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Assessment of archaeometallurgical residues from Bovey Tracey (BTIH21)

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Dr T.P. Young

Abstract

This excavation produced evidence for iron smelting and smithing, with waste accumulating in a series of small ditches.

The total submitted assemblage weighed 96.2kg (1653 items), of which 82.3kg were archaeometallurgical process residues (i.e. slag and hearth/furnace ceramic). Other items included natural stone, possible iron ore, concretions (on slag or iron) and fragment of iron.

Of the residues, 62% by weight were whole or fragmentary smithing hearth cakes (SHCs), 14% probable dense smithing slags, 14% low-density smithing slags, 4% hearth/furnace ceramic, 4% iron smelting slags and 2% slags of indeterminate origin.

Almost 95% of the assemblage was recovered from ditch [1003]/[1004] within 7m of their corner, tentatively suggesting derivation from the E or NE. Extrapolation from the recovered material, suggests that the total assemblage in those ditches may have been around 180kg of smithing slag. Very little or no residue was recovered from features associated with the probable smelting furnace [1020] and the possible smithy in the East of the site. The total iron smelting slag recovered (approximately 3.5kg) was very low, was mostly distributed amongst the main accumulation of smithing slags and represents much less than the slag output from a single smelt; accordingly, the focus of slag disposal from the furnace was not within the excavated deposits (either being elsewhere or truncated).

The quantity of smelting slag was too little for any detailed interpretation but appears to be waste from typical Roman bloomery technology.

The smithing slags, in contrast, form a significant assemblage, including 131 examples of effectively intact SHCs, varying in weight from 52g up to 1747g, with a mean of 279g. The SHCs showed textures that probably reflect their generation within an aluminous system (i.e. the hearths were probably built from a kaolinite-rich clay). The wide range of SHC weights suggests a variety of tasks being undertaken and/or a variation in the intensity of the work. The mean size of 279g compares more closely with assemblages from smithies within urban settings (where work would be more continuous) than it does with some more rural examples. The relatively high upper range of the weights indicates an involvement with the processing of raw iron, but this does not appear to have been the exclusive purpose of the smithy

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Background

This assessment was commissioned by Bryn Morris of South West Archaeology Ltd. The materials described and assessed here arise from excavations undertaken on land at Indio House, Newton Road, Bovey Tracey, Devon (site code BTIH21).

Assessment

All submitted materials were examined visually in November/December 2025, using a low-powered binocular microscope where required. They have been catalogued (Table 1) and assessed. No instrumental analysis has been undertaken,

Results

General

The total submitted assemblage weighed 96.2kg (1653 items), of which 82.3kg were archaeometallurgical process residues (i.e. slag and hearth/furnace ceramic). Other items included natural stone, possible iron ore, concretions (on slag or iron) and fragment of iron.

Details

The various classes of material present in the assemblage (with the exception of natural stone) are described here, following the headings employed on Table 2:

Smithing hearth cakes (SHCs): approximately 50.7kg of material (62% of the total residue assemblage) was classifiable as having been derived from smithing hearth cakes (SHCs). These are cakes of slag that form in front of, and slightly below, the blowhole carrying the blast of the bellows into the hearth. Typical SHCs have a convexly rounded lower surface and a planar (to slightly convex or concave) upper surface. SHCs form from the production of a fluid slag by reaction between the typically viscous partial melt derived from the action of heat upon the ceramic of the heath wall, and iron oxides derived from oxidation of the workpiece.

Most of the SHCs showed evidence for the use of charcoal fuel, either through surviving charcoal inclusions or the moulds of former pieces. No examples provided evidence for the use of any other fuel.

The material includes 131 examples of effectively intact SHCs, varying in weight from 52g up to 1747g, with a mean of 279g, totalling 36.5kg. This is equivalent to 72% of the material identifiable as from SHCs

The SHCs showed textures and morphologies that differ from the typical case. In particular, the SHCs often comprise a mass of more or less well amalgamated descending slag prills. The derivation of the SHC through amalgamation of prills may be particularly noticeable on the lower face of the SHC. In several examples, this lower part of less well-amalgamated prills forms a very irregular mass that may be fused to the hearth floor.

The upper parts of some SHCs may also show a degree of lack of integration of the inputs – many presenting as wedge shaped blocks reflecting the viscous flow of material down and away from the wall.

Other examples of SHCs show deeply concave tops with strongly hematised surfaces. This may reflect a failure in the supply of wall material to the forming slag. Such a morphology may, in other circumstances, reflect the use of an iron tuyère to carry the blast (resulting in a lower degree of melting of the wall), but here it may reflect the refractory (i.e. aluminous) nature of the hearth wall.

Taken together, these unusual features are indicative of the influence of the very aluminous composition of the wall ceramic – reflecting in turn the kaolinitic nature of the local geology.

