is, however, very similar to, although a variant of, the type II/III seam described by Winterbottom (1991, 250) at Carlisle as being used exclusively on tents, as far as is known. The short forked reinforcement strip is added at panel corners and the stitching changes from type II to type III. On this example the first seam is not a type II, as it only has a single row of stitch holes. The actual corner end of the reinforced seam is torn and missing on this example and the other end is cut. Another possible tent panel is <3755>, which is made up of a number of very fragmentary pieces, one of which has stitch holes that indicate where a corner reinforcement patch was.

There is also evidence for the repair of some of the panel pieces, a feature also noted in Carlisle (Winterbottom 1991, 264, fig 230). An unidentifiable panel fragment from Period 6 (B30) <5359> has a small round repair patch <5316> originally attached by tunnel-stitching. Another, smaller patch is now missing, but the stitch holes where it covered a small tear remain. A number of patches were found, either now separated from the pieces they were originally sewn to, or never used. Three round or oval patches <5338>, <4421> and <5260> and two roughly triangular <6554> and <4513> were found. The latter two are almost certainly corner reinforcement patches from

tent panels. Another, rectangular fragment <4362> with stitch holes is possibly a patch.

Part of a possible furniture cover (<5050> & <4700>) came from two of the tank fills (OA45) in Period 7. The leather is quite thin and supple and is decorated with an impressed repeating pattern of diagonal (saltire) crosses in boxes. Although the fragments from the two fills do not join they are all decorated with the same pattern and each has one cut edge with a line of fine stitch holes. It is thought that these may be parts of either covers or a hanging. The largest fragment (<4700>) has the remains of a small flat wooden peg perforating it. Too little remains of the peg, however, and the leather is too crumpled and torn, to be able to identify its function or even if it was an original part of the object. Other possible furnishing fragments are <3631> (Period 15, R1), two pieces of quite fine leather with decorative stitching. These pieces are very fragmentary and have some small fragments of binding associated with them.

One of the most interesting assemblages of non-shoe leather is the group of possible briefcase-type bag fragments (Carol van Driel Murray pers comm). Such bags or holders would, most likely, have held documents and can, therefore, be seen as further evidence for administrative activity at or near the site. Fourteen fragments came from the tank fills (Period 7, OA45). All of the fragments have a grain surface with a high sheen and all have the remains of double rows of stitch holes. In most cases just the stitched edges remain, the good sheet leather from the middle having been removed for re-use. Period 5 (OA25) produced a small but rather fine fragment, <2471>, probably a reinforcement around the fastening of a briefcase (Carol van Driel Murray, pers comm). The two small pieces were originally joined flesh to flesh with a binding along their top edge and decorative stitching. Part of an appliqué also survives in place, although no longer attached. It is of interest to note that two of the fragments from the tank, <4704> and <4453>, also join, flesh to flesh. A fragment with a very rare beaded seam <5315> is possibly from a kit-bag or a tent (Carol van Driel Murray, pers comm). Such seams are particularly strong and are therefore used where a lot of weight or stress will be put on a seam.

An interesting fragment is <4420> which appears to be part of a larger object cut up for reuse. It is made up of four layers of leather and is roughly triangular in shape with one curving edge, the only original edge left. The layers are arranged in such a way that there is a grain surface on both sides. One of the layers in the middle has a binding indicating that it possibly originally came from a different object to the others. A row of stitch holes runs parallel to the curving edge and there are two further curving rows of stitch holes in from this. The outer grain surfaces are very worn and little remains of one. The other is quite shiny and this, as well as the rows of stitch holes, may indicate that it, too, is part of a briefcase-type object. A small fragment <3405> is decorated with a series of small decorative cut-outs. These are arranged as a row of rectangles, then squares, then a series of hexagons, the latter set within a frame of roundals. The upper edge of this decoration curves and the fragment has been cut around this curve, indicating that it was removed from

an object. The decoration is reminiscent of that found on some nailed shoes (Padley 1991, 230 and 236, fig 209, no. 895).

5 Catalogue of the non-shoe leather

6 Sheet fragments

<1246> [+], unstratified

Incomplete; maximum l (370mm), maximum w (150mm). One long edge has a row of fine stitch holes with possible over-stitching on the edge. This may be part of a type II seam. There are three small circles of stitch holes indicating where small round patches were attached. The leather is in quite poor condition, with the grain surface particularly degraded.

<5849> [+], unstratified - Area 12

Incomplete; maximum l (325mm), maximum w (95mm).

<5281> [+], unstratified - Area 12

Complete; l 115mm, w 105mm.

A corner fragment of a possible tent panel with binding along the remaining long edge and an associated corner reinforcement patch <5281>. The panel fragment has two proper edges remaining, the other edges being torn. The patch is roughly triangular in shape and fits onto the flesh surface, lying flesh to flesh. There is an impression of another patch in the same area on the grain side. The binding fits onto the long edge of the panel, creating a IVb hem with two parallel rows of stitch holes. The patch is held in place by the inner of these two rows and by a curving row of stitch holes running across the corner angle. The adjoining edge of the panel has a double row of stitch holes. The patch and the binding are no longer *in situ*.

