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Assessment of archaeometallurgical residues from Ware, Hertfordshire

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Dr T.P. Young

Abstract

The site produced an overall submitted assemblage of approximately 4600 items, weighing a total of approximately 73kg and distributed between 329 individually bagged collections.

Of the submitted materials, 65.4kg (4359 pieces) were archaeometallurgical residues. These were dominated (45% by weight) by 319 pieces of smithing hearth cake (SHC) totalling 29.2kg. There were also 3166 smaller pieces of slag (totalling 28.7kg; 44% of the assemblage by weight) which included fragments of material similar to that of the SHCs, but too incomplete to be identifiable as SHCs with certainty, together with other isolated blebs and nubs of both dense slag and lining slag. A further 218 fragments of slag (1.8kg) were of particularly low density lining or fuel ash slags. The slags were accompanied by 522 fragments of vitrified hearth lining (weighing 5.0kg; 8% of the assemblage by weight), some with pieces showing evidence for 25-28mm diameter blowholes. This assemblage is indicative of ironworking (smithing).

The assemblage of well-preserved SHCs included 72 examples ranging in weight from 50g (possibly 36g) up to 952g, with mean weight of 246g, and with 31 examples weighing between 100 and 200g. Some of the larger SHCs appeared to indicate that their formation had occurred during more than one work period.

The observed metallurgical fuel was exclusively charcoal. Some fragments of coal, coal shale, clinker and coke were observed throughout, but were not seen as inclusions in certain metallurgical residues. Deposits of clinker were recorded in the modern overburden, so it is possible at least some of this coal-related material is an intrusive contamination.

Although iron working debris was recovered from deposits of phases 2, 5, 6, 7, 8 ,9 and 10, there appears to have been two major phase of metallurgical activity, one involving both ferrous and non-ferrous metals during phase 5 (2nd century), perhaps particularly associated with Building XIz, with a second in phases 8L-9 (probably late 4th -5th centuries, although the presence of coal and clinker, if genuine, would suggest a Roman rather than post-Roman date) including probable smithing hearth 132.

The general nature of the iron-working assemblage is very similar to that recorded elsewhere from urban (e.g. Carmarthen), rural (e.g. Marsh Leys) and military (e.g Caerleon) Roman sites undertaking the end-use of iron (blacksmithing) rather than being involved with iron production. The small amount of evidence for the casting of copper alloys (principally in Phase 5) was undertaken using large crucibles with an additional external clay coating, a type of crucible commonly seen in more 'Romanised' settings.

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Methods

The materials were examined visually (with a low-powered hand lens or microscope when required) and a catalogue prepared (Table 1). As an evaluation, the materials were not subjected to any high-magnification optical inspection, not to any form of instrumental analysis. The identifications of materials in this report are therefore necessarily limited and must be regarded as provisional.

Stratigraphic information in this report is derived from working documents supplied by KDL Archaeology.

This project was commissioned by Karin Kaye, of KDK Archaeology Ltd.

Results

Distribution of the residues

A simplified summary of the stratigraphic distribution of the residues is given in Table 2. Where contexts are of uncertain phasing, or span phases, data have been merged into the main phase concerned.

Although archaeometallurgical residues occur widely, there appears to be a concentration in Phases 5 and 8/9. Both of these periods have associated evidence for metalworking hearths.

Description of the residues

Residues from iron working:
The residues attributable to iron working include material referred to several distinct classes:

Smithing hearth cakes: the 319 certain fragments of smithing hearth cakes (SHCs) comprise 45% of the assemblage by weight. There were 72 complete (or almost complete) examples, ranging from 36g up to 952g.

Most of the SHCs are somewhat gravelly, with large inclusions of chert. This is commonly sen in Roman blacksmithing SHCs (e.g. Young 2013, 2014a). The SHCs are mainly dense and well-formed. Most of the smaller SHCs are approximately equant, although some of the larger examples are transverse in plan. Most of the SHCs show a glassy upper surface, but some show a smooth maroon slaggy surface over at least a part.

Indeterminate slags: 3166 fragments of slag, with a total weight of 28.7kg (44% of the assemblage by weight) were not strictly identifiable. In practice, this group includes three main types of material. Firstly, there fragments of slag that are probably small pieces of smithing hearth cake, but which do not include sufficient morphological features to permit that classification. Secondly, there are nubs, blebs and sheets of slag that were likely formed in the smithing hearth, but which were not part of a SHC. They have a similar range of slag textures to the SHCs. Thirdly there are slags formed on or against the walls of the hearth and which have a high level of input from the melted wall and are therefore partially glassy. Some of the lining-influenced slags with the lowest iron input are pale green translucent glassy slag with large lenticular vesicles.

Hearth lining: vitrified hearth lining was represented by 522 pieces with a total weight of 4988g. Although no complete blow holes were recovered, there was numerous sherds with partial blowholes. These ranged between about 25 and 28mm in diameter. In many instances the axis of the blowholes lay at an angle of about 70° to the hearth wall. In other instances the blowhole appear to lie on a small protuberance from the wall. There was no evidence this as constructed and may have been produced by differential erosion of the wall around the blowhole. There were finds indicating the use of any form of tuyère.

Low density slags: 218 pieces of slag weighing a total of 1842g were divided from the main group of indeterminate slags on the basis of their very low density. The slags are typically highly vesicular, pale and blebby; in these features they resemble other examples of fuel ash slags. Although some, possibly all, of these slags may simply be regarded as the product of partial melting of the hearth wall under the influence of the fluxing effect of the fuel ash, the lack of iron input leaves open the possibility that these slags were not generated during iron working. The stratigraphic distribution of these materials (Table 2), however, suggests that they are indeed directly associated with the iron working.

Thin iron slag sheets: 49 fragments (210g) of thin (typically less than 5mm) slag sheets, either with a characteristic maroon-coloured surface, which was often smooth or corrugated by sharp folds or ridges or more conventional fragments of slag blister. These occurred *in situ* within the hearth (132) together with the adjacent 'industrial' deposits. In all some 40 fragments were recovered from deposits of Phases 8 and 9. The interpretation of the maroon-coloured thin sheets is uncertain. The associated slag blisters have probably spalled from iron, although whether from the work-piece or the tools is unknown. In contrast the maroon coloured sheets are richer in quartz grains (presumably derived from ceramic). Some of the pieces shows strong folds and indents which may indicate they were removed from the hearth with tongs. The smooth surface suggests formation under the influence of the strong air blast around the blowhole. The formation of such residues around the blowhole is not usual. Possibilities include an origin for the sheets as flaps of lining slag descending in front of the blowhole, as lining slag transferred onto another substrate (the work-piece, a tool or a tuyère…) or as slag particles present within the fuel bed in front of the blowhole.

Residues from copper alloy working:
Several contexts produced a small collection of sherds of crucibles:

- *AH79, G103C, 199/1*. Three crucible sherds were present. Two were very similar, although not joining. They derive from the lower part of a somewhat globose vessel, with a two-layer structure, probably indicating an external clay coat. Both layers are quartz rich, mostly fine-grained, but with occasional angular fragments (of chert?) of up to 1mm and one rounded grain of 4mm diameter.

  The third sherd is small, planar, with a dark external vitrification which extends irregularly around a straight margin. It is unclear if this is an original rim, or a fracture. The interior face is irregularly fissured and vitrified with a reddened coloration. The fabric is moderately quartz rich, dense, but slightly vesicular, and shows slight foliation, but does not show convincing evidence for an external clay coat.

- *AH79, G102c/d, 264*. Two joining sherds of a fine moderately quartz-rich, very hard fabric. External clay coat is present and contains siliceous grains of up to 6mm. The internal surface is vitrified and bears globules of green oxidised copper-alloy. The fabric is very similar to, but not quite identical to, the sherds from c199. The piece is from the moderately curved side of vessel just above the base, but provides little information on overall form.

- *AH79, G1, u/s. (one sherd labelled GR79 F1; paper label Br 7 Gr1 +).* Twelve sherds of handmade, organic-tempered grey-ware with a very fine-grained fabric and varying degrees of vitrification. One sherd shows two small external protrusions, 3-4mm in diameter. One sherd shows a tall rim, probably slightly flaring above a rounded body. The rim is 30mm high and thins from 5mm to 1mm (this sherd apparently shows a well-developed external vitrified coating, now largely spalled off. The fabric of these pieces is completely different to that of the other two assemblages.

In addition to the crucibles, 35 tiny (total 4g) fragments of folded copper alloy strip were recorded from an un-numbered context described as 'AH84 phase 2 (pit in southern section)'. These fragments occurred in an ashy soil alongside a fragment of iron. There is no direct evidence that these are working residues.

Other metal residues:
The collections included six small prills of lead, from contexts in phases 7, 8 and 9 (total weight 106g). These are not necessarily indicative of metal working because lead was widely used in the Roman period for many purposes including plumbing, masonry clamps and even goods labels – so accidental melting of lead waste is common.

The presence of small amounts of copper alloy debris has been mentioned above.