Several of the SHCs showed evidence for deformation during extraction. In these instances, the smith has cleaned the hearth after a work session with the slag still hot, resulting in torn or rolled deformation to the SHC.

SHCs with weights over approximately 550g show complex features differentiating them from the smaller examples. Interpretation of the original features of these pieces is complicated by the deformation that some of them suffered during extraction from the hearth. Most of them show thicknesses of 90mm or greater and this has resulted in the lower part of the slag mass interacting with the hearth floor. In at least

one case, the slag appears to have interacted with, and undercut, the hearth wall. Removal of the larger SHCs from the hearth appears to have typically entailed significant damage to the wall, presumably why the removal of the SHCs when hot appears to have been so common here.

Dense smithing slag: not all of the iron-rich smithing slag necessarily becomes incorporated into a recognisable SHC and some SHCs were sufficiently fragmented that their component slag could not be classifiable as SHC with confidence. These materials provided 11.7kg (14%) of the total assemblage.

Low-density smithing slag: in contrast to the previous class, a similar proportion (11.7kg, 14%) of the overall assemblage was formed by particularly low-density slags, without good evidence for fluid flow and with blebby or even gravelly textures. These slags represent material dominated by input from partial melting of the hearth wall, without sufficient iron input to make them more fluid. Such slags may genuinely indicate systems with a low iron input, but in this instance, they probably reflect the poor mixing ability of the low-fluidity wall-derived slags.

An abundance of low-density slags with a gravelly component has been noted particularly as a feature of smithing slags of Roman age (e.g. Young 2011, 2013, 2014b, 2017, 2023b). This may be associated with the dominant use of floor-level smithing hearths created through use of a simple hole dug in the substrate.

Hearth/furnace ceramic: approximately 3.4kg (4% of the assemblage) was comprised by fragments of hearth/furnace wall. Given the dominance of smithing slags in the assemblage, it is likely that this material mostly (or even entirely) derived from smithing hearth walls.

Although most of the material was not particularly informative about the hearth morphology, both the separate fragments and the areas of wall still attached to some of the SHCs, indicate an approximately planar blowing wall away from the blowhole.

Two fragments from (1014) contain parts of blowholes. The more complete example shows a slight protuberance around the upper part of the blowhole, but an overhang approximately on the line of the middle of the bore. The bore of the blowhole was approximately 20mm in diameter and inclined at 45° to the face of the wall above. This is a relatively low angle, suggesting that the wall face was inclined at this level allowing the bore to be closer to the horizontal. Erosion of the wall above the blast level might account for both the inclination and the development of a protuberance around the blowhole in that cooled location.

The ceramic recovered was variable, often with a coarse texture and becoming very friable.

Tapped iron smelting slag: approximately 3.4kg of tapped iron smelting salg (tapslag) was recovered (4% of the assemblage) The largest tapslag fragment was 1350g, so there was little indication of the overall form or size of the tapslag cakes.

The base of tapslags often carried small crumps of furnace ceramic and of stone, but no examples with ore inclusions were found.

Slag rod: one possible fragment of slag rod (48g), 30mm in diameter but slightly incomplete, with strongly-developed flow lobing on one face was recovered from (1014), slot 3, [1004]. Slag rods are a characteristic residue from iron smelting of the Roman period in which a large poker was used to generate holes beneath the slag mass in the bottom of the furnace to encourage slag to tap.

Indeterminate slags: approximately 1.4kg of the residues were classed as indeterminate. This material is almost entirely slag which was too small to classify into any of the other classes with confidence.

Iron ore: a fragment of specular hematite, with reddened host rock, weighing 121g ore was found in context (701). A second large equant block of mineralised material, part altered granite, part specular hematite, weighing 341g was found in context (1012) slot 2 [1004]. These fragments are not necessarily the ore employed in the smelting activity, since such lithologies outcrop not far upstream.

Concretions: some 7.3kg of concretionary material was recovered. Concretions form through precipitation with the host sediment of a binding mineral from the groundwater. For almost all of the material grouped here that process has probably happened in a very localised way – with iron liberated into the porewater from weathering slag or metal and then precipitating when oxidised (for instance by lowered ground water levels during a drier period). Thus, at the core of these pieces will typically be a small particle of slag or iron, or perhaps quite commonly a piece of slag that carried metallic iron inclusions. Such material may conceal artefacts as well as small pieces of iron lost during processing.

Iron: pieces of weathered iron (including secondary oxide crusts, where those secondary minerals did not act to bind the iron into a mass of indurated sediment) comprised just 659g of the assemblage. Some of the pieces were clearly artefacts (e.g. some items that are probably iron nails), but others appear to be irregular fragments of iron – either process waste or residual fragments from stock iron.