<1247> [3774], P7, OA35, Group 418,090202

Incomplete; maximum l (455mm), maximum w (295mm). A roughly triangular fragment with a fine VI hem along the top edge. Another edge has the remains of tunnel stitching on the flesh side running parallel to it; the edge is either torn or very worn and it is not clear if this is a hem or a seam. The third side is torn. The leather is quite worn and fragmentary.

<1059> [3774], P7, OA35, Group 418,090202

Incomplete; maximum l (280mm), maximum w (150mm). A very scrappy fragment with a small fragment of one proper edge. All of the other edges are torn. There are two stitch holes remaining in this edge. The adjoining side has a row of horizontal tunnel stitches parallel to the edge. The edge is torn along a line of stitching indicating that it is probably a seam rather than a hem. The leather is quite supple and similar to <1247>.

<1261> [3774], P7, OA35, Group 418,90202

Incomplete; maximum l (150mm), w (140mm). A roughly square fragment with three cut edges and one torn edge. One of the cut edges appears to have over-stitching. The leather is slightly thicker than the other fragments (<1059> and <1247>) from this context.

<3555> [12908], P2, OA19, Group 223,10017

Incomplete; maximum l (500mm), maximum w (165mm). Probably part of a tent panel, with an odd seam similar to a type normally only found on tents. Only the lower part of the seam and part of a reinforcement strip remain. The top long edge has a row of fine, closely spaced stitch holes, similar to the lower part of a NR seam (Winterbottom 1991, 247, fig 220). Part of the way along the top this is supplemented by a lower row of vertical tunnel-stitch holes on the flesh side, indicating a type III seam. Part of the strip that was attached to this latter part of the seam remains, with the remains of a forked end. This is very similar to the type II/III seam described by Winterbottom (1991, 250) at Carlisle as being used exclusively on tents, as far as is known. The short forked reinforcement strip is added at panel corners and the stitching changes to type III. The end of this reinforced part of the seam is torn and missing on this example. The other end of the seam is cut.

<4302> [12908], P2, OA19, Group 223,10017

Incomplete; two fragments of very thin and scrappy leather. The fragments don't join but they almost certainly come from the same object.

(i) maximum l (165mm), maximum w (130mm); a single row of stitch holes along one edge. A conjoining edge has fine over-stitching.

(ii) maximum l (230mm), maximum w (160mm); a single row of stitch holes very close to one edge. A conjoining edge has the impression of a binding on it, although the binding is now missing. There is a roughly circular impression (diameter c 60mm) in the middle of this fragment which may be original or modern.

<4242> [6254], P2, OA19, Group 231,5011

Incomplete; l 240mm, w 220mm. A small square panel with hemmed edges. There are three very small fragments of binding, which probably belong to the top edge (a). This edge has widely spaced stitches, approximately 10mm from the edge. Side (b) has closer, slightly smaller stitch holes c 5mm from the edge. Side (c) and bottom edge (d) have closer, smaller stitch holes similar to (b) but only c 2mm from the edge. The edges of (c) and (d) are turned over but this may be accidental. A small tear near edge (c) has been repaired with a roughly circular patch, which is now missing.

<3854> [12864], P2, S4, Group 228,10028

Incomplete; l 450mm, maximum w (135mm). A sheet fragment with four rows of stitch holes running parallel to one long edge and also along one of the adjoining side edges. The rows extend approximately 45mm in from the edge. The other long edge is torn and the other side has been cut. The stitch holes along the long edge stop approximately 20mm from this cut edge.

<5359> [18282], P6, B30, Group 471,120230

Incomplete; maximum l (c 610mm), maximum w (c 300mm). Two fragments of a panel, which appear to join. The join, however, is rather tenuous but is supported by the distinctive linear grain marks on both fragments. There is a simple seam along one edge with a single row of stitch holes approximately 10mm in from the edge. There are two circles of stitch holes on the panel

where repair patches were attached. One of the patches <5316> (Fig RL16) is roughly oval (80mm x 65mm) and was attached by tunnel stitching. The other patch is missing but would have been smaller, approximately 20mm in diameter, and covered a small hole in the leather. This panel is very fragmentary and quite worn and thin in places.

<4917> [18184], P6, OA42, Group 460,120204

Incomplete; maximum l (450mm), maximum w (170mm). A torn fragment with one stitched edge remaining. The leather is quite fine but this is partly due to the fact that the grain side has lost almost all its surface. The stitched edge has a semi-circular indentation (d approximately 55mm) cut into it which the stitching and seam follow around.

<5339> [18237], P6, OA43, Group 465,120216

Incomplete; maximum l (140mm), maximum w 30mm. A thin, scrappy fragment with a row of stitch holes near and parallel to one long edge. The edge parallel to this long edge is cut. Accession <5314> is a fragment of binding which fits onto this fragment of leather, forming a IVA hem.

<5350> [18237], P6, OA43, Group 465,120216

Incomplete; maximum l (250mm), maximum w 35mm. A long fragment with both long edges and one short edge cut. The other short edge is torn. The cut short edge probably had a binding attached as there are impressions, a possible stitch hole and possible tunnel stitching on the flesh side.

<5263> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (70mm), maximum w (78mm). A small fragment with two cut edges remaining. One of these has a row of long thin rectangular stitch holes approximately 1mm from the edge. The other cut edge has similar stitch holes but they are more widely spaced and approximately 6mm from the edge.