The collections included 179 items (total weight 2420g) of iron and concretions containing iron. These materials have been counted as a single category, but include two classes of material: iron artefacts and iron fragments. The artefacts are almost entirely nails, mainly structural nails but including a few probable hobnails. The iron fragments are typically small offcuts of metal and are probable process residues.

Natural materials:
Natural materials included within the submitted assemblage were mainly rock fragments, mostly rounded small pebbles, either included by accident or as part of now decomposed concretions.

Other:
There was a large number of fragments of a vesicular porphyritic lava (or possibly tuff). In total, 122 fragments with a total weight of 2245g were recorded. Of the material that occurred in contexts with phasing information, a single fragment (106g) occurred in c293 (Phase 5E), otherwise the material was later:
- 11 pieces (102g) Phase 8E
- 1 piece (68g) Phase 8/8L
- 10 pieces (49g) Phase 8L
- 25 pieces (668g) Phase 8L/9
- 3 pieces (36g) Phase 9

Very few of the fragments showed surviving surfaces from the original querns, although there were a few with a single worn surface and one large fragment of a quern margin. It would appear likely that any pieces identifiable as querns would not have been placed into the slag collection. This group of finds therefore requires integrating with the querns from the site.

Other non-metallurgical materials included small fragments of pottery, ceramic building materials (CBM), bone and fired clay.

Interpretation

The assemblage is dominated by residues from iron-working (smithing) and the relatively small size of the smithing hearth cakes (93% of examples are less than 800g in weight) is likely to be indicative that the smithing is associated with the end use of iron (blacksmithing), involving the creation and repair of artefacts.

If the assemblage of complete (and almost complete) SHCs from the site is taken as a whole, there were 72 examples, ranging from 36g up to 952g. The examples had a mean weight of 246g. Half of the assemblage (36 SHCs) weighed between 90g and 180g, with a fairly even distribution across that range.

There may be some issues with comparing such statistics between sites – particularly in the details of the smallest SHCs, for they become less certainly identifiable as SHCs with decreasing size. However, it is clear that in a broad sense (Table 3a) that the Ware assemblage is very similar to other assemblages from sites in Britain, for which the end use of iron, rather than iron-production, is indicated.

This similarity between blacksmithing assemblages appears to hold across site types (Carmarthen and Cowbridge were urban; Caerleon was military with Bulmore being an associated civil settlement; the Neath assemblage derives from the *vicus* area NW of the fort). Somewhat similar assemblages have been reported from earlier medieval smithing sites (e.g. Worcester Willow Street and Mill Street; Table 3b).

The range of SHC weights is indicative of a range of work periods and/or work types; this is a feature to be expected of a general purpose smithy. There does not appear to be any significant difference in the SHC assemblages by phase (for those phases with sufficient examples).

The assemblage provides only a small amount of detail on the technology of the iron-working. Both Phase 5 and Phase 8 show evidence for floor level hearths. Further interrogation of site records may provide further useful detail. The hearth lining fragments show the use of a simple wall with a blowhole. The maroon-coloured thin slag sheets are of unknown significance. The fuel appears to have been entirely charcoal; the presence of coal residues does not appear to be directly related to the metalworking. The amount of coal residue (coal, clinker, coke) is very small and it is possible that at least some of it may be accidental contamination from the clinker layers documented as having been present within the topsoil.

Evidence for the working of other metals was rather sparse. The casting of copper alloys was undertaken in Phase 5L, with crucible fragments recovered from c264 (BXIz: Small, shallow industrial waste pit) and c199 (B XIIz: Gully along western edge of side road [200] and surrounding eastern frontage of BXII). Building X1y had an elliptical hearth [314] adjacent to a rectangular furnace [275], but no evidence of industrial use was recorded for B XIz. Building BXIIz

contained hearth [352]. None of these hearths/furnaces yielded diagnostic residues, but further consideration of the field evidence may assist with their interpretation.
The crucibles represented in Phase 5L deposits were of a common Roman type, using a well formed, moderately large vessel with an external clay coat. This form of crucible is well documented in Roman Britain (e.g. Bayley & Rehren 2007, Figure 3g). The unstratified assemblage of organic tempered fine-grained crucibles apparently from G1 is more problematic. The tall rim (or neck?) above a broader body of much less refractory appearance than the Phase 5L examples, is not a common vessel form and although they might be Roman, a somewhat later origin cannot be excluded.

The large number of small fragments of lava querns also requires comment. Are they indicative of a significant role for cereal processing in this area of the settlement (perhaps supported by the numerous records of ovens and hearths)? Or, alternatively, might they indicate a workshop fabricating querns (the finishing of raw blanks, which would be more likely to survive transport from the Rhine, has been documented for medieval 'emporia'; Pohl 2010).

Conclusion

The residues from Ware document what is likely to be general purpose blacksmithing (Phases 5 and 8/9) together with a very low level of copper alloy casting (Phase 5). Such activities would have been commonplace in Roman settlements of all types, with the increased use of iron during the Roman period leading not just to a need to fabricate artefacts, but also to an increased need for their maintenance.

The Roman period also saw technological changes in ironworking in Britain. These included the introduction of the use of coal as a fuel and of waist-level (rather than floor-level) hearths. Neither of these innovations appears to have been employed at Ware. On the other hand, the use of Romanised, rather than native-style, crucibles for copper alloy work was documented.

References

Barford, P.M. 1996. The metalworking debris from Bear Barn and the Bear Field. Pp. 205-209 *in*: J. Parkhouse & E. Evans, *Excavations in Cowbridge, South Glamorgan, 1977-88*. BAR, British Series, 245pp.

Bayley, J. & Rehren, T., 2007, Towards a functional and typological classification of crucibles, pp. 46-55 *in*: S. La Niece, D. Hook and P. Craddock (eds), *Metals and mines: studies in archaeometallurgy,* London.

Crew, P. 2003. Slags and other iron-working residues. pp. 333-340 *in:* H. James, *Roman Carmarthen: Excavations 1978-1993*. Britannia Monograph Series 20, Society for the Promotion of Roman Studies 2003.

McDonnell, J.G. 1992. The identification and analysis of the slags from Burton Dasset, Warwickshire, Ancient Monuments Laboratory Report, 46/92.

McDonnell, J.G. & Swiss, A. 2004. Ironworking residues. pp. 368-378, *in:* H. Dalwood & R. Edwards, *Excavations at Deansway, Worcester, 1988-89: Romano-British small town to late medieval city*. CBA Research Report 139.

Pohl, M. 2010. Quern-Stones and Tuff as Indicators of Medieval European Trade Patterns. *Papers from the Institute of Archaeology*, **20**, 148-153

Young, T.P. 1999. Iron-working residues from Bulmore. Geoarch Report 99/01. 3pp.

Young, T.P. 2005. Evaluation of metallurgical residues from Marsh Leys Farm. GeoArch Report 2005/07.

Young, T.P. 2007. Evaluation of archaeometallurgical residues from Willow Street and Mill Street, Worcester. GeoArch Report 2007/12. 10pp.

Young, T.P. 2008. Evaluation of archaeometallurgical residues from Prior Park, Cricklade. GeoArch Report 2007/23. 5pp.

Young, T.P. 2009. Evaluation of archaeometallurgical residues from 35 Mill Street, Worcester*,* GeoArch Report 2009/33, 9 pp.

Young, T.P. 2011c.Metallurgical Residues, p. 112-114 and Appendix IV, p. 178-180 in: M. Luke & Preece, T. *Farm and Forge: late Iron Age/Romano-British farmsteads at Marsh Leys, Kempston, Bedfordshire*. East Anglian Archaeology, Report No. 138, 198 pp.

Young, T.P. 2013. Assessment of archaeometallurgical residues from Dwr-y-Felin School, Neath (GGAT 677 & 716). GeoArch Report *2013-11*, 31pp.

Young, T.P. 2014a. Archaeometallurgical residues from Dwr-y-Felin School,Neath (GGAT 677 & 716). GeoArch Report 2013-27. 53pp.

YOUNG, T.P. 2014b. Assessment of archaeometallurgical residues from Milbury Farm, Exminster, Devon (ACD478). ***GeoArch Report 2014-09***. 16pp.

Table 1: summary catalogue by context and bag.