Distribution

Almost 95% of the assemblage (4.2kg from Slot C, 24.2kg Slot D, 16.8kg Slot E, 25.6kg Slot 3 and 6.3kg Slot 2) was recovered from ditch [1003]/[1004] within 7m of their corner, tentatively suggesting derivation from the E or NE. Extrapolation from the recovered material, suggests that the total assemblage in those ditches may have been around 180kg of smithing slag.

Just 3.6kg of residue was recovered from ditch [1003b]. 82% of this assemblage, however, was provided by just two items: two of the four SHCs from the site with weights over 1kg (an example of 1166g from Slot F and one of 1747g from Slot G).

Very little residue was recovered from features associated with either the probable smelting furnace [1020] or the possible smithy in the E of the site. The total iron smelting slag recovered (approximately 3.5kg) was very low, was mostly distributed amongst the main accumulation of smithing slags and represents much less than the slag output from a single smelt; accordingly, the focus of slag disposal from the furnace was not within the excavated deposits (either being elsewhere or truncated). Hollow [1018] yielded (from context (1018)) 2 pieces of tapslag (total 304g), a piece of slag of uncertain origin (100g) and a possible bloom fragment – and thus was the only feature producing an iron smelting-dominated assemblage.

Interpretation

The assemblage is characterised by two components: a dominant contribution from iron smithing and a very minor one from iron smelting.

The iron smelting remains indicate low levels of loss away from the main focus of disposal, since the total of the iron smelting residues (tapslags and rods) is much less than the products of even one single smelt.

Feature [1020] has been interpreted as an iron smelting furnace. The morphology, with a sunken furnace base at one end of a 1.05m-long cut, the suggestion of a clay wall/lining at least 50mm thick, and a heat-affected tapping channel leading to an external working hollow, is certainly compatible with this interpretation, despite the lack of any associated archaeometallurgical residues. The description of the heat-affected clay around the furnace base describes it being wider to the west. It is unclear if the clay thickens to the west, or a zone heat alteration thickens to the west (or indeed if the clay might even be heat altered natural rather than an applied layer), but if it is the heat-alteration that thickens on the west, then it would suggest that the furnace was blown by bellows located on this side. A furnace with these basal features would be compatible with the types of iron smelting slag recovered on the site.

Oak charcoal from fill (1021) in the possible furnace returned a C14 date of 126-235 cal. AD (95.4% SUERC-132746). Although the potential problems of dates from oak must be borne in mind, this might hint that the smelting activity here pre-dated the smithy to the east, with its apparently late Roman pottery assemblage. Thus, the small quantity of smelting slag in the main assemblage in the ditches might potentially be residual.

The only context-assemblage dominated by smelting residues was the small collection from hollow [1018].

A probable metal working area on the east of the site showed a hard surface surrounding a possible hearth. Although the presence of hard, 'compacted', layers in this complex might, as suggested, be the result of heating, it is also common to find areas of cementation, particularly centred upon the anvil location, produced by the reaction of iron particles in the smithing microresidues (a so-called smithing floor concretion). Unfortunately, it does not appear that these deposits were sampled for archaeometallurgical microresidues (hammerscale). Deep pits in association with probable hearths are often linked to the substantial wooden stumps into which an iron anvil could be placed. Indeed, on many sites the apparent cut feature may be as much due to the build-up of hammerscale on the smithy floor around the stump, as to the depth of the original posthole for the stump.

The northern gully around the south of the probable smithy yielded a single small fragment (88g) of SHC.

Thus, the direct evidence from the residues for the character of the industrial features is largely lacking, despite the morphological evidence.

The evidence from the distribution of the smithing residues, including the concentration near the angle of ditches [1003] and [1004], together with the occurrence of some of the largest SHCs within the southern part of ditch [1003b], was suggested above perhaps to indicate derivation from the NE (i.e. the direction of the possible smithy).

The evidence for the potential purpose of the smithing activity comes largely from consideration of the weight-frequency statistics of the SHCs. The assemblage from Indio House is compared with other relevant assemblages in Table 3 and Figure 1. The assemblage from Exminster (Young 2014b) provides a local comparator for a Roman rural blacksmithy, whereas Dainton's Cross, Ipplepen (Young 2025), similarly provides a comparator for a blacksmithy within a larger settlement. The site at Newyears Green (London Borough of Hillingdon; Young 2021) provided an assemblage that is probably associated with a specialist iron production site. Table 1 provides some additional examples.

The rural smithies show a narrow range of weights, with the mean SHC size of less than 150g. Larger settlements where the smith might have been more continuously occupied and perhaps undertaking some larger, or more welding intensive, tasks. The maximum SHC size increases little, but the mean rises to up to 250g. In contrast, for the specialist iron production sites the maximum SHC weight is much higher, typically to a few kilograms. The mean also increases to over 500g. The Indio House site lies intermediate between the two groups. It can be suggested, therefore, that the smithy at Indio House was involved with the processing of raw iron, but was also engaged with the further working of iron.