<5262> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (140mm), w 63mm. A scrap of leather with two parallel long cut edges and two short torn edges. One of the cut edges has two rows of stitch holes, possibly the remains of IVb (Winterbottom 1991, 248, fig 221) hem. The binding that would have been attached is now missing.

<4710> [18172], P7, OA45, Group 463,120211

Incomplete; maximum l (85mm), maximum w (78mm). A fragment with a seam edge. The edge is folded over and there are stitch holes through the turned over fragment. There is a row of vertical (to the edge) tunnel stitches in the flesh side, above the turn over. Possibly a II, III, or NR seam (Winterbottom 1991, 247, fig 220).

<4449> [18087], P7, OA45, Group 463,120212

Incomplete; maximum l (230mm), maximum w (140mm). There are the remains of a very small piece of cut edge with three parallel stitch holes. A row of stitch holes runs across the middle of the fragment. This fragment of leather has quite a distinctive grain with linear indentations/markings.

<3630> [12229], P8, R1, Group 514,10051

Incomplete; two long, narrow rectangular fragments that make up two long strips.

(i) maximum l (445mm), maximum w 59mm. A long, narrow fragment with three cut edges and one short torn edge. The cut short edge has another fragment (59mm x 47mm) attached (these have now become separated) by two seams, one at its very edge and another in the middle. There is a further row of stitch holes very near the other cut edge; this is a seam III, although now missing the other sheet or fragment that it would have been attached to.

(ii) maximum l (342mm), maximum w 59mm. This fragment has three cut edges and one torn short edge. The shape of this fragment is very similar to the above piece but there is no join. They are, however, almost certainly part of the same cut-up object since the leather is the same in both.

<6553> [1108] P10, OA75, Group 482,120236

Incomplete; maximum l (210mm, maximum w 40mm. A torn fragment with a small part of one original edge remaining. This edge has a row of very fine, closely spaced (c 1-2mm apart) stitch holes, approximately 1.5mm from the edge. The impression of the thread is still visible on the grain surface.

<3755> [11967], P15, R1, Group 877,10059

Incomplete; two fragmentary pieces and four pieces of binding.

(i) maximum l (220mm), maximum w (155mm). A fragment with two conjoining edges; there is a single row of quite closely spaced (c 5mm apart) stitch holes along these two edges. The corner is missing but there are the remains of a double semi-circle of stitch holes across it; this may have been for a reinforcement patch, similar to those found on tent panels (Winterbottom 1991, 264, fig 228). There is also another small and rather scrappy fragment with this closely spaced stitching along its remaining edge.

(ii) maximum l (280mm), maximum w (240mm). A fragment with a more degraded and rather flaking grain surface. There are two conjoining edges with a single row of wider spaced (c 8-10mm apart) stitch holes along each edge. The corner is missing. There are four other small and rather scrappy fragments that also have this larger stitching along their remaining edge.

Also associated with these panel fragments are four pieces of binding:

(i) maximum l (250mm), w 18mm. A flat fragment apparently not folded over anything. There are stitch holes along the top edge, 8-10mm apart and further stitch holes along the bottom edge, c 13mm apart.

(ii) maximum l (130mm), w 20mm. A flat fragment apparently not folded over anything. This fragment slightly curves through its length. The bottom edge is roughly cut. There are fine stitch holes 7mm apart along the top edge and a further row of larger stitches, 12-15mm apart, immediately below them.

(iii) maximum l (75mm), w 25mm (when unfolded). A fragment with a very fine row of stitch holes which perforate both layers, c 7mm apart.

(iv) maximum l (43mm), w 25mm (when unfolded). This fragment is the same as (iii) and probably comes from the same piece of binding.

<3759> [12327], P18 ph2, R2, Group 946,10104

Incomplete; maximum l (140mm), w 152mm. A square of leather with three cut edges and one torn. Two of the cut edges conjoin and have seams. One is a II or III seam with the associated binding, although this is no longer attached. The binding (w 24mm) would have been placed on the flesh surface, where there is a row of stitch holes with a row of upright tunnel stitching below that. The conjoining edge has had its edge folded on to itself and sewn in place. Below this there is a row of upright tunnel stitching and the impression of where another binding strip would have gone. There are two other scrappy fragments of binding.

Binding

<5261> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (110mm), w 40mm. A small fragment of binding with a single row of widely spaced stitch holes.

Furnishing/hanging

(i) <5050> [18089], P7, OA45, Group 463,120212

(ii) <4700> [18172], P7, OA45, Group 463,120211

These three fragments, one <5050> and two <4700>, are all part of the same object. The leather is quite thin and supple with an impressed design of saltire crosses in boxes. None of the three fragments join but all are decorated with the same design and are definitely part of the same object. All three have one cut edge with fine stitch holes. The largest fragment (<4700>) has a small flat wooden peg perforating the leather, but the leather is too crumpled and torn and the peg too incomplete to be able to identify the purpose of this. Due to the decorative nature of these pieces and the suppleness of the leather it is thought that they may have come from some form of furnishing, either as a cover or a hanging.