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr1	AH77	G3A	3		46			
						10	1	slag fragment
						1	2	coke
						32	2	concretions on iron
Tr1	AH76	G1	4		96			
						46	2	greenish sandy vesicular moderately dense lining slags
						44	1	clinker
Tr1	AH76	G2	4		90			
						64	2	internally prilly dense slag fragments
						2	1	clinker
						16	1	vitrified lining
Tr1	AH76	G3G	4		62			
						58	2	dense clinkery slag with shale fragments, quartz, maroon surface and lobate top
Tr2	AH77	G103B	2		278			
						74	21	slag fragments
						32	2	small prilly lead blebs
						164	1	large part of small transverse SHC
Tr2	AH77	G113d	2		20			
						18	1	clinker
Tr2	AH77	G111d	3 or 2 (or 312?)		342			
						336	1	almost complete bun-shaped SHC, somewhat biconvex, 80x70x60mm, has multiple dense crusts (at least 2 maybe 3), incomplete
Tr2	AH77	G101b	3 slash 3		18			
						14	1	dense worn slag fragment

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH77	G111d	3 slash 3		16			
						14	1	dense lobe of lag
Tr2	AH76	G102a/g	4		114			
						94	2	fragments of concavo-convex cakes, probably SHCs in moderately dense sandy lining slag
						14	12	similar debris
Tr2	AH76	G102C	4		1135			
						98	7	vitrified lining
						34	3	low-density lining/FAS
						82	4	concretions containing iron fragments
						660	54	denser slag fragments
						146	1	small SHC, 80x65x35mm, very low-density, pale vesicular, top slightly lobed, base irregular and highly vesicular - all very FAS-like
						92	1	central fragment of small dense SHC
Tr2	AH76	G102d	4		118			
						116	1	exploded bock of slag - gravelly tongue-like mass with well developed lower flow lobes
Tr2	AH77	G103c	4		592			
						56	4	vitrified lining
						172	9	dense slag fragments
						78	1	prilly mass of low-density slag - probably a deformed tongue
						36	1	small mass of gravelly slag- discoidal - possibly an incipient SHC
						96	1	low-density gravelly SHC, 55x75x30mm
						148	1	90% of a small dense globose SHC, 60x60x35mm, fuel dimpled top,
Tr2	AH76	G103d	4		986			
						256	21	dense slag fragments
						50	4	lining slags
						58	4	vitrified lining
						18	1	lava quern fragment with polished surface
						18	1	concretion-rich in lime on nail
						120	2	small dense SHC fragments

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						134	1	dimpled slag lump - possibly deformed SHC
						314	1	well-formed dense biconvex somewhat gravelly SHC, 60x95x45mm
Tr2	AH76	G102d	5		62			
						56	1	dense slag flow lobe with charcoal inclusions on base
						2	1	dense slag prill
Tr2	AH76	G103d	5		176			
						38	1	gravelly slag fragment, probably from SHC
						96	1	small SHC-like mass, with fuel dimpled base and worn vesicular top attached to convex section of oxidised fired wall. SHC incomplete
						36	1	vesicular dense slag fragment
Tr2	AH77	G101d	5		16			
						14	2	clinker
Tr2	AH78	G110c	5-2 (?)		24			
						22	1	exploded concretion on small large-headed nail
Tr2	AH79	G100a	5 slash 12		18			
						10	1	concretion
						6	1	ceramic - pot/CBM
Tr2	AH79	g101a	5 slash 7		156			
						154	1	small dense SHC with finely dimpled base and smooth flat top, 60x70x35, possibly slightly folded
Tr2	AH79	G101c	5 slash 7		30			
						28	3	vitrified lining
Tr2	AH77	G102a	7		68			
						3	2	vitrified lining

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						63	1	exploded gravelly slag lump
Tr2	AH77	G102D	7		8			
						6	1	vitrified lining
Tr2	AH77	G111c	7		148			
						58	6	clinker, low-density
						22	4	green milky glassy slag in blebby an vesicular piece
						8	9	corroded iron fragments
						1	1	coal shale
						58	9	slag fragments
Tr2	AH77	G112C	7		44			
						40	1	corroded iron
Tr2	AH77	G112d	7		44			
						42	2	dense slag fragments - probably from SHCs
Tr2	AH77	G113c	7		146			
						18	1	fragment of red hard shale with partially vitrified surface on one side
						122	1	broken rounded nub of gravelly clinker-like slag, but without clear evidence of fuel and clinker-like nature may just be melted wall
Tr1	AH77	G1b	8		60			
						54	4	dense slag fragments
Tr1	AH77	G1b	8a		58			
						56	3	fragments of porphyritic lava/tuff with vesicles
Tr1	AH77	G1A	8		16			
						12	1	rounded nub of vesicular tuff/lava
Tr2	AH78	G113d	8		2			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						1	1	lining slag fragment
Tr2	AH77	G102b	9		1115			
						50	8	vitrified lining
						900	126	denser slag fragments
						12	1	concretion on iron
						6	1	nail head
						44	1	concreted iron or marcasite
						50	4	fired clay
						20	4	FAS-like ;low-density slag
						5	1	pot
Tr2	AH77	G113d	9		72			
						22	3	charcoal mould-rich iron slag
						58	1	gravelly dense slag attached to oxidised fired wall
						8	1	vitrified lining
						1	1	low-density slag bleb
						1	1	corrugated thin slag sheet with sandy rear face cf, too coat material
Tr2	AH77	G111C	9		136			
						68	1	possible incipient SHC - nub of slag with included pebble, smoothish top, fuel moulds on base
						4	1	iron fragment turned into socket?
						36	1	small dense iron slag piece
						16	1	somewhat lobate slag
Tr2	AH77	G101	9		72			
						64	4	slag fragments
						4	1	tabular iron fragment
Tr2	AH77	G103b	9		262			
						194	41	moderately dense slag fragments
						58	13	vitrified lining

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH77	G111d	9		10			
						6	1	concretion on iron
						2	1	clinker
Tr2	AH77	G112d	9		652			
						18	4	vitrified lining
						58	14	low-density slag fragments
						224	23	denser slag fragments
						30	1	small fragment of dense SHC
						68	1	fragment of SHC
						138	1	very worn piece but probably most of small dense SHC
						90	1	small SHC
						10	2	iron fragments
						12	1	17x19mm D-sectioned fired clay, turning vesicular on margins, slightly slagged on one side, possible core from brazing or heat treatment, 10-15mm long
Tr2	AH77	G112c	9		1170			
						74	8	vitrified lining
						50	9	iron fragments - 1 probably a nail
						1	1	coke
						96	21	low-density pale FAS-like material
						8	3	slightly fragmented slag sheets with maroon surface cf tool coats
						740	105	denser slag fragments
						174	2	fragments of small dense SHCs
Tr2	AH77	G102a	9		36			
						34	33	debris of slags and vitrified lining in tiny pieces
Tr2	AH77	G111c	10		36			
						34	3	dense slag lump
Tr2	AH77	G112c	10		38			
						24	1	small fragment of dense SHC

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						12	1	low-density slag bleb
Tr2	AH77	G112D	10		104			
						42	13	possibly original 2 pieces of iron - one a nail, the other a tabular fragment
						10	3	slag scraps
						46	1	concretion on uncertain core
						1	1	coke
Tr2	AH77	G103B-11	11		892			
						104	1	rounded smithing slag lump/cake - irregular rounded nub
						160	1	rounded smithing slag lump/cake - irregular rounded nub with possible rounded tool mark
						72	1	fragment of flat small SHC
						466	40	indeterminate dense slag fragments
						34	4	low-density lining slag pieces
						50	7	vitrified lining fragments
Tr2	AH77	G102a-11	11	1 of 2	1795			
						192	1	cake fragment with dense lower crust to 15mm, with c40mm of overlying slag
						104	1	twisted sheet - probably a deformed small flat SHC
						68	1	irregularly crudely plano-convex nub - probably an incipient SHC
						1060	62	indeterminate dense slag fragments
						106	9	low-density lining slag pieces
						218	17	vitrified lining slag pieces
						10	1	square nail head, 17x20mm head, 6x6mm shank
Tr2	ah77	g102a-11	11	2 of 2	1880	138	32	vitrified lining
						16	2	angular iron fragments
						1	1	tiny nail (hobnail?)
						1	1	nail shank
						1	1	thin sheet of lining slag spalled from convex surface (just possibly crucible wrap)
						134	14	low-density lining slags
						862	138	indeterminate dense slag fragments

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						96	1	irregular slag lump, possibly incipient and/or deformed SHC
						146	1	fragment from medium sized dense SHC
						228	1	60x85x40mm asymmetric (or broken?) dense SHC, worn,
						84	1	irregular low-density mass, dimpled top, rounded base
						130	1	small dense puck-like concavo-convex SHC, fuel impressions on top, 65mm diameter, 25mm thick
Tr2	AH77	G112c-11	11	1 of 4	1865			
						192	10	vitrified lining
						32	2	other fired clay
						126	8	low-density lining slags
						1225	87	indeterminate dense slag pieces
						30	1	chert
						144	1	c80% of small dense concavo-convex SHC, puck-like, dished top shows fuel impressions, base shows attached lower slag fragment
						102	1	rounded irregular slab of slag, probably a poorly formed SHC
Tr2	AH77	G112c-11	11	3 of 4	2015			
						196	10	low-density lining slags
						96	13	vitrified lining
						28	1	irregular angular iron fragment
						12	1	exploding iron concretion
						2	1	small nail shank
						8	1	sheet iron fragment -possibly nail head
						6	1	nail head, 18x19mm round, 3x6mm rectangular shaft
						9	2	potsherd
						4	2	strange fired clay fragments, smooth one side, fluted the other, deeply vitrified and oxidised
						26	1	fired clay
						1249	148	indeterminate dense slag fragments
						2	1	thin shafted nail/tack
						86	1	irregular SHC fragment
						66	1	irregular SHC fragment