The upper limit on SHCs derived from blacksmithing in the Roman period is approximately 850g, with the mean SHC size for such assemblages ranging from around 125g for farmstead smithies up to 250-300g for smithies in more urban settings. It has been argued that this difference is only partly due to the types of tasks being undertaken and may owe much to the continuity of the activity. In the Indio House assemblage of SHCs there are 7 SHCs of over 850g, comprising 5% of the assemblage by number, but 23% by weight.

These heavy SHCs correspond to part of the group of SHCs with a complex morphology over 550g described above (which larger group would correspond to 8% of the assemblage by number and 29% by weight).

For SHCs of over 850g from the Roman period, an origin in the process of smithing raw blooms into finished iron (typically entailing repeated folding and welding, depending on the quality of the original bloom) must be considered.

The large SHCs from Indio House share the prilly characteristics of the smaller examples, rather than showing the deep slag puddle characteristic of the slag

produced during bloomsmithing on sites elsewhere (e.g. Newyears Green, Young 2021). This suggests that the smithing did not involve the addition of siliceous flux in sufficient quantity to change the slag properties to a significant degree.

Discussion

There is increasing evidence for early iron smelting down the eastern margins of Dartmoor. Much of this has been synthesised and discussed by Crew & Quinell (2022, 69-71).

Most of the recognised sites (James House, Chudleigh; Twinyeo; Tigley; Dainton's Cross?) have proved to be Iron Age where they can be dated. Tigley was dated to between 400 and 200BC by radiocarbon (Mudd & Joyce 2014), Twinyeo gave dates suggesting early 4th to 3rd century BC activity (Farnell 2015). The smelting evidence from Dainton's Cross comprised probably residual material in a Roman feature (Young 2025). Crew & Quinnell (2022) have argued that the Iron Age Coffinswell currency bar hoard had a local origin.

The site at Kestor is post-Roman (with a radiocarbon date of AD429-640; Crew & Quinnell 2022).

The Indio House site provides the first example within this area that is more certainly Roman in date.

A side at Slade Mead, 1km SW of Indio House, has also produced surface finds of Roman age, apparently in conjunction with iron smelting slag and is thus the smelting is very likely to be of Roman age. The presence of two sites associated with iron production in close proximity in this area to the west of Bovey may suggest that other unrecognised smelting sites may also exist here.

Although this cluster of sites forms a coherent group and the Iron Age sites appear to show a shared technology (Young 2023b), it seems likely that they exploited different types of iron ore. The immediate area of Indio House has no major known iron ore sources.

To the south of the area, furnaces have been described at Tigley A and Lower Velwell (Mudd & Joyce 2014). Both these sites lie in small tributary valleys that fall N into the valley of the Dart. Analysis of the residues appears to suggest that the Tigley slags were low phosphorus, but that the Lower Velwell slags had a high phosphorus content. The slags from Kestor are of an unusual composition, but low in phosphorus (pers. obs.). Indio House lies on the outcrop of the Bovey Formation (Eocene to Oligocene) as mapped by BGS. The nearby site at Twineo (3.3km to the SE; Farnell 2015; Young 2013, Young 2014c) lay on similar geology (more specially the Southacre Clay And Lignite Member within the Bovey Formation) with the site at Slade Mead, Bovey Tracey, also lying on the same unit. It was argued that the ore source for the Twinyeo furnaces may have been a bog iron ore from the Teign/Bovey floodplain (Young 2014c) and thus this might be considered for the other sites lying on the same geology. James House, Chudleigh (Young 2023b) produced evidence for Iron Age smelting on the margins of the alluvium of Kate Brook, to the NE of Chudleigh. The location hints at the use of a bog iron ore, but no analysis of the residues has yet been undertaken.

As well as the possibility of the smelting sites around Bovey Tracey using river flood-plain bog iron ores, there are also rocks ores present only a few kilometres upstream. The area 2-4km NW to N of Bovey Tracey contains several mines (e.g. Hawkmoor, Kelly, Shaptor Plumley, Bowden and Great Rock mines) within the margins of the Dartmoor granite that were formerly worked for specular hematite for paint (Dines 1956, 726-727). Such sources would be compatible with the iron ore pieces recovered from Indio House, though, as noted above, the presence of those ores at Indio House might be due to entirely natural processes. Crew & Quinnell (2022) reported an otherwise unpublished find of bloomery slag at Kelly Mine, that had been smelted using a non-tapping technology that could be either Iron Age or Early Medieval.