(i) Incomplete; maximum l (250mm), maximum w (208mm). The only surviving original edge has a single row of stitch holes. The other edges are torn or cut, except for one small part of the opposite side to the stitched edge, which has a small amount of stitching surviving.

(ii) Incomplete; maximum l (470mm), maximum w (372mm); maximum l (265mm), maximum w (250mm). The larger fragment has a single row of stitch holes along its top edge. The smaller fragment is made up of two joining pieces and has a single row of stitch holes along one edge.

<3631> [11965], P15, R1, group 877,10060

Incomplete; two fragments possibly from the same object. The leather is quite fine and there is a row of decorative stitching suggesting that these fragments may come from furnishing covers or hangings. There are also a number of very small and scrappy fragments and pieces of binding.

(i) Maximum l (230mm), maximum w (170mm). There is a IVA hem along the top edge; the binding is now separate. The stitches are c 7mm apart. There is a double row of very fine holes running down and across the leather, almost certainly decorative. There is a small rough hole c 5mm in diameter and approximately 30mm from the hem edge. There is a very faint circular

impression around it, c 20mm in diameter. This may be where a stud or other fitting was inserted but there are no traces of any metal corrosion.

(i) Maximum l (80mm), w 85mm. Part of a small, possibly square, fragment with three cut edges and one torn. There is a IVA hem along its top edge and a double row of stitch holes running parallel to the two cut edges.

Briefcase-type bag

<2471> [8763] P5, OA25, Group 305,80105

Incomplete; surviving l 110mm, surviving w 110mm. Two small fragments originally joined flesh to flesh with a binding or edging along one side. The binding or edging strip is folded twice as far over on one side as the other. The longer side is secured to the leather sheets by two rows of stitching. On the reverse, however, the shorter edge meets the edge of the sheet. The top row of stitching goes through this side of the binding, whereas the lower row of stitching only goes through the top of the sheet and not the binding. The sheet fragments have decorative stitch holes and it is clear that the two fragments were sewn together. The thread impressions are visible on one side, but on the other side there are no thread impressions and instead it is possible to see the impression of an appliqué, the same shape as the stitched design. This appliqué is on the same side as the shorter binding edge. A small fragment of the leather appliqué survives, although no longer *in situ*.

Four, small, roughly oval holes have also been pierced through the binding and the top of both the sheet fragments. This was obviously done when all of the fragments were in place as the holes go through all the layers. The small fragment of appliqué has the remains of parts of the two lower holes. These holes were probably for some form of fastening, such as a tie or lacing, since they show evidence of having been stretched and pulled. The appliqué was, therefore, probably placed there both as a decorative feature and also to reinforce the area around the holes. This piece has been identified as a reinforcement area around a fastening on a brief-case type container.

<5070> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (255mm), maximum w 62mm. A roughly rectangular fragment with one long edge cut. The parallel edge is cut and seamed with a row of rectangular stitch holes near the edge. A horizontal double row (c 8-9mm apart) of stitch holes runs down the middle of the fragment and meets a short vertical double row.

<5184> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (300mm), maximum w (65mm). One long cut edge with a seam as above. There is a row of closely spaced slanted stitches parallel to this seam, c 15mm from the edge. Approximately 37mm above the row of slanted stitches is the remains of a double row, as in <5070> (Fig RL5).

<4703> [18172], P7, OA45, Group 463,120211

Incomplete; two fragments.

(i) Maximum l (200mm), maximum w 47mm. The long edge has a seam as above. Above this there is a double row of stitch holes, 22mm above the edge and 15mm apart. The edge above this has been cut and torn.

(ii) Maximum l (110mm), maximum w 75mm. Three cut edges and one torn edge. The longest cut edge has a seam as above. Approximately 20mm above this there are a double row of stitch holes 13mm apart. Above this there is a double semi-circle of stitch holes that disappear into the cut edge. Too little remains of this semi-circle to get a full diameter measurement but it can be estimated at about 55mm.

<4704> [18172], P7, OA45, Group 463,120211 and <4453> [18087], P7, OA45, group 463,120212

Incomplete; overall dimensions: maximum l (190mm), maximum w 58mm. These two fragments join, flesh side to flesh side, thereby producing a double grain side fragment. One long edge has a seam, similar to the above examples. Approximately 23mm above the edge is a double row of stitch holes, 9mm apart. Above this are four stitch holes, possibly forming a semi-circle, and then a cut edge. This cut edge is c 26mm from the top of the double row. One short edge is also cut and near this are two rough holes that pierce both fragments (2mm in diameter and 3mm x 6mm).

<4863> [18172], P7, OA45, Group 463,120211

Incomplete; maximum l (72mm), maximum w (67mm). One long edge with a seam as the other examples above. Approximately 21mm above this is a double row of stitch holes, 9mm apart. Above this is part of a semi-circle of stitch holes, the remainder of which is torn.

<4709> [18172], P7, OA45, Group 463,120211

Incomplete; four fragments, two of which join.

(i) Maximum l (310mm), maximum w (80mm). Two joining fragments. The seam edge is as above and here it is on the short edge. A long double row of stitch holes runs vertically from it, 30mm from the parallel long cut edge. This double row is 9mm apart. There are the remains of a further row of stitch holes 40mm on the other side of it.

