

Leather from a Roman well at Tollgate Farm, Staffordshire, UK

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NB: The methodology employed in preparing this report is summarised in a separate accompanying document.

1 the leather assemblage, its context and recovery

Since 2002 members of the Stoke-on-Trent Museum Archaeological Society (SOTMAS) have been excavating a Roman site at Tollgate Farm in Staffordshire (UK) in the English West Midlands. The site lies by the side of a Roman road (Road 181 Margary 1973, 309-310) a short distance, 1.5 miles, from the Roman fort of Rocester and was occupied from the late first through to the fourth century. Excavation has revealed large barn-like buildings of timber post construction and associated features including a large well. This large well was 1.4m in diameter and more than 7m deep, the bottom of the well was not reached due to safety concerns. It contained an intriguing array of material culture closely dated to between the late 2nd and the mid 3rd c. A.D. (Hollins 2011, 38). Amongst this material was leather, comprising principally of shoes, along with a large piece of folded cattle hide and a handful of shoemaking waste; in all, 69 individually catalogued items. Coming from a small, rural, civilian settlement, the leather is not only interesting in its own right but can contribute to the discussion of what the contents of this well represents, not least, was it simply the result of the disposal of domestic rubbish in a conveniently large hole or part of a meaningful act to mark the end of the life of a, once important, water source?

2 the shoes

Much of the leather from the well were shoes, but how many shoes were found? At the time of their discovery, it was thought that about 40 shoes had been retrieved from the well (Hollins 2011, 39). It is always difficult to be certain how many individual shoes are represented by the shoe parts recovered once they have become separated from their other components or are fragmentary, and, while separated components were re-united where ever possible, it was necessary for the total number of shoes present to be estimated. The shoes were of two types, those of nailed construction and those of one-piece construction. The shoes of nailed construction were estimated from the number of toes and seats of insoles and soles present, from this it was estimated that at least thirteen shoes were represented. For shoes of one-piece construction, an estimation from counting the number of left and right back seams suggested that at least fourteen shoes were present (toe areas were not used as these are under-represented being an area of heavy wear and, consequently, heavy fragmentation). It would seem from this that at least 27 shoes had been deposited in the well and were roughly equally divided between those of nailed and those of one-piece construction. The amount of fragmentation undergone, however, makes this likely to be a slight under representation of the number of shoes originally deposited.

Though not large in number, 27 shoes represents a significant group of footwear to be disposed of in one place. While one cannot always be sure from published reports whether what is described is all that was recovered from a context or merely a selection, it would seem that this group from Tollgate Farm is amongst one of the larger assemblages to be found within a well in Britain. It is modest in comparison with the group of footwear from a well (Brunnen 1) from the Ostkastell at Welzheim, Baden-Württemberg (DE), however, where even the most conservative of estimates suggests that around 100 items of footwear were present (van Driel-Murray 1999a, 11 and 17 Tabelle I).

Shoes of nailed construction

All the nailed shoe bottoms had pointed toes, the treads tapering to a slight waist, others continuing straight down to a seat of similar width (figure 1). Some (cat no 4 and cat no 5, figure 2) had a slightly narrower foot shape appearing more elegant than the rest. No nailed shoes of a size suitable for children were present, none of the insoles, from which estimations of equivalent modern shoe sizes are made, were of a size smaller than that appropriate for small adults/adolescents, so that all may have been worn by adult women and men, or alternatively adolescent boys and men.