Some 6km to the west, iron ores (goethite, haematite and magnetite) are present within the Carboniferous sedimentary rocks to the east of the granite margin around Haytor (Dines 1956, 732-734).

It would appear likely, therefore, that the source of iron for the smelting at Indio House was either a local bog iron ore or was the specular hematite from higher up the Bovey Valley.

Further work

Although iron smelting slags formed only a minor part of the assemblage, they would be capable of yielding further archaeological useful information through additional analysis. Chemical analysis should be capable of comparing the composition of the smelting slags with the specular hematite samples found at the site (and also with the smelting slags from Twinyeo) and providing an interpretation whether the rock ore was a potential resource or whether smelting of bog iron ores was more likely (as previously postulated for Twinyeo).

The iron smithing slags form a significant collection. A very limited programme of chemical analysis, involving examples of large and small smithing hearth cakes (together with a reference sample of the hearth ceramic) should be capable of shedding further like on the proposed origin of the larger cakes as being from bloom-refining, and if so, whether they represented the onward working of blooms smelted using the same ore as the that which produced the smelting slags.

A limited campaign of chemical analysis (both major and trace elements) is therefore recommended, involving samples of the two specular hematite samples, a tapslag, a piece of hearth lining, a small SHC and a large SHC.

Figure Caption

Figure 1: bar charts showing the frequency of SHCs in selected Roman assemblages by 50g weight intervals (upper limits labelled). The sites include Exminster (rural blacksmithing; Young 2014b), Dainton's Cross (blacksmithing in a more substantial settlement; Young 2025), Indio House and Newyears Green (specialist bloom working site; Young 2021).

References

All GeoArch reports are available for download from: https://www.geoarch.co.uk/report%20library/

CREW, P & QUINNELL, H. 2022. A hoard of iron currency bars from Coffinswell, South Devon. *Proceedings of the Devon Archaeological Society*, **80**, 41–75.

DINES, H.G. 1956. *The metalliferous mining region of South-West England*. British Geological Survey.

FARNELL, A. 2015. Multi-Period Settlement, Burial, Industry and Agriculture: Archaeological Excavations 2007-2012 at Twinyeo Quarry, Chudleigh Knighton. *Proceedings of the Devon Archaeological Society*, **73**, 185–278.

FOX, A. 1954. Excavations at Kestor, an early Iron Age settlement near Chagford, Devon. *Transactions of the Devon Association for the advancement of Science*, **86**, 21–62

McDONNELL, J.G. 1985. Slag report, Amersham Mantles Green Bucks. AML Report 4805.

MUDD, A. & JOYCE, S. 2014. *The Archaeology of the South-west Reinforcement Gas pipeline, Devon, investigations in 2005-2007*. Cotswold Archaeology Monograph 6, Cirencester.

YOUNG, T.P., 2011. Archaeometallurgical residues from Calstock Roman fort. *GeoArch Report 2011/17*. 9pp.

YOUNG, T.P. 2012. Archaeometallurgical residues from the Brecon to Tirley gas pipeline. *GeoArch Report 2012/18*, 75pp.

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. 2013. Assessment of archaeometallurgical residues from Twinyeo Farm, Devon. *GeoArch Report 2013-31.* 14pp.

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.

YOUNG, T.P. 2014c. *Archaeometallurgical residues from Twinyeo Farm, Devon (ACD170/ACD504).* GeoArch Report 2014-10. 52pp.

YOUNG, T.P. 2014d. Assessment of archaeometallurgical residues from Ware, Hertfordshire. *GeoArch Report 2014/18*. 53pp.

YOUNG, T.P. 2015. Assessment of archaeometallurgical residues from Uffington, Oxfordshire. *GeoArch Report 2015/30*. 12pp.

YOUNG, T.P. 2016a. Assessment of archaeometallurgical residues from Cleevelands, Bishop's Cleeve, Gloucestershire. *GeoArch Report 2016/18*. 43pp.

YOUNG, T.P. 2016b. Assessment of archaeometallurgical residues from Ebrington, Gloucestershire (EGE09 ex). *GeoArch Report 2016/21*. 18pp.

YOUNG, T.P. 2017. Archaeometallurgical residues from Priory Field, Caerleon. *GeoArch Report 2017/17*, 90pp.

YOUNG, T.P. 2021. Assessment of residues from Newyears Green (IS20NYGAR). *GeoArch Report 2021/06*, 20pp.

YOUNG, T.P. 2022. Assessment of residues from Ipplepen. *GeoArch Report 2022/13*, 34pp.

YOUNG, T.P. 2023a. Assessment of materials from Calstock (excavations 2019-2022). *GeoArch Report 2023/10*, 17pp.

YOUNG, T.P. 2023b. Assessment of materials from James House, Chudleigh, Devon. *GeoArch Report* 2023/24, 11pp.