(ii) Maximum l (265mm), maximum w (40mm). A long fragment, all of the edges of which are torn. There is a long double row of stitch holes, 8mm apart.

(iii) Maximum l (155mm), maximum w (68mm). A torn stitched edge with another rising at an angle from it. The other edges are torn.

<4452> [18089], P7, OA45, Group 463,120212

Incomplete; two fragments, both very similar to each other.

(i) Maximum l (118mm), maximum w 19mm.

(ii) Maximum l (120mm), maximum w 19mm.

Both fragments have three rows of stitch holes, one very near each edge and one in the middle. These are similar to the double rows mentioned on the fragments above. The rows are 8mm and 9mm apart.

<4790> [18094], P7, OA45, Group 463,120212

Incomplete; maximum l (340mm), maximum w (65mm). A long rectangular fragment with three torn edges and one long edge torn along the stitching. The leather appears to be different to all of the preceding fragments as it is not as shiny and polished. This may, however, possibly be due to where it was used on the object, for example if it was exposed to outer wear.

7 Briefcase-type bag?

<4500> [18087], P7, OA45, Group 463,120212

Incomplete; maximum l (122mm), maximum w (87mm). A reused rectangle of leather with cut edges, possibly associated with the other briefcase fragments. One short edge has a single row of stitch holes very near the edge, similar to those on the briefcase fragments. There are fold marks but it is difficult to identify if these are original or occurred during burial. The grain surface has quite a high sheen (also a feature of the briefcase fragments).

Loops

<6551> [12658] P2, OA19, Group 222,10035

Complete; l 126mm, w (folded) 9mm, maximum w (unfolded) 40mm. A long roughly oval fragment with convex sides and each end narrowing to a blunt point. The fragment has been rolled up lengthways and apparently secured by stitching at each end. The only remains of this are the stitch holes in each end. This has created a small but strong loop that could be used as a handle or for connecting one object to another. The outer grain surface is quite abraded and worn, particularly when compared to the inner, rolled grain surface. The leather recovered from the excavations at Castleford contained examples of loops made from folded fragments of leather (van Driel Murray 1998, 320-321, nos 53-59) some of which were intended as rope covers.

<6247> [18151] P6, OA43, Group 493,120208

Complete; l 95mm, w (folded) 5mm, th (folded) 2-5mm. A small loop, open at one end and both ends cut. The loop is formed of a tightly rolled fragment of leather. Both ends are flattened.

<4514> [18081], P10, OA75, Group 482,120326

Incomplete; maximum l (65mm), maximum w 15mm. Part of a leather loop, possibly a fastening loop.

Patches

<5338> [18227], P6, OA43, Group 465,120216

Incomplete; diameter c 65mm. A circular fragment with a single row of stitch holes around its outer edge.

<6554> [1113] P6, S21, Group 494,120242

Incomplete; 104mm x 80mm x 80mm. A virtually complete triangular fragment with one corner cut off and missing. The fragment also has three more cuts through the middle of it. This may be a triangular patch, probably for

reinforcing a corner or repair; it is similar to corner infill fragments found on tent panels (Winterbottom 1991, 271, no. 1042). The long edge has a row of stitch holes with continuous thread impressions on the flesh side. The next edge has a row of wider stitch holes closer to the edge. The third side has the very edge folded onto itself, there is a single row of stitch holes along the fold and a row of vertical tunnel stitch holes below the fold in the flesh surface. This is probably part of a seam rather than a hem.

There are two other associated fragments that do not join this piece, but are detailed here as they may all have come from the same object.

(i) Maximum l (150mm), w 10mm. A fragment of a probable reinforcement strip for a seam with two rows of stitch holes parallel to each long edge, the thread impressions are visible on the grain side. The stitches of one row are slightly more widely spaced than the other.

(ii) Maximum l (170mm), maximum w (20mm). A long thin strip with a single row of stitch holes parallel to the long top edge. Towards one end a further row of stitches becomes apparent at the very edge of the leather but only six of the stitch holes remain. Also at this end the lower edge flares out indicating that this strip has been cut from a larger object. A vertical slit has been made in this end and a thin loop of leather formed. The purpose of this is unknown as it is not very strong looking.

<4421> [18089], P7, OA45, Group 463,120212

Complete; 94mm x 80mm. A roughly circular fragment with a cut/trimmed edge. Probably intended as a patch.

<5260> [18089], P7, OA45, Group 463,120212

Incomplete; 40mm x (50mm). Part of an oval with a single row of stitch holes parallel and close to the edge.

<4513> [18089], P7, OA45, Group 463,120212

Incomplete; two fragments of a re-enforcement patch.

(i) maximum l 125mm, maximum w 115mm. Two straight cut edged with a row of stitching parallel to the edge. A third cut edge curves and has a row of stitches running parallel to this curving edge. A diagonal row of stitch holes runs from the corner to the middle of the outer curve. This fragment has probably been reused since a piece has been cut from the middle of it.

(ii) maximum l (85mm), maximum w (75mm). This fragment has a cut edge with a row of stitch holes parallel to the edge. The other three sides are torn. A diagonal row of stitches runs from this edge towards another row of stitches (of which only two or three stitches remain).