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						72	1	irregular SHC fragment
						140	1	irregular SHC fragment
Tr2	AH77	G113c-11	11		92			
						82	4	indeterminate dense slag
						1	1	low-density lining slag
						4	1	vitrified lining
Tr2	AH77	G103b-11	11		68			
						58	6	vitrified lining
						8	2	oxidised fired clay
Tr2	AH77	G113d-11	11		140			
						134	6	indeterminate dense slag
						2	1	low-density lining slag
Tr2	AH77	G103a-11	11		8			
						6	1	indeterminate dense slag
Tr2	AH78	G103b	11 +Biii2		80			
						70	1	part of tiny SHC with metallic iron fragments
						8	1	slag fragment
Tr2	AH77	G112c	11		1335			
						512	62	denser, mainly gravelly slag
						40	80	as above but tiny bits
						234	1	75x65x45mm biconvex but well-formed SHC
						160	1	60x70x30mm probably most of an SHC with planar dense top and porous conical lower part
						70	1	fragment of-concavo-convex SHC with dense crust - not far off Aristotle puck
						44	2	SHC fragments
						90	1	50x55x20mm - small blebby crude incipient SHC
						30	8	low-density slag blebs

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						22	10	iron pieces, including 1 hobnail, 1 fiddle key nail, 1 curved sheet fragment
						20	7	vitrified lining fragments
						2	1	clay wedge with possible vitrified contacts
						3	1	iron slag sheet with planar iron contact and striated sandy back
						2	1	curved sandy sheet, 24mm diameter, rather like brazing shroud but not so highly fired
Tr2	AH77	G112c	11		1825			
						842	70	denser, mainly gravelly slags
						68	8	pale low-density slag blebs
						140	18	vitrified lining
						5	1	pottery/cbm
						15	1	stone
						5	1	iron, probably nail
						112	1	probable low-density tongue-like SHC in concretion
						122	1	central part of medium sized gravelly SHC
						136	1	low-density semi-circular SHC
						74	1	very irregular piece, but dense and probably incipient SHC
						122	1	fragment of dense SHC
						170	1	probably complete but worn and obscured dense SHC
Tr2	AH78	G111c	11		68			
						4	1	clinker
						2	1	burnt coal
						36	1	dimpled dense slag mass
						24	1	ling slag attached to wall
Tr2	AH78	G112d	11		320			
						226	3	fragments of dense SHCs, one with maroon lobes on top
						62	16	slag fragments
						88	5	vitrified lining
Tr2	AH77	G102b	11		234			
						16	1	exploded flat iron fragment

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						176	1	concreted mass, probably a small SHC but obscured
						36	3	slag fragments
Tr2	AH78	G111d	11		10			
						8	2	clinker
Tr2	AH78	G111c	11		28			
						24	1	slag fragment - has lobed top
						2	1	vitrified lining
Tr2	AH78	G112C	11		372			
						52	12	slag fragments
						126	1	low-density possible tongue/SHC
						154	1	dense slag lump - probably SHC fragment - has internal curved contact surface - contained iron? - or just fuel?
						64	6	vitrified lining
						12	1	concretion on iron?
Tr2	AH78	g112c	11		346			
						2	1	vitrified wheel turned potsherd
						8	1	vitrified lining
						30	1	brick
						4	1	organic tempered fired clay
						76	1	basal crust from SHC
						220	27	slag fragments
Tr2	AH78	G111d	11 and 11a		52			
						50	1	coarsely gritted fired clay - CBM?
Tr2	AH78	G113C	11a		122			
						88	12	slag fragments
						18	1	slag sheet - formed on ceramic or stone substrate?
						10	1	concretion on iron

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						1	1	vitrified lining
Tr2	AH77	G102b	11a		30			
						12	2	slagged lining
						14	1	rounded slag bleb
Tr2	AH78	G112d	11a		12			
						10	1	lava fragment
Tr2	AH78	G113d	11a		56			
						48	1	large part of small SHC, plano-convex, thin
						4	1	slag fragment
Tr2	AH78	G113c	11a		480			
						278	1	irregular large dense fragment - possibly burr from large SHC?
						20	3	vitrified lining
						160	9	dense slag fragments
						8	1	reduced fired sandy ceramic
Tr2	AH77	G102a-11a	11a	2 of 3	2295			
						1435	112	indeterminate dense slag fragments
						68	1	iron fragment - suggests spall from hexagonal sectioned hammer or stake anvil - sides 20mm, partly flaring, maximum preserved length 25mm, approximately 2.8 sides preserved
						218	29	vitrified lining fragments
						128	16	low-density lining slag fragments
						232	4	fragments of small-medium sized dense SHCs
						68	1	rounded nub - possibly incipient SHC
						138	1	65x75x30mm small dense SHC with rounded reddened lobate margins and central depression, otherwise plano-convex
Tr2	ah77	g102a-11a	11a	1 of 3	1945			
						226	10	vitrified lining
						872	47	indeterminate dense slag fragments

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						96	1	irregular proto SHC, smooth top, dark, charcoal base
						94	1	fragment from small dense SHC
						78	1	slightly incomplete low dense slag pad, smooth slightly raised top and fuel moulds on base, coarse vesicular
						78	1	slightly incomplete low dense slag pad, smooth slightly raised top and fuel moulds on base, coarse vesicular
						110	1	very irregular rounded lump - probably twisted smithing slag lump of small SHC
						64	1	fragment from small-medium dense SHC
						66	1	low-density slag pad, smooth top, charcoal-rich base
						96	1	fragment from small-medium dense SHC
						152	1	irregular flat wide slightly lobate SHC
Tr2	AH77	g104B-11A	11a		8			
						8	5	vitrified lining
Tr2	AH77	G103c-11a	11a		104			
						8	1	prilly piece of oxidised lead between charcoal fragments
						44	5	indeterminate dense slags
						22	5	low-density lining slags
						12	3	vitrified lining
						8	1	rock
						4	1	sheet of dark lining slag spalled from flat surface - possibly from tool
Tr2	AH77	G103a-11a	11a		88			
						82	3	indeterminate dense slag
Tr2	AH78	G112C	11a		4			
						2	1	vitrified lining
Tr2	AH78	G114D	11A		34			
						32	1	very dense grey blue glassy slag with gravelly inclusions
Tr2	AH78	G112C	11A		36			
						34	1	twisted rounded bleb of grey, lining-influenced slag

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH77	G102A	11a	3 of 3	1655			
						196	40	vitrified lining
						68	9	iron and concretion including 1 square nail head
						14	1	prill of lead
						62	10	low-density slag blebs
						1250	240	slag fragments
						2	1	lava fragment
Tr2	AH78	G102C	11a		638			
						94	6	pale lining/FAS slag in dimpled masses
						316	17	dense slags with charcoal dimples on many pieces
						90	1	small dense rounded mass, probably a form of SHC
						130	1	fragment from the base of a larger SHC with a prominent tool mark
Tr2	AH77	G103b	11a		394			
						2	1	reduced fired organic tempered clay - unclear if metallurgical
						194	23	slag fragments and blebs
						30	5	vitrified lining
						156	1	small dense SHC of slightly lobate outline
Tr2	AH78	G103d	11a		122			
						54	1	small dense probable incipient SHC
						48	3	slag fragments
						16	1	fragmented iron lump
Tr2	AH78	G102A	11a		268			
						32	3	slagged lining
						232	20	slag fragments
Tr2	AH78	G112	11a		450			
						444	1	Well-developed transverse SHC, top with maroon lobate surface, base dimpled where doesn't reach to-sandy substrate, some maroon surfacing on base as well as top, 70x110x45mm. top slightly dished

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	G113d	11a		234			
						1	1	coke
						160	11	slag fragments
						24	3	vitrified lining
						30	7	iron fragments, exploded
						10	2	low-density pale slag blebs
Tr2	AH78	G111c	11a		102			
						98	1	unusually dense irregular slag mass, slightly dimpled base, smooth top appears as if slag skim draped over internal clasts
Tr2	AH78	G102a	11a		200			
						140	32	slag fragments, mainly small blebs of more-or-less lining related materials
						54	7	vitrified lining
						2	1	pottery
Tr2	AH78	G102c	11b		228			
						68	9	slag fragments
						150	1	concretion on slag with iron
Tr2	AH78	G103b	11b		140			
						48	7	slag fragments
						34	5	low-density lining slag blebs
						34	3	vitrified lining
						22	14	exploded iron fragments - probably one flat piece, 2 small nails, 1 small fiddle key type nail and 2 hobnails
Tr2	AH78	G102a	11b		776			
						38	5	vitrified lining
						406	28	dense and associated slags, mainly gravelly but variable in density
						6	1	maroon surfaced curved slag film - from around tuyère or tool?
						88	1	small SHC fragment with rust suggesting iron inclusions
						106	1	very dense grey slag with non-wetted basal lobes

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						114	1	large part of light gravelly SHC
Tr2	AH78	G103B	11B		100			
						96	12	dense slag fragments
Tr2	AH78	G103A	11B		8			
						6	1	gravelly slag bleb
Tr2	AH78	G103a	11b		1080			
						828	1	well formed SHC, mainly concavo-convex, but with raised ridge in middle of bowl, 115x120x55mm, base mainly sandy with possible central tool mark ridge, top dished smooth, slightly maroon with fuel moulds distally
						142	16	denser slag fragments
						84	1	small lobate slag lump, irregular
						18	3	vitrified lining
Tr2	AH78	G112	11b		976			
						642	20	lava fragments
						80	4	vitrified lining, one very slagged
						166	17	low-density lining slags
						66	4	denser slag blebs
						8	1	iron fragment
Tr2	AH78	G103b	11b		180			
						68	8	slag fragments
						104	1	slightly incomplete low-density slightly lobate slag mass - apparently most of a slab-like tongue
						6	1	vitrified lining
Tr2	AH78	G101c	12 slash 1		4			
						1	1	iron
						1	6	lime scale/mortar/tufa?