The density of nailing varied. Many of the shoe bottoms had the nails widely spaced, in the most pronounced example (cat no 5, figure 2) only 25 nails had been used on the sole, on another (cat no 3) about 45. By contrast, those with closely spaced nailing (e.g. cat no 12 and cat no 13, figure 3), had approximately 100 nails in each sole while at least 130 nails had been used on the most heavily nailed examples (cat no 1 and cat no 2, figure 4). The nailing patterns found at Tollgate Farm are shown in figure 5, top. All might be considered to fall into type 1 of Carol van Driel-Murray's classification (van Driel-Murray 2001, 351 and figure 21) with a single row of nailing around the edge and nails infilling the tread and seat. Two examples were heavily nailed (cat no 1 and cat no 2, figure 4), both were broad with a slight waist, and occurred in large adult male sizes (Adult 9(43) and Adult 11(45)). Each had four rows of closely packed nailing running vertically down the tread, with two rows continuing down the waist to the seat, which had further nailing at this point of heavy wear. As such, they have similarities to the more heavily nailed type 3A but still fall into the type 1 of the classification, and have been called 1/3A in table 1 and figure 5, top. The majority of the nailed shoes were more lightly nailed with nailing at the tread and seat and a single row of nailing running down the waist area (cat no 6, figure 6, and cat no 8, figure 7), these have been classified as type 1A, though it must be said that those with the most widely spaced nailing could not be easily differentiated from a type 1C which have one or two nails at the waist area. Two examples (cat no 4 and cat no 5, figure 2) lacked any nailing at the waist area, type 1B. Two shoes (cat no 12 and cat no 13, figure 3) were distinctive in having decorative nailing (type 1T) with a tendril pattern at the tread and a group of three nails, a trefoil, at the waist marking the arch of the foot; it is possible, but not certain, that these shoes were a pair. Parts from a possible third example with tendril pattern nailing could also be recognised amongst the more fragmentary material. While the tendril pattern is commonly found and groups of three nails, 'trefoils', is a motif occurring from the 1st c. throughout the Roman period, the combination of the tendril and the trefoil patterns appears to be less commonly found together. This same tendril pattern with a trefoil at the arch of the foot, however, has also been found on shoes from mid to late 2nd c. contexts at Castle Street, Carlisle (Padley and Winterbottom 1991, 238 figure 211 nos. 868 and 869). Whilst, further afield, an example found its way to Ferwerd, a Frisian terp on the north coast of the Netherlands (van Driel-Murray and van de Plicht 2016, 177, figure 10).

Constructional thonging (figure 5 bottom) was used to hold the insole and midsole or midsole laminae together on the majority, though it had not been used in the construction of the two heavily nailed examples (cat no 1 and cat no 2, figure 4). The thong varied between 4-8mm wide, and while most of the surviving thongs were of bovine leathers one (cat no 11) was of sheep/goatskin, which may suggest that the thongs had been cut from whatever scraps had been present in the workshop at the time. No shoe bottoms had type 1 constructional thonging with a single row running down the centre, but the use of types 2 and 3 were equally popular, see figure 5 bottom. Differences in the proportion of the three types of constructional thonging have been noted in groups of nailed footwear recovered from differing parts of the country and between principally civilian and those of principally military occupation. At Draper's Gardens in London (an urban civilian assemblage) type 1

constructional thonging was more than three times as popular than type 2, and type 3 was rarely found (Mould forthcoming) while at the Millennium excavations at Carlisle (military) type 2 was twice as common as types 1 and 3 which were equally represented (Mould 2009, 835). Here at Tollgate Farm the proportions vary from both these but, at present, too little data exists to know whether this is in any way significant.

One shoe (cat no 4) was notable in having small grain/flesh stitches for thread on the insole and paired slits for stitching with narrow thongs on the midsole to attach the shoe upper, another (cat no 5, figure 2) had slits from fine thonging running around the edge of the sole, indicating that stitching as well as nailing played a major part in their construction and so might be considered to be of nailed and stitched construction. These shoes were both of a more elegant shape than others in the assemblage and the most sparsely nailed. Three broken bottom unit components (cat no 15, 16 and 17), possibly broken from a single shoe bottom, also had a row of closely-spaced thong slits running around the edge on the same line as the outer row of nailing and so were of similar construction. No un-nailed shoes of entirely stitched construction were noted at Tollgate Farm, however, though they are frequently found elsewhere.