YOUNG, T.P. 2025. Iron Age and Roman metalworking debris, p.214-222 In: S. Rippon, 2025. *Landscape and society in Dumnonia; Iron Age, Roman, and Early Medieval Ipplepen and the countryside of south-west England*. Oxbow.

YOUNG, T.P. & KEARNS, T. 2010. Evaluation of archaeometallurgical residues from Kyrleside, Dymock, Gloucestershire (32523 & 33787). *GeoArch Report 2010/19*, 5pp.

Table 1: catalogue of submitted materials. Assm = assemblage of small particles. Weights in g.

C	notes	swt	iwt	l no	notes
707	G1	bag 2	121	1	specular hematite, associated with a reddened host rock
707	G1	bag6	268	1	very irregular SHC; spiky in plan; flat smooth top with a few fuel impressions; base microprilly/microdimpled
			371	1	very dense SHC; slightly incomplete; dished top with hematite that extends over the edge onto a ramp to one side; base coarsely prilly; resembles a 383g piece from (1014)
			91	1	stone
			444	4	ferruginous concretions
			58	2	iron slag fragments
			153	1	part of a dense SHC
			72	1	part of a lining rich SHC
707	G5	Bag 8	155	1	50x80x40mm; wedge shaped gravelly mass; dense and prilly below; attached to wall
			118	1	70x80x30mm; square slab of lining slag; one face smooth, the other deeply impressed; could be SHC equivalent
			256	1	fragment from very dense large SHC
			18	1	tapslag fragment
			16	2	fragments of gravelly slag
			63	3	fragments of iron slag
			106	2	ferruginous concretions
707	G1	From bag 6, frag 5 for 14C?	106	1	ferruginous concretion with organics and charcoal
707	cleaning	bag 5	206	1	elongate deformed SHC attached obliquely to wall, strong smear on wall and one side suggests it was pushed aside when hot, unclear if complete
			47	1	elongate blob of relatively low-density iron slag, maybe deformed
707/708		bag1	15	1	blebby gravelly lining slag
			8	1	stone
			3	1	smooth fragment of bloated reduced fired ceramic
707/708		Bag 3	55	1	iron concretion with prilly/lobate slag
708	G3	bag 4	130	1	tapslag fragment

				152	1	fragment of dense slag crust associated with fine slag with charcoal; could be smelting or smithing
				48	1	dense iron slag
				31	1	lining slag bleb
				186	1	exploding ferruginous concretion on substantial piece of iron
708	G3		bag 7	49	1	elongate prilly mass of gravelly lining slag
				109	1	very dense, shiny, inflated lobe of flown slag, dimpled base, slightly maroon on top, origin uncertain, could be from smelting
708	G3	object		38	1	110mm long narrow concretion, suggests iron rod or nail
1008	surface	[1004]		360	1	concretionary lump with large piece of iron attached to a burr; it is unclear if this is primary or a post-depositional join
				125	1	now 2; fragmented piece of corroded iron
				55	2	small pieces of slag bearing fine charcoal
1009	Slot I	[1004]	BTIH21	292	1	very corroded accreted lump, but appears to have sediment contact on one side, suggesting this is a compact SHC; 75x85x55mm; flat top; some charcoal between prills in lower part
				266	1	angular chunk of dense slag; bears charcoal to 15mm; very dense; very worn - unclear if this is a slag from smithing or smelting
				105	1	very highly abraded fragment, probably from the lip of a dense SHC
1011	slot 2	[1004]		1350	1	large fragment from the proximal end of a large tapslag cake; reaches about 60mm; all margins damaged; 60mm thickness is at approximately 140mm from proximal end; flow shows inclusions of small grey gravel particles (possibly reduced fired clay); top in large flows and well reddened; base well formed, again with grey inclusions and quartzose grit in dimples (no obvious ore)
				866	1	110x150x80mm; prismatic 'SHC'; the top angles down at 45° to wall; the upper part is lining-rich; the lower part is a prilly lobate horizontal layer passing back to wall; base prilly with slightly dimpled surfaces
				275	1	stone (with slight rusty accretion at one end)
				30	3	small slag scraps
				258	1	slag lump with very rusty accretion on one side; rest prilly; probably a small pyramidal SHC
				13	6	fragments from a concretion around weathered iron
1012	Slot 2	[1004]	BTIH21	821	1	block of thick massive/amalgamated tapslag, from mass at least 65mm thick; top shows slightly chaotic lobing; base smoothish with ceramic contact
				113	1	tapslag
				169	1	tapslag, base shows many inclusions of reduced fired ceramic - probably furnace wall debris
				574	1	10x110x55mm; probable concavo-convex dense SHC, partly overgrown by concretion; base has abrupt angle - so a base of wall furnace slag cannot entirely be excluded