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	G101d	12		194			
						192	1	slightly incomplete iron oxide and fuel-rich SHC - not much fluid slag, 70x90x35mm
	ah78	g101c	u12	flue liing no 1	122			
						120	6	slag fragments
Tr2	AH77	G101C	13		12			
						10	3	slag fragments
Tr2	AH78	G102d	13		40			
						38	1	slag fragment probably from SHC
Tr2	AH79	G101c	13 slash 2		154			
						152	1	highly fragmented almost complete small gravelly SHC
Tr2	AH77	G112c	14		22			
						20	3	slag fragments
Tr2	AH77	G111d	14		2			
						1	1	slag fragment
Tr2	AH78	G102b	14		16			
						14	1	slag fragment
Tr2	AH78	G101c	14		4			
						1	3	clinker
						1	1	slag fragments
Tr2	AH78	G102a	14		6			
						2	2	vitrified lining

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	g113d	14		24			
						22	2	slag fragments
Tr2	AH79	G101c	15		130			
						128	3	slag fragments
Tr2	AH78	G102b	18		10			
						8	3	concretions on iron
Tr2	AH78	G102b	18		20			
						18	2	slag fragments
Tr2	AH77	G102c	19		8			
						6	1	clinker
Tr2	AH77	G112d	20stroke 3		18			
						8	1	lava fragment
						8	1	vitrified lining
Tr2	AH77	G112d	20-4 (?)		30			
						18	1	lava
						10	2	slag fragments
Tr2	AH77	G111c	22		34			
						32	8	dense slag fragments
Tr2	AH78	G112d	51		66			
						30	1	cracked fragment of lead sheet
						34	1	slag fragment
Tr2	AH77	G111c	53		86			
						50	1	fragmented gravelly slag lump

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						16	1	dense slag lobe
						18	1	clinker
Tr2	AH77	G102A	54		482			
						290	28	slag fragments
						20	2	concretions on iron
						22	1	lead prill
						138	19	vitrified lining
Tr2	AH77	G102b	54		196			
						66	12	scraps of lining slag
						126	1	low-density slag mass of pale lining slag attached to v slightly convex oxidised fired vitrified wall
Tr2	AH78	G112c	54		12			
						10	1	vitrified lining
Tr2	AH77	G101b	55		46			
						44	1	concretion on iron object - possibly conical
Tr2	AH78	G111c	55		50			
						36	1	fragment of small thin SHC
						19	1	concretion on iron
Tr2	AH78	G101a	55		44			
						42	1	natural sandy concretionary rock
Tr2	AH78	G112d	55		268			
						2	1	concretion
						12	2	stones
						10	1	vitrified lining
						230	25	slag fragments

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH77	G101C	63		20			
						18	1	pear shaped iron loop
Tr2	AH78	G101c	63b		106			
						74	2	iron concretions - one a very large headed nail
						26	1	SHC fragment
Tr2	AH78	G101b	74-2		8			
						6	1	slag fragment
Tr2	AH78	G102b	76		34			
						32	1	SHC fragment
Tr2	AH78	G101D	77-2		6			
						4	1	ashy coated fired clay fragment
Tr2	AH79	G111c	77		6			
						4	1	slag fragment
Tr2	AH78	G112C	83	1 of 2	2565			
						1680	52	slag fragments
						54	2	peeled slag sheets
						2	2	iron
						10	1	lava fragment
						14	2	dense flow slags
						2	1	green glassy slag
						270	17	vitrified and slagged lining fragments
						14	1	reduced fired clay
						146	1	central fragment from medium SHC, concavo-convex with porous slag and marked basal tool mark
						118	1	low-density tongue-like SHC
						118	1	central fragment from porous SHC
						118	1	SHC fragment

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	G112c	83	2 of 2	974			
						846	160	slag fragments
						16	8	iron
						80	16	vitrified lining
						8	2	low-density pale slag blebs
						10	2	green glassy slags
						8	1	corrugated maroon thin slag sheet
						1	1	slag flat
Tr2	AH78	G112C	83		96			
						94	1	now fragmented sheet of vitrified lining around blowhole, half of which is preserved c. 27mm diameter at 70 degrees to preserved face
Tr2	AH78	G102a	83		28			
						6	1	iron
						20	2	slag fragments
Tr2	AH78	G112c	83-2		510			
						32	1	concretion on iron
						18	2	iron - 2 nails
						84	13	slagged vitrified lining
						66	1	small SHC with flat top and eccentric conical base
						292	72	slag fragments
Tr2	AH78	G112c	83-3		1025			
						728	1	broadly plano-convex concretion - probably a plano-convex SHC - concretion obscures all details
						40	9	vitrified lining
						16	3	pale low-density FAS blebs
						221	44	slag fragments
Tr2	AH78	G112c	83-3		36			
						26	2	vitrified lining

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						8	1	low-density slag bleb
Tr2	AH78	G101C	83A		48			
						38	1	small slightly dished tongue-like piece, 47x57x18mm
						1	1	small thin scale of iron
Tr2	AH78	G103b	84		18			
						4	6	lava fragments
						12	7	slag fragments
Tr2	AH78	G103d	84		6			
						4	1	slag fragment
Tr2	AH78	G102c	881 or 88 slash		8			
						6	1	fragmented piece of vitrified lining
Tr2	AH78	G102a	88 - 1		60			
						22	3	slag fragments
						34	2	iron
Tr2	AH78	G113D	89		112			
						66	1	concretion with iron
						44	1	small fragment from small dense SHC
Tr2	AH78	G113d	89		42			
						40	1	basal crust from SHC
Tr2	AH78	G113d	89-2		178			
						176	1	60x65x25mm very neat dense plano-convex SHC with slightly maroon crystal/gravel-rich top, neat rough base
Tr2	AH78	G113d	89-1		36			
						34	3	fragments of small gravelly topped SHC

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	G113D	89-4		180			
						176	1	slightly incomplete SHC with flat top of-maroon slag, slightly flowing over blow-margin
Tr2	AH78	G113d	89-5		30			
						28	1	concretion-rich in glassy slag
Tr2	AH78	G113d	89/3		20			
						18	1	vitrified lining
Tr2	AH78	G113D	90		232			
						230	20	gravelly SHC, low-density, unclear if all a single piece originally
Tr2	AH78	G113d	90-3		266			
						128	1	probably incomplete or rolled up dense SHC with a smooth maroon top
						46	1	side of torn open small hollow SHC
						42	1	gravelly lining slag
						38	10	slag fragments
						4	2	vitrified lining
Tr2	AH78	G113d	90-1		284			
						40	4	vitrified lining
						14	3	lava fragments
						206	42	slag fragments
Tr2	AH78	G113d	90-2		442			
						176	1	sheet-like SHC with dimpled/lobed top and base apparently on sandy hearth floor, incomplete and irregular
						50	8	vitrified lining including some protruding blowhole margin fragments
						190	16	slag fragments
Tr2	AH78	G113d	90-4		476			
						60	1	stone

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						94	13	vitrified lining
						140	1	odd spoon shape SHC, dense, incomplete (top missing)
						172	42	slag fragments
Tr2	AH78	g113d	90-5		566			
						564	1	SHC with moderately well formed top passing own to slag-rich in moderately large charcoal (90x120x50mm) top slightly dished
Tr2	AH78	G112c	91		4			
						2	1	slag prill
Tr2	AH78	G113c	91		18			
						16	3	slag fragments
Tr2	AH78	G103d	92		86			
						18	4	slag fragments
						10	1	vitrified lining
						54	1	most of tiny SHC
						2	1	maroon thin slag fluted sheet
Tr2	AH78	G103a	92		70			
						68	1	angular lava fragment
Tr2	AH78	G103A	92		54			
						32	6	slag fragments
						18	2	concretions on iron
Tr2	AH78	G102A	92		618			
						64	10	vitrified lining
						64	7	iron, including 1 large-headed nail
						470	35	slag fragments
						16	4	dense maroon surface slag sheets with bends and corrugations and sandy contacts