As is often the case, the shoe bottoms were much better preserved than their more fragile uppers. While the heel stiffeners survived well, being made of thick bovine leathers, the uppers were mostly represented by areas of lasting margin, such as cat no 5 and 6 (figures 2 and 6) where parts of their uppers of sheep/goatskin were preserved. One exception was the back part of a shoe (cat no 31, figure 8) of bovine (calfskin) leather sufficiently well preserved to be identified as a shoe of Vechten style; a style first recognised and named by Carol van Driel Murray. It has small, low, lace tabs, a decorative multiple scalloped top edge and rouletting, and can be dated to the end of the 2nd - beginning of the 3rd c. (approximately A.D. 180-230). A small quantity of other, highly fragmentary, nailed upper remains had comparable rouletted decoration (cat no 34, figure 9 top) comprising a row of 'S' motifs and arcs of small vertical lines. One fragment extends into a narrow strap which may suggest a Zwammerdam style, again a style first recognised and dated by Carol van Driel Murray (van Driel-Murray 2001, 365 and figures 55 and 56), or possibly a Bar Hill style. The Zwammerdam style can be dated to the middle of the 2nd c. (approximately A.D. 140-170), or slightly earlier (approximately A.D. 120-160) by Volken's estimation (Volken 2014, 277, cat. No. 10.03). It is a common style in the military zone of northern Britain and is found throughout the Northern Provinces. The Bar Hill style (Volken 2014, 277, cat. no. 10.04) is similarly dated (approximately A.D. 142-160). To the dating evidence provided by the few surviving shoe upper remains may be added the shape of the nailed shoe soles which are of a shape typical of the late 2nd-early 3rd c. (van Driel-Murray 2002, 120 figure 10b).

Cat no	TGF	L/R	Parts present	Nailing	Con Thong	Other thong/st	Est size
1	SM/SE	L	S,I	1/3A c	no	1 thong slit	Adult 11(45)
2	SP/TX	R	S,I,HS	1/3A c	no		Adult 9(43)
3	TJ	R	S,M,I	1A w	Type 2		Small adult
4	UD/UB	R	M,I	1B w	Type 2	Th at right angle/st	Adult 2(34)
5	UE	Str	S,U	1B w	unknown	Thong slots in upper	Small adult
6	UA	R	S,M,I,U	1A w	Type 2	Extra thong at toe	Adult 2(34)
7	SN	L	S,M,I,HS	1A w	Type 3		Adult 6(39)
8	SC/SQ	L	S,ML,I,HS	1A w	Type 3		Adult 4(37)
9	UC/TB	L	S,M,I	1A w	Type 3	Th at right angle	Small adult
10	SD	L	M,I	1A w	Type 2		Small adult
11	TQ	?	M,I	1A c	Type 3		

12	SK/UF	L	S,ML,I	1T c	Type 2		adult
13	TL/SB	R	S,I,HS	1T c	no	Th at right angle	Small adult
14	TW/TV	R	I	1 w	Type 3		Small adult?

Table 1: TGF9 nailed shoes, principle features of the better preserved examples

L=left foot, R=right foot, Str=straight, foot not defined

Parts present: S=sole, M=midsole, ML=midsole lamina, I=insole, HS=heel stiffener, U=upper

Nailing: c=closely spaced, w=widely spaced

St=stitch/ing, Th=thong/ing.

Shoes of one-piece construction

These shoes, which had been cut in one piece from cattle hide, laced up the front of the foot through a series of loops along each side and tied around the ankle. Many had been heavily worn and some had their soles repaired with patches (clumps) sewn with leather thong (for example cat no 45, figure 10 and cat no 50, figure 11). While most were broken, six complete or near complete examples ranged sufficiently in length to show that one-piece shoes had been worn by children (cat no 49, figure 12) as well as adults (cat no 45, figure 10), including large men (cat no 38 figure 13, cat no 39).

The majority of the one-piece shoes recovered were of Billingsgate-U style (Volken 2014, 247 cat no 2.14); a style datable to the end of the 1st - beginning of the 2nd c. (A.D. 80-130). Only two other styles were recognisable in the assemblage. One small shoe (cat no 49, figure 12), a child size 9(27), was of a Dragonby-U style (Volken 2014, 247 cat no 2.15). Volken describes the Dragonby-U style as 'the basic Roman *carbatina* pattern of the second century' (Volken 2014, 99) and dates the style to A.D. 75-150. Two loops broken from the left side of a middle section came from a second example (cat no 55, figure 14) or a derivative. The cutting patterns of the Billingsgate-U style and the Dragonby-U style shoes from Tollgate Farm are shown in figure 15. A small fragment from a joined loop panel (cat no 48, figure 16) broken from the middle section of a shoe, suggests that a third style was also present, coming from either an Allendale-Ua or a Castleford-Ua style (Volken 2014, 253, cat no 3.02, 3.03 respectively) and dated to approximately A.D. 70-125.