				165	3	crumbly oxidised fired vitrified ceramic; shows some ferruginous accretion
				620	2	irregular mass of finely prilly slag; most likely to be from smithing but not conclusively so
				422	2	open textured more coarsely prilly slag with charcoal; most likely from open-textured SHC
				338	1	unusual, probably deformed SHC - sightly rolled up top, hematised upper surface is now a concave area; now 55x110x55mm; original top slightly gravelly; base prilly
				341	1	large equant block of mineralised material, part altered granite, part specular hematite
				159	5	small pieces and lumps of probable smithing slags
				24	14	slag debris
1014	Slot 3	[1004]	2 of 4	821	35	lobate gravelly lining slags
				251	4	small fragments from SHCs
				419	8	ferruginous concretions, most with slag
				463	26	iron slag pieces, too small to carry indications of being from SHCs or in discrete lumps
				249	4	attachment fragments between wall and low-density slag
				14	1	vitrified oxidised ceramic
				11	3	stones
				175	1	50x65x40mm; very dense rather equant slag mass; one side inclined inwards, suggestive of hot deformation
				60	1	55x50x25mm; small puck of low-density slag; one face has a curious concave contact (from a tool?)
				368	1	75x95x85mm; very irregular mass of prilly slag, with small area of inclined lining influence on top
				168	1	60x65x40mm; small irregular prilly dense SHC with charcoal; one side has square-sectioned re-entrant - from tool?
				234	1	70x85x50mm; low density, lobate rather irregular SHC
				363	1	90x80x65mm; dense SHC; strongly dished smooth hematised top; lower part includes protruding thin slag sheets, unclear if toolmarks, re-oriented slag, or odd basal flows
				130	1	55x65x45(35)mm; very dense small conical SHC
1014	Slot 3	[1004]		650	27	lobate gravelly lining slags
				144	2	small fragments from SHCs
				100	3	ferruginous concretions, most with slag
				95	1	rounded slag lump, dense with rusty surface
				608	20	iron slag pieces, too small to carry indications of being from SHCs or in discrete lumps
				180	8	vitrified oxidised ceramic
				180	1	75x75x35mm; diamond-shaped SHC with small attachment area; plano-convex; dense; lower part formed of large lobes
				229	1	65x85x45mm; dense SHC with slightly dished top; finely prilly with charcoal
				126	1	55x50x35mm; very well formed dense SHC; dimpled base, rough top
				300	1	smoothed and overgrown dense SHC; no details visible
				232	1	irregular prilly SHC; corroded iron attached to upper surface; 65x80x50mm

				574	1	100x100x80mm; irregular prilly SHC; large charcoal moulds; well-formed curved dimpled base over one half
1014	Slot 3	[1004]	3 of 4	828	36	lobate gravelly lining slags
				154	2	small fragments from SHCs
				516	4	ferruginous concretions, most with slag
				178	2	stones
				478	21	iron slag pieces, too small to carry indications of being from SHCs or in discrete lumps
				148	6	vitrified oxidised ceramic
				48	1	possible fragment of slag rod; 30mm diameter; slightly incomplete; strongly flow lobed on one face
				179	1	75x75x45mm; slightly irregular plano-convex gravelly SHC
				166	1	SHC with well-formed burr, deep hematised smooth bowl and prilly base, but distal part is squashed; probably entire but not certain
				122	1	55x65x45mm; slightly gravelly, small equant SHC
				155	1	75x65x40mm; SHC with microdimpled base; slightly lobate dished top
				93	1	45x65x30mm; neat semicircular SHC; top reddened and crudely lobate cf clinker; moderately large charcoal below
				176	1	incomplete SHC; rich in charcoal microdimpled base; slightly dished top
				161	1	probably complete irregular prilly SHC
				260	1	85x65x50mm; irregular elongate SHC; raised lining lobs on top; basely microdimpled
1014	Slot 3	[1004]		770	32	lobate gravelly lining slags
				244	4	small fragments from SHCs
				477	11	ferruginous concretions, most with slag
				54	1	stones
				332	10	Iron slag pieces, too small to carry indications of being from SHCs or in discrete lumps
				50	1	fragment from margin of tapslag cake; heavily hematised surface
				24	1	vitrified oxidised ceramic
				166	1	55x75x50mm; lining-rich SHC with prilly base rich in charcoal
				91	1	55x60x40mm; low density prilly SHC rich in charcoal
				122	1	crudely biconvex mass of prilly lining slag
				89	1	irregular mass; lobate and dished on top; prilly on base; probably an incipient SHC
				383	1	90x100x50mm; SHC with bulbous smooth (overblown?) top; base microdimpled with fine charcoal (resembles 371g example from (707))
				167	1	irregular crescentic mass; dimpled base; probably hot folded SHC
				400	1	concretionary mass; in the shape of SHC; but no details visible
1014	Slot 3	[1004]	4 of 4	400	18	lobate gravelly lining slags
				585	5	small fragments from SHCs