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	g103b	93		414			
						84	16	vitrified lining
						1	2	lava fragments
						1	1	iron
						316	32	slag fragments
Tr2	AH78	G112d	93		22			
						1	1	pale low-density FAS
						6	1	slag fragment
						4	1	slag sheet with right angled re-entrant contact surface - on tool?
						8	2	vitrified lining
Tr2	AH78	G102c	93		126			
						90	26	slag fragments, mostly blebby
						10	1	low-density blebby slag
						1	1	sheet iron fragment
						6	1	vitrified lining
						12	1	green glassy lining slag sheet
Tr2	AH78	G102a	93		614			
						202	1	dense central section of medium sized SHC, dense crust to 25mm, overlain by rusty material, base microdimpled, top obscured, possibly dimpled, probably around half
						40	4	vitrified lining
						290	51	slag fragments
						42	4	pale low-density blebby slags
						34	1	iron
Tr2	AH78	G102B	93		148			
						64	1	fragment of ?folded SHC with strong basal tool-marks
						82	13	fragmented gravelly SHC fragment
Tr2	AH78	G102a	93-1		906			
						44	5	vitrified lining

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						26	1	concretion on iron
						220	1	plano-convex mass some rusting - probably a concretion on a dense plano-convex SHC containing iron
						14	6	low-density blebby pale FAS
						52	2	slag sheets from sandy/ceramic substrate
						536	69	slag fragments
Tr2	AH78	G103b	93-1		12			
						10	1	vitrified lining
Tr2	AH78	G102a	93-2		124			
						122	1	slab of vitrified lining
Tr2	AH78	G103b-94	94		508			
						44	2	vesicular igneous rock with rare quartz and feldspar phenocrysts - fragments of lava quern?
						220	1	appears to be 90% of dense elongate small SHC
						20	2	low-density lining slag
						62	6	indeterminate slag fragments
						134	2	fragments from small SHCs
Tr2	AH78	G103A	94		64			
						58	1	fragment of medium SHC
Tr2	AH78	G102A	94		138			
						1	1	probable nail shank fragment
						14	2	vitrified lining
						86	16	indeterminate grey slag fragments including both possible SHC frags and prilly flow slags
						40	2	dense grey slags containing rock fragments (one a chert pebble thee other a more slabby piece)
Tr2	AH78	G103B	94		82			
						48	1	exploded attachment of SHC to oxidised fired wall
						20	2	blebby lining slags
						10	10	slag fragments

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH78	G103A	95		16			
						14	3	slag fragments
Tr2	AH78	G103c-98	98		32			
						1	2	coke
						15	1	four pieces, broken slagged blowhole margin, surviving margin low curvature and diameter not estimable
						10	4	indeterminate scraps of slag
Tr2	AH78	G102A-99	99		42			
						33	7	indeterminate slag scraps
Tr2	AH78	G103C	100		6			
						4	1	slag bleb
Tr2	AH79	G113c	101		534			
						14	1	vitrified lining
						50	2	flaps of lining/FAS with buff substrate
						104	1	prill of dense iron slag
						366	15	fragments of dense slag, possibly al one original piece. The largest block is crust of an SHC with extremely large, frequent tubular vesicles
Tr2	AH78	G113C	110		10			
						8	1	concretion
Tr2	AH78	G112C	113		22			
						1	1	iron strip
						16	3	slag scraps
Tr2	AH78	G103C	113A		4			
						2	1	concretion around void left by decayed iron - nail shaft or similar
Tr2	AH78	G102A	118		150			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						150	2	pieces of medium sized pale grey SHCs
Tr2	AH78	G102A-123	123		42	2	4	indeterminate slag scraps
						16	1	rock
						18	4	low-density lining slags
						1	1	vitrified lining
Tr2	AH78	G102B	123		38			
						36	1	sandy ferricrete with charcoal, core unknown
Tr2	AH79	G101a	126-2		12			
						10	1	dense blebby slag
Tr2	AH78	G101A	130		38			
						36	1	(2) iron-rich concretion probably a corroded sheet iron artefact, possibly with a rolled edge
Tr2	AH78	G102A	132		138			
						16	6	sheet-like complex slag sheets
						6	4	blister-like complex thin slag sheets
						32	11	thin slag sheets, complex forms, mostly with 'T' cross section
						34	5	vitrified oxidised lining, one piece with tiny part of blowhole margin
						32	2	lining influenced prilly slags
						2	1	thin iron sheet
						1	1	probable nail shank fragments
						14	1	thin slag sheet possibly adhering to iron sheet fragment
Tr2	AH78	G112C-135	135		34			
						1	1	vitrified and bloated ?stone fragment
						10	2	vitrified lining
						10	3	indeterminate slag scraps
						1	2	rust
Tr2	AH78	G102A-135	135		28			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						2	1	slag flat probably from tool
						6	1	vitrified lining
						2	1	thin slag sheet fragment
						10	1	slag nub with adhering concretion containing FHS
Tr2	AH78	G103B	137		16			
						14	1	low-density slag bleb with attached iron corrosion
Tr2	AH78	G102A	137		28			
						8	1	domed nail or stud head
						18	2	slag fragments
Tr2	AH78	G103C	143		20			
						18	1	friable slag fragment around large charcoal-mould
Tr2	AH78	G103C	151		56			
						54	1	clinker
Tr2	AH78	G103a-152	152		1265			
						690	1	100x120x55mm, concavo-convex SHC, dense, base with rough parallel tool-marks, top smooth depressed, vesicular, probably 85% preserved
						372	1	section from centre of a large SHC, size not estimable
						104	1	flap of lining slag attached to oxidised fired wall
						78	20	plus bits - indeterminate dense slag fragments
Tr2	AH78	G103A	153		16			
						14	1	concretion spalled from substrate
Tr2	AH79	G103a	154		282			
						280	1	concretion - possibly on SHC, but exploding so contains iron and may simply be iron
Tr2	AH78	G103B	160		30			
						20	1	dense slag fragment

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						8	2	low-density lining slag
Tr2	AH78	G103D-160	160		78			
						16	2	very pale siliceous lining with coarse grit and vitrified surface
						58	2	either dense pale fired clay or natural concretion
						6	1	slag fragment
Tr2	AH78	G103C	160		16			
						14	1	exploding piece of curved sheet iron
Tr2	AH79	G103a	164		20			
						6	1	concretion on iron
						12	1	bone
Tr2	AH79	G102B	180		14			
						12	1	fragmented piece of fired organic tempered clay - daub?
Tr2	AH78	G102B	181		16			
						12	1	gravelly slag fragment
Tr2	AH76-79		189	(from exhibition probably 189!)	276			
						22	7	slag scraps
						254		remainder is decomposed iron and concretions - many separate iron pieces, including, but not limited to, nails. Attached accretion includes hammerscale
Tr2	AH79	G113c	189		270			
						56	3	vitrified lining, one piece with a small section of blowhole margin
						210	9	slag fragments of-various form
Tr2	AH79	G113c	189		10			
						8	1	slag fragment
Tr2	AH79	G113d	189		126			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						104	1	very dense section from centre of medium sized SHC
						22	1	dense blebby slag
Tr2	AH79	G102c	189		84			
						74	9	slag fragments
						4	1	pot
Tr2	AH79	G102d	189		66			
						64	13	fragmented piece of SHC
Tr2	AH79	G113d	189		24			
						10	1	vitrified lining
						12	1	slag fragment
Tr2	AH79	G113c	189		2375			
						266	1	SHC, 85x85x25, dense neat SHC, slightly prilly base, glassy smooth top, plano-convex
						590	1	irregular SHC, transverse, torn from wall peeling vitrified slag, 100x145x55, slag mass probably dips forward at 45 degrees from wall, moderately well formed burr
						482	1	transverse, slightly two layered SHC, peeled from oxidised wall, 80x130x60, top gravelly and maroon, base finely prilly,
						762	1	broken double layered SHC, dense with maroon smooth top, 110x(110)x70, part missing,(see below…)
						190	10	broken fragments, similar to cake above, may be fragments from it
						72	4	vitrified lining
Tr2	AH79	G103d	189		52			
						40	2	slag fragments
						6	1	iron
Tr2	AH79	G103a	189		38			
						28	1	heavily slagged lining with probable blowhole margin
						10	1	slag fragment
Tr2	AH79	G102d	193		20			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						18	1	thin sheet of dense clinker
Tr2	AH79	G103c	196		64			
						4	1	vitrified lining
						52	5	slag fragments
Tr2	AH79	G103c	199-1		28			
						26	3	sherds of crucible, one (rim), almost planar, larger sherd has possible clay coat, all very quartz-rich and deeply vitrified. Some reddening of exterior, but no observed metal droplets
Tr2	AH79	G103D	200-1		366			
						318	1	70x120x45 elongate slag mass, biconvex, presumably SHC but odd shape
						46	6	slag fragments
Tr2	AH79	G102b	200/1		166			
						164	2	concretions on iron?
Tr2	AH79	G111c	201		18			
						16	1	slag fragment
Tr2	AH79	G101a	201		20			
						18	1	gravelly slag fragment
Tr2	AH79	G102B	201		410			
						404	1	90x85x50(30) SHC, very corroded so vesicularity is exposed, dene grey slag of bowl is overlain by upstanding concretion for half of top
Tr2	AH79	G102A	201		154			
						84	1	exploded concretion around iron artefact
						60	10	slag fragments
Tr2	AH79	G112c	201		22			
						20	1	iron slag on reduced lining