By far the most popular style of one-piece shoe at Tollgate Farm was the Billingsgate-U (figure 15, top). It accounted for over 66 per cent of the one-piece shoes for which a style could be recognised, rising to as high as 83 per cent if the less certain examples are added, although it must be said that it does have distinctive traits making it possibly more easily recognisable than other styles. The Billingsgate-U style shoes occurred in a number of variants differing slightly in small particulars regarding their fastening straps and loops (table 2). All had long, narrow straps (sometimes described as tabs) to tie at the ankle. While two shoes (cat no 45, figure 10 and 50, figure 11) had broader straps with large tear-drop shaped fastening holes for the lace (figure 15, top left), also seen on examples found elsewhere in Britain (Bar Hill, Newstead and London, Volken 2014, 247), the majority from Tollgate Farm were distinctive. These shoes were notable in having extremely narrow straps ending in circular, centrally-pierced terminals (e.g. cat no 40, figure 17 and figure 15, top middle), a feature which may be considered characteristic of this site. Some had decorative cut-outs at the base of the narrow strap (e.g. cat no 40, figure 17), others did not. Two examples (cat no 38, figure 13 and cat no 63 part) had straps with particularly well-formed circular terminals with decorative notches below (figure 15, top right). An impressed line, made with a heated tool today

known as a crease or creaser, often decorated the edge and the mid line of the strap (tab). The smaller loops to each side of the middle section of the shoes were also distinctive being small, well cut, semi-circular lobes each separated from the next by a length of straight top edge. They also varied, some had semi-circular holes others had circular holes often distorted to an oval shape by the stress from the fastening laces. Though small, these differences show that this style of shoe was being produced using several differing templates. While this might suggest that they were being made by several shoemakers it is equally possible that one shoemaker had a range of templates from which the customer could choose. So far, other examples of this distinctive 'sub-type' are rare, one example, with its narrow strap sadly lacking the terminal, was found in a brine tank at Nantwich (Mould 2012, 113 and figure 9.5 no. 12) less than 20 miles (32Km) away. While it is tempting to speculate whether these local, rural communities in the west midlands may have developed their own particular, narrow-strapped, variant of the 'Billingsgate-U' style it is better avoided as, in the future, recovery of examples elsewhere immediately makes the idea untenable.

Cat No	TGF ident	Strap terminal shape	Strap L/W	Cut outs	Mid sect hole shapes	Est size
38	SL	circular, notched	74/10mm	no	semi-circular	Adult 11(46)
39	TU	?	?/>10mm	yes	oval	Adult 8(42)
40	TE	circular	80/8mm	yes	oval	
41	TN	circular	59/11mm	no	?	
42	SF	?	35+/8mm	no	oval	
43	SS/SR	?	?	yes	?	
44	SU	?	?	yes	?	
45	TG/SW/SX/SH	lobate	45/14mm	no	semi-circular	Adult 4(37)
50	TT	lobate	45/15mm	no	semi-circular	
60.1	UM	circular	64/6mm	no	oval	
60.2	UM	circular	59+/8mm	?	?	
60.3	UM	?	55+/11mm	no	?	
62	Wet box	circular	48/10mm	no	?	
63.1	Wet box	Circular, notched	59+/14mm	?	?	

Table 2: TGF9 one-piece shoes of 'Billingsgate-U' style, tab and loop hole features.

Abbreviations used:

L=length, W=width, Mid sect=middle section, TGF ident=Tollgate Farm original identifier

3 the waste leather

Six small pieces of waste leather were found in the well (figure 9, bottom). Such small pieces would be difficult to differentiate from the thick black mud in which they were found so this may well be an under representation of what was originally deposited. They included three pieces (cat no 66.1, 66.2, 67.1, figure 9, bottom) characteristic of shoemaking waste. Though few in number, these three pieces provide evidence for the making of footwear, in vegetable tanned leather, in a small, rural community. While large quantities of shoemaking waste are commonly recovered from urban and military contexts, incidences of the recovery of very small amounts of shoemaking waste from rural settlements, like this, is slowly accumulating (see Keily and Mould 2017, 250 table 11.1 for examples in south-eastern Britain).