<4362> [18081], P10, OA75, Group 482,120326

Incomplete; maximum l (110mm), maximum w 59mm. An incomplete rectangle of quite fine, supple leather with three cut edges and one torn. There is a row of fine stitch holes parallel to each side. These stitch holes run off diagonally towards the two remaining corners. This may have been used as a re-enforcement patch.

8 Other

<5315> [18328], P6, OA45, Group 483,120312

Incomplete; maximum l approximately (400mm), maximum w (113mm). A fragment with a beaded seam; it is very rare for such seams to remain complete and *in situ*. Possibly from a kit bag.

<4420> [18089], P7, OA45, Group 463,120212

Incomplete; l, maximum w. A long, roughly triangular fragment made up of four layers of leather. There are two straight edges and the third side curves to a point. The two straight edges are cut, whilst the curving edge appears to be part of the original object, which has been cut up. There is a row of stitch holes along the curved edge and a double curving row of finer stitch holes through the middle. The layers are placed so that the outer surface on both sides is a grain one. One of the inner layers has a diagonal hem across its width near the top. This is covered by a binding and then covered by a top layer, which is very degraded. The features on the inner layer may indicate that it was part of another object reused. The other outer layer is also quite worn and the grain is very shiny. This wear and the double rows of stitch holes may indicate that this fragment is also part of a briefcase-type bag.

<3405> [12575], P18 ph1, R2, Group 944,10095 (High Street Londinium)

Incomplete; maximum l (145mm), w 74mm. A fine, supple fragment of leather with a decorative design of cut-outs. The decoration takes the form of a row of upright rectangles running parallel to a cut edge. Each of the short ends of the rectangles is cut in a V-shape. Above these is a row of small squares, and then a series of small hexagons (6-sided) set within a frame of small roundals. The upper edge of the decoration curves and the fragment has been cut around this curve possibly suggesting that this piece was cut from another object.

Unidentified

<1262> [+], unstratified

Incomplete; maximum l (100mm), maximum w (60mm). A small, delaminated fragment with a double row of fine stitch holes along its top edge. Parallel to this are two, presumably decorative, rows of fine holes which curve around and back, forming an elongated oval. The fragment may have been originally oval in shape but most of the outer edges are missing.

<1240> [3782] P6, OA37, Group 859,90302

Incomplete; max l (115mm), max w (19mm). A small strip cut and torn from a seam edge. The top edge has a single row of fine stitch holes running parallel to it. The leather has been folded just below this stitching. A row of fine vertical tunnel stitching is visible on the grain surface.

<1242> [3782] P6, OA37, Group 859,90302

Incomplete; max l (59mm), w 22mm. A very small fragment, possibly of binding with three parallel rows of fine stitch holes.

<4301> [12908], P2, OA19, Group 223,10017

Incomplete; maximum l (285mm), w 5-8mm. A tapering strip of leather; probably a fragment of waste.

<5351> [18246], P6, B30RMC, Group 475,120308

Incomplete; maximum l (45mm), maximum w (23mm). A very small and narrow fragment with the remains of two rows of stitch holes, possibly indicating where a small, round patch was attached. Three of the edges are cut and one is torn.

<5335> [18211], P6, B30, Group 471,120230

Incomplete; maximum l (200mm), maximum w (20mm). A long strip with two rows of widely spaced stitch holes near the long cut edge. The other long edge is roughly cut and torn. This may possibly be a fragment of binding or part of the edge of a sheet or panel that binding would have been attached to.

<5071> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (88mm), maximum w (63mm). A fragment with one cut and three torn edges. There are two possible thong holes near and parallel to the cut edge.

<5234> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (43mm), maximum w (28mm). A very small, scrappy fragment with two cut and two torn edges. There is a line of stitch holes approximately 1-2mm from the possibly curving cut edge. There are more stitch holes that may form a semi-circle, but the piece is too fragmentary to identify this for certain.

<4450> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l (130mm), maximum w (75mm). A scrappy fragment with one partly cut edge with a single row of stitch holes parallel to it. Just below this there is an oval (48mm x 30mm) of widely-spaced stitch holes, possibly for a reinforcement patch, however, the surface of the leather is too degraded to be certain of this.

<5334> [18182], P7, OA57, Group 628,120310

Incomplete; maximum l (62mm), maximum w (60mm). A scrap of leather with one cut edge and an adjacent edge with the remains of over-stitching.

<5264> [18089], P7, OA45, Group 463,120212

Incomplete; maximum l 125mm, maximum w (35mm). A scrappy fragment with three cut and one torn edges. A single row of stitch holes runs parallel to the long cut edge. Much of this edge is missing since it has partly torn along the line of the stitches. There are also two possible stitch holes along one short edge.

<4793> [18094], P7, OA45, Group 463,120212

Incomplete; maximum l (75mm), maximum w 28mm. A small fragment with three cut edges and a single row of stitch holes running parallel to the only short cut edge.

<4502> [18087], P7, OA45, Group 463,120212

Incomplete; two fragments of thin leather.

(i) maximum l (180mm), maximum w 36mm. Two cut edges, one with a single row of stitch holes parallel to and very close to the edge.

(ii) maximum l (120mm), maximum w (45mm). Only one cut edge remains with a single row of stitch holes parallel to and very close to the edge.