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH79	G111c	201		1150			
						416	7	SHC fragments
						288	1	85x70x40, neat dense SHC
						160	1	part of neat-dense plano-convex SHC with rust on break suggesting iron clast
						64	1	small conical prilly SHC,
						202	1	large part of thinnish tabular SHC
						12	6	vitrified lining fragments
Tr2	AH79	g112c	201		52			
						22	3	slag fragments
						48	1	grey slightly gravelly fired clay
Tr2	AH79	G112D	201		22			
						20	1	slag fragment
Tr2	AH79	G111c	201		50			
						48	1	dense flattened slag mass, irregular, flat smooth reddened top, microdimpled base, possibly tiny SHC?
Tr2	AH79	G112d	201		1035			
						252	1	75x85x45, dense SHC, plano-convex, flat top has fuel impressions, base irregular with step in centre of base
						172	1	small dense SHC, 60x80x30
						404	1	highly fragmented SHC, finely vesicular, weathered surfaces
						50	1	blebby lining slag mass
						74	1	fragment of SHC base with prominent tool-marks
						10	1	iron
						64	16	fragments of friable weathered SHC
Tr2	AH79	G102b	201		44			
						42	1	lobate prilly slag - from an SHC margin?
Tr2	AH79	G102a	201		2			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						1	2	slag fragments
Tr2	AH79	G101A	203		26			
						24	2	gravelly slag blebs
Tr2	AH79	G102b	203		438			
						14	1	vitrified lining
						380	1	SHC, well formed, dished smooth haematised top, 90x85x45(30), with slight upstanding lip in places, dense, base with divergent tool-marks
						40	8	lava fragments
Tr2	AH79	G101c	203		18			
						16	1	gravelly slag fragment
Tr2	AH79	G102b	203		152			
						18	3	slag fragment
						142	1	extremely irregularly formed possible SHC, 90x60x25, smooth topped ,microdimpled base, V shaped in plan
						6	1	vitrified lining
Tr2	AH79	G102b	203		64			
						62	3	lava fragments
Tr2	AH79	G101c	203		108			
						104	2	dense flow lobe with dimpled base, descending slag on one side - foot pf wall below blowhole
Tr2	AH79	G102d	203		36			
						34	1	slag sheet, curved, with ceramic contact
Tr2	AH79	G101c	203		146			
						142	4	slag fragments
Tr2	AH79	G113c	205-2		66			
						64	9	slag fragments

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH79	G113c	205/4		14			
						10	3	vitrified lining
						2	1	prilly dense slag
Tr2	AH79	G113d	206-1		400			
						308	1	slightly incomplete SHC, irregular, fuel impressions on all surfaces, flattened so base and top parallel but unclear if this is original
						50	9	slag fragments - possibly from above SHC
						34	3	vitrified lining
Tr2	AH79	G112c	206-1		34			
						32	2	coarsely vesicular slag with one cured clay surface - probably burr rather than floor
Tr2	AH79	G112c	206-6b		32			
						30	1	fragment from base of SHC
Tr2	AH79	G101A	213		4			
						2	1	slag bleb
Tr2	AH79	G101a	213		2			
						1	1	FAS fragment
Tr2	AH79	G101c	223		34			
						32	1	fragment from small discoidal SHC
Tr2	AH79	G101c	236		8			
						6	1	slag fragment
Tr2	AH79	G102B	243		4			
						2	1	pale vesicular low-density FAS/lining slag
Tr2	AH79	G102d	244		278			

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						12	1	folded iron strip
						80	7	vitrified lining
						180	18	slag fragments
Tr2	AH79	G113c	249/3		2			
						1	1	soft fee-rich stone or-ceramic
Tr2	AH79	G101A	260		72			
						68	4	folded film-like iron slags and other scraps
Tr2	AH79	G102c/d	264		66			
						52	5	slag fragments
						8	2	sherds from large crucible, fresh breaks, clay coating on exterior, globules of corroded Cu-alloy on the inside
Tr2	AH79	G102c	267		28			
						26	11	fragments of gravelly slag
Tr2	AH79	G112d	293		44			
						42	5	fragmented piece of a small SHC
Tr2	AH79	G101A	293/3		4			
						2	1	vitrified lining
Tr2	AH79	G111c	293		788			
						246	1	around half of pale dense SHC, bowl to 30mm is solid with few large vesicles, top slightly glassy, base well formed, clay coated
						466	13	fragments of small-medium charcoal-rich SHCs
						64	3	blebby isolated slag
Tr2	AH79	G111c	293-1		332			
						66	4	slag fragments
						106	1	lava fragment
						152	1	SHC, 70x60x40, microprilly base, smooth top with central broad groove,

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr2	AH79	G102d	293-1		472			
						376	1	SHC, apparently folded over, further fragments are probably in following group
						68	7	fragments probably from above
						18	3	slag fragments
Tr2	AH79	G101a	293-2		662			
						332	1	80x80x40(30) very neat dense SHC, flat top with raised areas all dimpled with fuel, base hard even smoothly rounded
						306	12	slag fragments
						10	1	vitrified lining
Tr2	AH79	G101c	294		18			
						16	1	slag fragment
Tr2	AH79	G101a	298		94			
						92	1	exploded concretion on iron
Tr2	AH79	G102c	320		52			
						22	1	vitrified lining
						16	1	lava fragment
						12	1	gravelly fired grey clay
Tr2	AH79	G103c	330		16			
						14	2	slag fragments
Tr3	AH78	G10/11/12	1000		18			
						12	1	slag fragment
						2	1	clinker
Tr3	AH78	G11B	1005		32			
						12	2	slag scraps
						18	1	exploding triangular sheet iron

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
Tr3	AH78	G11C	1005		6			
						2	1	slag fragment
Tr3	AH78	G12B	1008		58			
						52	1	vesicular slag lump
						4	1	concreted thin slag sheet
Tr3	AH78	G10A	1008/9		8			
						5	1	piece of vesicular ?clinker, with reddened surface
						1	1	scrap of sheet iron
Tr3	AH78	G11B	1011		22			
						20	1	pale brown glassy slag with large vesicles - resembles modern BF slag - or possibly foundry
Tr3	AH78	G11D	1011		116			
						112	1	tongue-like SHC, pale dimpled top, dense slag, base dirty, 60x65x20mm
Tr3	AH78	G120 or G12D?	1023/1		32			
						30	1	?marcasite nodule with strong radial structure
Tr3	AH78	G12D	1026		58			
						56	4	porphyritic lava/tuff with irregular vesicles - probably a broken quern fragment
Tr2	AH78	G12d	11d	1028/3	36			
						34	6	small fragments of lava/tuff
								Tr 3 total
	AH79	G16	2003-5		10			
						8	1	fluted, sandy, maroon slag, appears to include horizontal sheets from 45 degree wall?

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	AH77	G112d	2011		66			
						12	1	iron artefact
						30	1	small SHC fragment
						18	3	slag fragments
	AH77	G112d	2015		32			
						30	1	dense slag sheet, like thin SHC, but firmly adhering to grey clay on base
	AH79	G1013	2018		236			
						162	1	irregular dense SHC, 70x75x40, irregularly biconvex and crudely lobate, adhering rusty material may have some hammerscale but uncertain
						52	4	slag fragments
						16	1	vitrified lining
	AH79		2022-2		24			
						22	2	slag fragments
	AH79	G93	2022/3		750			
						670	1	well formed SHC, 95x115x60, SHC has well formed bowl dipping slightly downwards into hearth (if wall steep), top rather irregular because of ribs of gravelly material, base largely obscured by rust, contact broad, reduced wall
						74	1	convoluted maroon gravelly slag
	AH77	electicity cable trench W of Q block					74	
						32	1	concretion on probable large nail
						38	1	dense clinker-like gravelly slag attached to red sandy substrate - either very sandy ceramic or sandstone
	AH83	T1+			108			
						102	1	exploded chert-rich small SHC, probably originally complete
	AH81	F1 T1			84			
						80	2	vitrified oxidised lining, large piece shows part of large radius blowhole margin on conical elevation, but too little of blowhole for detailed comment

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	AH84	u/s	phase 2 (pit in southern section)					56
						4	35	fragments of thin CU-alloy sheet - many folded
						6	1	concretion, probably on thin iron narrow strip
								remainder ashy soil
unidentifed contexts								
	AH76	G2a	F10 1		82			
						80	1	broken slag bock, probably a rather tongue-like SHC bearing some gravel
	AH77	G2D	f4 3		478			
						474	4	margin of lava quern and 3 other fragments
	AH76	G2d	f2 3		56			
						52	1	gravelly slag
	AH76	G1c	f2 2		112			
						108	1	central part of small dense gravelly SHC with maroon slightly dished top, rough base. 55x60x30mm, but all edges missing
	AH78	G2B	F4 3		14			
						10	1	iron nail in concretionary matrix
						2	11	tiny fragments of lava/tuff
	AH77	G2A	f15 2		90			
						88	2	lava fragments
	AH77	G2d	F28 1		96			
						74	3	small angular lava fragments
						18	2	slag fragments
	AH77	G2d	f28-4		20			
						18	6	fragmented thin sheet of limescale/mortar or similar - not slag