4 the cow hide

At a depth of about 6.5m, a large 'mass' of tightly folded leather (cat no 69) was recovered (figure 18) which, when unfolded, proved to be the greater part of a vegetable-tanned bovine hide (figure 19 and 20). The hide was stiff and brittle and, though carefully flattened following conservation to permit study (Kenward 2011), the surface remained considerably crumpled and puckered. Consequently, accurate measurement was not possible, however, the approximate dimensions of the hide, having a length of 1950mm and a width of 1760mm, represents an animal hide only slightly smaller than that produced by a mature animal today. The hide varied considerably in thickness from the edge to the centre, measuring from approximately 1mm in the centre to more than 4mm at the edge. In addition to elliptical slits around the edge of the hide, used during handling the hide during processing, a series of paired holes were also present, located slightly further away from the edge and at right angles to it (figure 21). The paired holes were distorted, some with the area separating them folded or deformed suggesting that a thick thong or cord had been passed through. The surface of the hide showed areas of wear in places, most notably in an area at the shoulder where with the grain pattern was no longer visible. This, together with the paired holes, suggests that the hide had been employed for a particular use. The hide provided a large area of strong, flexible, resilient material that could have been used for a variety of purposes, possibly in the manner that we might use a tarpaulin today. The hide is now missing an area on the left side between the fore and hind shanks, from the belly to the line of the backbone. This area appears to have been torn or broken away and discarded elsewhere before the hide was folded and placed in the well.

The recovery of a tanned hide is rare and there are few other incidences to which it may be compared. Large pieces of leather described as sheets, which may potentially have been hides or parts of a hide, have been found in Roman Britain, but little is known of them as none seem to have survived. One such was found during excavations at the Temple of Mithras site at Bucklersbury House, in the city of London (UK), where it was said that 'one surface still bore the surviving portions of a skin held down by pegs which had been used to stretch it for cutting up' (Grimes 1968, 97). As cutting up a skin or hide would not have necessitated pegging or stretching, however, is likely that the hide had been serving another purpose, as is suggested for the Tollgate hide. Two other potential hides have been recorded as coming from water-containing features comparable with that at Tollgate Farm. A disused, square, clay-lined pit, 1.52m square, located outside the former kitchen area at Lullingstone Villa, Kent (UK), was said to contain a large sheet of leather stretched over the base of most of the northern part, with 34 shoes lying on it and pressed into the clay that lined the pit sides (Meates, 1979, 106-7, 169 figure 26a, 206d). A photograph of the feature (Meates 1979, 206d) shows a roughly square-shaped sheet of leather which, though hard to judge, appears to take up not much more than a quarter of the bottom of the pit. Described as 'having the appearance of an apron such as is used by shoeing-smiths' (Meates 1979, 107) it might well have been an animal hide, but the photograph would suggest it was of considerably smaller size than that found at Tollgate Farm. The unusual contents of the pit at Lullingstone Villa, first erroneously termed 'the tannage pit' by its excavator, were later reinterpreted as a structured deposit (van Driel-Murray 1999b, 137). Another possible example may be inferred from an antiquarian, anecdotal, reference 'unearthed' when collating information on Roman leather from Northern Britain (Douglas 2015). The site of Castle Greg close to West Calder, West Lothian, in Scotland (UK) is considered to be a fortlet of Flavian date (Frere 1989, 271) having produced much Roman material though it has not been subject to excavation in modern times. An account of trenching undertaken there in 1852 included a verbal account that forty years previously 'a "bull's hide" was got out of the well, filled with silver

coins' (Wilson 1855, 59). This anecdote was later refuted (Macdonald 1918, 221), and Douglas tells us that 'if the hoard ever existed, its location is not known' (Douglas 2015, 7).

5 the dating gap

The dating suggested by the nailed footwear, limited though it is as so few uppers survived, is late 2nd and earlier 3rd c. (approximately A.D. 180-230 Vechten style, or approximately A.D. 140-170/120-160 Zwammerdam style) and compliments that suggested by the other contents of the well (Hollins 2011, 38). The dating suggested by the shoes of one-piece construction is somewhat at odds with this, being rather earlier, the styles present having a date range spanning the late 1st c. to the first half of the 2nd c. (approximately A.D. 80-130 Billingsgate style, approximately A.D. 75-150 Dragonby style). Even if one was to consider the latest date for the one-piece shoes and the very earliest date for the nailed footwear we are still potentially a generation a drift. The dating of Roman footwear is not an exact science, however, and different scenarios can be concocted to accommodate this discrepancy. Perhaps the one-piece styles were long-lived, indeed several showed signs of having had a long life with holes worn through the 'sole area' and then patches applied, while the nailed shoes may have been examples of the most highly fashionable styles that had travelled up country from the large urban centres. Adopting this position of compromise, all the footwear may have been deposited in the later part of the 2nd c., and we might conclude, in the light of the evidence from the other contents of the well, that this 'sub-type' of the Billingsgate U one-piece style may date slightly later than other 'Billingsgates' from elsewhere, being popular for longer in this part of the country. Alternately, perhaps we should consider the possibility that the shoes found do, indeed, cover a timespan of about a hundred years.