<4363> [18081], P10, OA75, Group 482,120326

Incomplete; maximum l (108mm), maximum w (56mm). A fragmentary piece with one torn edge, two possibly cut edges and another edge with serrations, possibly where a row of stitching has torn. One of the possibly cut edges has three possible stitch holes near it.

<4364> [18081], P10, OA75, Group 482,120326

Incomplete; maximum l (165mm), maximum w (60mm). A fragment in poor condition. The remaining outer edge appears to have been trimmed into a circular edge. There are very worn stitch holes, possibly part of a rectangular shape.

<6552> [18027] P11, OA77, Group 854,120513

Incomplete; two small, rather scrappy fragments.

(i) Maximum l (44mm), maximum w (43mm). A small corner fragment with two cut edges, each of which has a row slanting stitch holes (c 7mm apart).

(ii) Maximum l (75mm), maximum w (17mm). One long cut edge with a row of stitch holes (c 8mm apart), approximately 8mm below this, and parallel to it, is the remains (two stitch holes) of a further row of stitching.

<4738> [12631], P18 ph2, R2, Group 945,10099

Incomplete; maximum l (80mm), w 30mm. A small fragment of thick, stiff leather with cut and torn edges. The fragment is quite worn and the grain surface is missing. Possibly part of the middle sole of a shoe.

<4446> [12327], P18 ph2, R2, Group 946,10104

Incomplete; maximum l (125mm), maximum w (35mm). A fragment of thick, stiff leather; possibly part of a shoe sole.

Roman leather waste:

9 Introduction

As well as the shoe and non-shoe leather a large amount of fragmentary scrap and waste leather was recovered. No evidence for the tanning process was found. The scrap material is made up of unidentifiable fragments of torn leather that may or may not have come from the manufacturing process. The waste is of particular importance as the types of waste as well as the quantity in which it was found would indicate that shoemaking was taking place in the vicinity of the site. The waste is made up of cut-outs (fragments that are left after cutting out the object), trimmings (the pieces which are trimmed off the roughly cut out objects) and discards (those fragments of the hide not required, such as the head or hide edges). In addition to this waste, which would largely indicate shoemaking, other waste was found in the form of objects, such as tent panels that were cut up and reused. This reuse of suitable material is evidenced in London (Suffolk House (Keily, in prep)) and elsewhere (Castleford (van Driel Murray 1998, 328-31) and Carlisle (Winterbottom 1991, 265). Such material is dealt with in the 'Non-shoe leather', as it is often the only surviving evidence for artefacts other than shoes.

Most of the contexts producing waste contained only one or two fragments but a number of contexts contained quite considerable amounts. Context [3774] (P0, Group 0,90202) produced a number of fragments of shoe-making waste as well as one large triangular fragment of very soft and supple leather. This fragment may have been used in the production of more delicate shoe uppers, such as for sandals, or may have been used for other finer items.

Amongst the thicker, sole-type leather is an unusual fragment <6546>, a small rectangle. Two of its corners are rounded and two have small roundals cut into them. The purpose of this object is unknown and it may be just a waste piece used for trying out a cutting tool.

10 Shoe-making waste

Shoe-making waste is frequently found on Roman sites in London and it would appear that London was a major shoe-making centre from the late 1st to mid 3rd centuries (Rhodes 1987, 174). The waste recovered from Poultry includes fragments discarded from the three initial stages of shoemaking. Firstly the unusable parts of the hide are removed, for example the head, the legs or, as in this case, predominantly the edges. The shape of the uppers and soles are sketched out on the remaining piece of leather and these rough shapes are cut out. The fragments most frequently left over from the cutting out of soles are distinctive triangular pieces and long, curving pieces (for example <6550>), many of which were found at Poultry. The upper and sole fragments are then trimmed before the shoe is assembled. The waste from

this trimming stage are usually long, thin strips and shavings. The waste found at Poultry comes predominantly from sole making, with little evidence for the manufacture of uppers.

The following table details the type of waste that was recovered. Only those contexts with more than eight fragments are considered.

(A) = sole waste; (B) = thinner leather waste, possibly upper waste and HE = hind edge

Context	Period	Feature	(A) triangles	(A) other off-cuts	(A) off-cuts with HE	(A) HE trim	Trimming s	(B) off-cuts	(B) HE trim
[3782]	0		16	25	21	16	28		
[18237]	6	OA43		1			3	6	3
[1113]	6	S21	6	10	1	6	22	2	
[18089]	7	OA45	7	8	3	6	8	5	
[18094]	7	OA45	3	3		2	2	5	2
[1108]	10	OA75	3	2	2		3		
[1112]	11	OA77	1	3			4		
[18207]	11	OA77	8	15	2	3	30		
[12575]	18	R2	8	3			9		
[3850]	21	B64RMA	3	9	4		3		

11 Catalogue of the accessioned waste

<6550> [3782] P6, OA37, Group 859,90302

Complete; l 195mm, maximum w 32mm. An off-cut from sole-making. The two outer edges are straight and at right angles to each other. The inner edge curves down and around, following the outline of the side and part of the heel of a sole. Two small squares have been carefully cut from this fragment of waste; the purpose of this is unknown.