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	AH77	G1b	f31 1		28			
						26	1	lava fragment
	AH77	G1b	F31 3		352			
						350	1	large sheet iron artefact, possibly with one rolled edge?
	AH79	G15	L5		828			
						780	1	well formed pc SHC, slightly dimpled flat top, base rough with three marked deep tool marks, 125x100x50
						42	10	slag fragments, possibly broken from above
F numbers								
	AH78	G101c/101a	u/s		946			
						176	24	indeterminate denser slag fragments
						324	2	conjoining fragments of very dense burr rom large slag cake
						288	1	charcoal-rich cone of slag with flat dimpled top, small area of clay to one side of point - SHC, 65x90x55mm
						152	6	vitrified lining, includes part of blowhole on sub-conical protrusion, c25mm diameter, at 60 degrees to face of cone
	AH77	G12+	u/s		56			
						4	1	nail, 50mm
						50	1	clinker
	AH84	u/s	u/s	section cleaning	560	56	2	low-density lining slag, one with lining base
						476	9	denser slags, mostly in fee concretionary coating
	AH78	G12D+	u/s		14			
						6	1	clinker
						6	4	lava/tuff

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	AH77	G102c	u/s	above 4	38			
						12	1	vitrified lining
						16	2	lining slag
	AH79	G1	u/s		70			
						68	13	sherds of grey ware 'crucible' with vitrified external surface, bulbous body with narrow sub-vertical (just slightly played) narrowing rim of c25mm height. Four sherds have no external vitrification are less certainly associated with the other 9
	AH77	G103C	u/s		16			
						14	1	fragmented piece of vitrified and slagged lining
	AH79	G113	u/s		496			
						400	1	partial transverse gravelly SHC attached to very wide burr on reduced fired wall, 65x120x75, forward part of SHC is missing
						92	4	similarly green gravelly slag to above and possibly broken fragments from it - although not joining
	AH79	G93	u/s		964			
						586	1	large gravelly SHC-like mass - 100x125x70. has two distinct sheets - one possibly dipping down wall and upper is more horizontal
						316	1	well formed SHC, 95x105x35, very blebby texture, mostly glassy irregular top with some gravel/crystals
						50	1	slightly dished pad of irregular glassy slag. Base shows evidence for included gravelly clasts, top slightly reddish in places
	AH79	G113c	u/s		152			
						22	1	coal shale
						128	1	dense vesicular iron slag in worn fragment
	AH79	G93	u/s		24			
						22	2	slag fragments
	AH79	G123	u/s		16			
						12	1	rusty concreted slag bleb - unclear if iron is in the slag or separate

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	AH78	G12B	u/s		104			
						80	1	dense rock-rich slag with bright red surface - appears like clinker, but no evidence for fuel and texture probably derives from melted rock fragments
	AH84	se sector	u/s		180			
						24	1	exploded large rectangular nail head
						152	2	fragments of small medium dense vesicular SHCs
	AH76-78	area 2 unit nos above 300	1 of 2	208				
						114	20	dense slag fragments
						86	1	large part of small SHC
	AH76-79	area 2 unit nos above 300	2 of 2	416				
						54	1	stone or dense fired clay with one blackened face
						354	30	fragments of vesicular lava/tuff
Unstratified finds								
	AH84	u/s	phase 2sooty layer over pre-roman ditch					416
						98	1	(2) small dense SHC - probably 90%
						68	1	sheet of charcoal-bearing dense slag
						198	1	slab of vitrified lining
						38	1	lining slag nub
	HAT11	AF			16			
						12	1	clinker
	HAT11	CZ	1		292			
						286	1	part of-dense, slab-like SHC, 40mm thick, top dimple with chert inclusions, base slightly fuel bearing, vesicular

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	HAT34	EA1			70			
						66	4	clinker
	HAT39	EB+			58			
						56	1	basal crust of charcoal-rich cake - presumably SHC
	HAT39	EC1			68			
						50	6	vesicular slag fragments
						10	2	vitrified lining
						6	1	vitrified shale
	HAT39	EC+			42			
						40	1	triangular charcoal-rich slag piece - just possibly an-incipient SHC
	HAT39	ED1			312			
						308	25	dark fresh glassy clinker
	HAT11	DZ	1		24			
						22	1	fresh clinker
	HAT39	FA+			586			
						184	4	fresh clinker
						266	1	biconvex rounded accreted piece, charcoal-rich, probably SHC
						118	2	fragments similar to charcoal-rich ?SHC above
	HAT180	sf9	118	tr11	224			
						220	12	probably the remains of one fragmented small charcoal-rich SHC
	HAT180	sf12	118	tr11	60			
						56	3	dense gravelly slag
	HAT54	OH4 (0114)		10				

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
						8	1	nail
	HAT57		148		10			
						8	1	flow lobe of dense slag
	HAT180	sf13	118	tr11	58			
						46	1	fragment of friable vesicular slag
	HAT39	FA3			20			
						18	1	vesicular and charcoal- bearing slag fragment
	HAT164	sf3	108		56			
						52	1	dense slag fragment
	HAT57		121		78			
						20	1	lining slag
						54	1	fragment from charcoal-rich small SHC
	HAT11	AT	1		16			
						14	1	clinker
	HAT57		147		14			
						2	1	coal fragment
						6	2	slag fragments
	HAT180		179		34			
						32	1	fragmented gravelly slag lump
	HAT57		100		24			
						22	2	vitrified lining, 1 piece has margin of what appears to be 30mm plus blowhole
	HA59		128		6			
						4	1	clinker

Trench	Site	Grid	Context	Other	Bag wt (g)	Item wt (g)	Item No	Item notes
	HAT39	KA+			16			
						14	1	fragmented piece of vitrified lining
	HAT39	CD	1		4			
						2	1	vitrified lining
	HAT59		141		96			
						94	1	fragment of dense SHC with dimpled top
	HAT39	ML (or HL?)	1		10			
						8	1	lining slag fragment

Table 2.Stratigraphic distribution of submitted materials (only includes materials for which provisional phasing data are available).

(a) Archaeometallurgical residues

	Iron working												**Total residue**
	SHC			indeterminate slag fragments		Hearth lining		Low-density FAS		Thin slag sheets		Copper alloy working Crucible	
	wt (g)	no.	intact	wt (g)	no.	wt (g)	no.	wt (g)	no.	wt (g)	no.	wt (g)	no.	**wt (g)**
phase 1														
phase 2	98	1	1	82	3	198	1	38	1					**416**
phase 3														
phase 4														
phase 5	4188	63	8	931	76	108	16	2	1	68	4	34	5	**5331**
phase 6				18	3			1	1					**19**
phase 7	986	19	2	444	45	183	24	84	16					**1719**
phase 8	5475	58	8	4007	444	783	67	179	21	26	8			**10521**
phase 9	12548	129	41	18824	2135	3195	363	1291	134	99	32			**36013**
phase 10	520	8	3	2495	348	239	41	175	40	9	4			**3439**

(b) Other materials

	Metals						Coal residues				Other		Lava	
	Lead		Cu-alloy		Iron		coke/coal		clinker					
	wt (g)	no.	wt (g)	no.	wt (g)	no.	wt (g)	no.	wt (g)	no.	wt (g)	no.	wt (g)	no.
phase 1														
phase 2			4	35										
phase 3														
phase 4														
phase 5					278	5					61	3	106	1
phase 6											4	1		
phase 7	22	1			114	7			18	1	53	8		
phase 8	32	2			600	30	19	3	61	5	410	11	287	26
phase 9	52	3			755	98	4	3	44	6	311	21	722	29
phase 10					176	27	1	1	59	7	131	9		

Table 3: Comparison of the SHC weight-frequency distribution with that of other comparable sites.

a. Roman sites in Britain

Site:	Neath	Carmarthen	**Ware**	Bulmore	Caerleon Priory Field	Marsh Leys Farm	Cowbridge
Reference:	Young 2013	Crew 2003		Young 1999	Author's unpub. data	Young 2005 & 2011c	Barford 1996
SHC count	47	136	**72**	?	18	30	?
SHC min. wt	74	100	**36**	127	146	60	175
SHC max. wt	630	820	**952**	770	600	824	700
SHC mean wt	244	227	**246**	270	294	333	403
% <500g	89%	94%	**82%**	?	83%	77%	?
% <1000g	100%	100%	**100%**	100%	100%	100%	100%

b. medieval sites in Britain

Site:	Exminster Milbury Fm.	Worcester 35 Mill St	Worcester Willow St	Prior Park Cricklade total	Worcester Deansway (period 8)	Worcester Deansway (period 9)	Burton Dassett
Reference:	Young 2014b	Young 2009b	Young 2007	Young 2008b	McDonnell & Swiss 2004	McDonnell & Swiss 2004	McDonnell 1992
Age:		12th	12th	11th-15th	11th – 13th	13th-15th	14th- 15th
SHC count	107	23	28	17	61	32	60
SHC min. wt	32	74	86	156	168	144	130
SHC max. wt	482	782	770	794	1490	1800	1670
SHC mean wt	127	233	327	329	492	499	550
% <500g	100%	91%	82%	82%			
% <1000g	100%	100%	100%	100%			

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