6 the backfilling of the well

Once the well no longer functioned as a supply of fresh water, there is evidence for it having been used as a latrine before the large hole was finally backfilled. The excavators believe that at some point in the late 2nd c. the entire site was levelled prior to the area being turned over to agriculture and that the backfilling of the well was the result of this general site clearance. This would suggest that all the material filling the well was *deposited* at the same time, however this backfilling material may not necessarily have been originally *thrown away* at the same time. An account of the excavation indicates that the well fill did not comprise a single homogeneous deposit, but that differing fills were noted (Hollins 2011, 38-9). This would suggest that discrete episodes of filling had taken place even if over a short timescale. The shoes did not go in to the well simultaneously but were found at three different levels. The first shoe was found toward the top of the well at a depth of just over 3.2m, with parts of only four or five shoes being recovered that season (November 2009). The majority of the shoes were found in the subsequent year (April 2010), some at a depth of 5m, with the greatest number being found, along with the folded hide, at a depth of c. 6.5m. While there was no formal record of which individual leather items were found where, examination of video footage has allowed the first shoe recovered from the well to be recognised as the front part of a one-piece shoe (cat no 51, figure 22). From this it would seem that the one-piece shoe (cat no 51) was the last shoe to go into the well, though on typological evidence it is likely to be older than the nailed shoes that had been thrown into the well earlier. This would suggest that, if the large well was backfilled in one discreet event as the excavators believe, the three different shoe bearing episodes represent individual tips or dumps of mixed material that had accumulated over a period of time elsewhere, perhaps on a large midden. The clearance of a large pile of domestic rubbish that had accumulated over a protracted time span might account for the proposed dating of the footwear recovered.

7 rubbish or ritual?

As the bottom of the well was never reached, the material recovered does not represent items deliberately deposited during an act of closure to mark the end of its use, rather it was part of the general backfilling of the deep shaft. Components of that backfilling, however, do suggest that some of the material included did have a ritual component. The footwear includes heavily worn shoes in a range of styles and sizes compatible with domestic refuse, and shows no obvious signs of selection, but it should be remembered that a 'ritual' deposit of footwear may not be so easy to distinguish from domestic refuse. As Carol van Driel-Murray has previously pointed out, a shoe used ritually will be old and worn, as only then will they have taken on the footprint and, therefore, the essence of the wearer (van Driel-Murray 1999b, 137). While many items in the Tollgate Farm well, including the leather, may simply be the result of rubbish disposal, harder to explain are the remains of a complete cow with only the legs and tail missing. Clearly the carcass had not been butchered for its meat, lacking the legs and tail suggests that the hide had been removed, before it was placed in the well, presumably as part of a meaningful act. Two further cow skulls were found separately. Though not yet studied in detail, the pottery in the well appears to have differed from that found elsewhere on the site, being in rather better condition (Dunn 2012, 5). Various aspects of the material culture recovered from the site still await analysis and so discussion of the nature of the well contents must await the results of this work, but those discussions will be interesting. Footwear is a well-attested component of acts marking the construction and subsequent closure of structures. Study of the pattern of deposition of footwear found in the numerous wells in the *vicus*, and to a lesser extent, the fort at Saalburg (DE) has suggested that ritual activity may also have played a part in the deposition of more general domestic rubbish in-filling those features (Volken 2014, 51-2). So that a ritual aspect may have comprised part of a sequence of events when the Tollgate well was backfilled.

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Acknowledgements

The leather was conserved by the York Archaeological Trust Conservation Laboratory. The hide was studied in conjunction with Sue Winterbottom and the text has benefited greatly from her input. All line drawn figures are by Sue Winterbottom. All photographs were supplied by SOTMAS with the exception of selected photographs of the hide following conservation which were supplied by YAT.