<5337> [18211] P6, B30, Group 471,120230

Incomplete; maximum l (160mm), maximum w 11mm. A long, thin strip with one edge decoratively cut, this takes the form of every second wide and narrow U-shaped cut-outs. The other long edge is roughly cut and both ends are torn. The leather is quite thick, possibly indicating that it came from the manufacture of shoes.

<6546> [18207] P7, OA57, Group 479,120319

Complete; l 30mm, w 38mm. A small rectangle; partly worked and then discarded. Two of the corners are rounded and two have a small roundal partly cut into them.

12 Inscriptions and marks

Four waste fragments were recovered with incised letters or marks on them. All were pieces discarded from shoe making. Similar incised letters have been found on leather off-cuts, both discarded hide fragments and shoe-making waste, from other sites in London (Rhodes 1987,173-81). Such inscriptions

are also found elsewhere in Britain and on the continent (ibid, 174). The purpose of these inscriptions is unknown but since many would appear to have been made prior to tanning (as evidenced by the 'opening-up' of the cuts for the letters) they may be interpreted as tanner's marks. Since not all have this 'opening-up' or widening of the cut lines it may be that some inscriptions were added at a later stage in the leather processing (ibid, 175).

Of the four inscriptions found on waste leather at Poultry, one <3145> appears to have a full name incised on it. This is unusual as normally only the initials of personal names were cut into the leather (Hoevenberg 1993, 243). Two of the fragments have incomplete inscriptions, one <6548> is torn through the letters and the other <6545> has been cut. The latter is interesting since it suggests the possibility that the leatherworker may have used the rest of the sheet that had the remainder of the name on it. Usually such inscriptions are found on waste expressly because the leatherworker did not want to use the inscribed piece and therefore cut it off and discarded it. The fourth fragment <6549> has three overlapping crescents, all three obviously cut with the same tool. It is questionable as to whether they are supposed to be some sort of tanner's or owner's mark or if they are more accidental, possibly the result of someone testing a cutting tool on a waste fragment of leather. A further fragment <6547> has a single small semi-circular cut near one cut edge, which may be a tanner's mark. It is interesting to note that fragments <6548>, <6545>, and <6549> all came from the same deposit (context [3782]), which produced the largest amount of shoemaking waste. One of the fragments, <3145>, is triangular, indicating it is a by-product of sole making. All four are positioned relatively close to the hide edge, a feature also noticed on other examples from London. It is possible that some inscriptions, at least, were placed close to the hide edge on purpose so as not to interfere with the better quality leather further in from the edge (Rhodes 1987, 173).

Two further inscriptions <3767> were found, both on a shoe insole. These are both stamped inscriptions, DOSCIOS in the seat of the sole and, in larger letters, PIC across the tread. The occurrence of these inscriptions on a shoe insole is interesting as they are more normally found, in London, on waste fragments and it would appear that leather workers took some care in removing and discarding these inscribed fragments (Rhodes 1987, 173). Outside of London, however, stamps and inscriptions appear to be more frequently found on shoe insoles and other leather artefacts than on waste (Rhodes 1987, 174; Padley 1991, 234; Hoevenberg 1993, 225-7, 234-5 and 239-45).

The inscription identifications are by Mark Hassel.

13 Catalogue of leather with inscriptions

<6548> [3782] P6, OA37, Group 859,90302

Incomplete; l 80mm, maximum w (52mm). A roughly rectangular fragment with two cut edges, one original hide edge and one torn edge. The tear runs

through the inscription leaving only the last three letters: RRI(?). The letters have been cut or inscribed into the leather and are quite small (c 7mm high). The inscription is approximately 48mm from the hide edge and 15mm from a cut edge.

<6545> [3782] P6, OA37, Group 859,90302

Incomplete; approximate l 170mm, maximum w (80mm). An oddly shaped off-cut. Most of the edges are cut except for one short torn edge and a short portion of original hide edge. The letters are approximately 65mm from the hide edge and approximately 14mm above a cut edge. The leather has been cut through the middle of the inscription and only the last three letters remain complete with traces of a fourth: VRI(?). The letters are approximately 10mm high.

<6549> [3782] P6, OA37, Group 859,90302

Incomplete; maximum l (90mm), w 75mm. A small roughly rectangular fragment with the partial remains of three cut edges and one torn edge. Three small semi-circles or crescents are incised, overlapping each other. They are approximately 45mm from the hide edge and the leather has been cut through the middle of the third crescent. These marks may be either accidental, possibly made when testing a cutting tool, or they may be a tanner's or owner's mark.

<6547> [12708] P18 ph2, R1, Group 924,10065

Complete; l 185mm, w 66-78mm. A roughly rectangular fragment. There is a semi-circular cut near one short cut edge. Possibly a tanner's mark.

<3145> [12316], P18 ph2, R2 (u), Group 946,10105 (High Street Londinium)

Complete; 100mm x 96mm x 77mm. A triangular fragment of shoe-making waste with an inscription. The letters l LACCI, probably FLACCI (work or property of Flacus) are cut into the grain surface and are thought to possibly be a full name rather than just someone's initials as is more usual. It is on a decent 'cut-out' fragment of leather, whereas usually inscriptions occur on the peripheral part of the hide which would be discarded (Carol van Driel Murray, per comm). The letters are approximately 10mm high.

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