				386	8	ferruginous concretions, most with slag
				409	1	stone - mineralised
				280	15	Iron slag pieces; too small to carry indications of being from SHCs or in discrete lumps
				52	2	dense iron slags with charcoal of 20-40mm
				332	3	vitrified oxidised fired lining; largest piece shows slight protuberance then overhang aligned on c20mm blowhole; blowhole steeply inclined c45° with respect to wall above
				28	1	lining fragment with curious broad, slightly concave face, could be structural, could be a coating?
				211	1	block of dense tapslag
				252	1	60x80x55mm; block of prilly slag with charcoal; top is crossed by U-shaped depression with smooth, maroon, clinker-like surface
				109	1	curiously strongly oblique small SHC; dished top proximally; overlain by charcoal bearing slag distally; base rich in charcoal
				220	1	large tongue of gravelly lining slag attached to wall
1014	Slot 3	[1004]	1 of 4	465	20	lobate gravelly lining slags
				575	5	small fragments from SHCs
				841	16	ferruginous concretions, most with slag
				39	4	stone
				286	8	iron slag pieces, too small to carry indications of being from SHCs or in discrete lumps
				140	3	vitrified oxidised ceramic; includes a partial blowhole margin
				82	1	50x60x30mm; smooth-topped dense puck; prilly below
				170	1	55x65x40mm; very dense SHC with dished hematised top; microprilly base
				131	1	irregularly lobate gravelly mass; one pebble on top sems to be hematite?
				111	1	60x60x35mm; deep crudely SHC-shaped gravelly lining lump
				265	1	highly rusty mass, SHC shaped, no details visible
				309	1	possibly incomplete dense lump; has lower elements of flat dimpled sheets as seen in other specimens
1014	Slot 3	[1004]	BTH21	690	22	gravelly and lobate lining slags
				310	8	rusty rounded weathered slag in rounded lumps, with some accretion, low density
				605	5	substantial fragments of small-medium sized SHCs
				284	1	very irregular SHC-like complex lump, smoothish upper pad; moderately large charcoal-bearing slag forms base; 80x70x50mm
				50	1	siliceous pebble
				170	1	mass of gravelly lining slag, probably most of low density SHC
				70	1	45x50x30mm; small dense SHC; moulds and charcoal fragments in prilly dense slag
				736	1	95x110x100(55)mm; complex dense irregular SHC; probably hot deformed; microprilly base; top covered by folded? material
				246	1	75x90x55(30)mm; gravelly low-density SHC

				395	1	120x60x60mm; microprilly and charcoal-rich irregular SHC
				304	9	scraps and lump of dense, rusty often charcoal-bearing slags
				14	12	small scraps of slag
				28	1	vitrified oxidised fired lining
1014	Slot 3	[1004]	BTH21	623	20	gravelly and lobate lining slags
				65	52	scraps of indeterminate slag
				533	11	fragments of mostly prilly and charcoal-bearing dense slags
				1156	9	fragments of various SHCs, dense prilly to lobate gravelly
				194	1	65x85x30mm; probable SHC (just possibly part of a larger example); dished with small piece of iron on upper surface; base is a dense puddle
				100	1	larger fragment of fired wall with charcoal-rich slag adhering
				317	1	SHC with large fragment of wall attached; 65x100x40mm (plus wall); gravelly lining top; dense prilly base
				514	1	95x100x60(40)mm; very rusty SHC; rusted charcoal on top, rest obscured
				59	6	oxidised fired vitrified lining
				230	4	lining attached to charcoal bearing slags
				72	2	stones
				557	13	rounded rusty lumps, probably weathered iron-bearing slags, but some may be purely concretionary
1014	slot E			955	1	130x110x90mm; irregular SHC formed of gravelly lining dipping away from tall vertical wall; lower part iron-rich and prilly, apparently underlies margin of flat bottom wall by 45mm, extends into wall area by 20mm; flat base is 40mm below SHC top
				246	1	dense compact SHC; with abundant large charcoal; 65x95x50(40)mm
				252	1	slightly incomplete lining slag mass; gravelly, flat top; prilly iron slag base; 80x70x50mm
				93	1	moderately dense slag lobes/prills
				586	31	irregular lobate gravelly slags
				32	2	iron slags with fine charcoal
				213	7	dense iron slags, some are flowed slightly
				356	23	ferruginous concretions - most probably on iron pieces
				106	1	stone
				100	4	vitrified oxidised fired ceramic
				24	1	oxidised fired clay
				51	1	very low density bloated ceramic ball
				988	14	fragments of small SHCs
1014	slot E		2 of 3	1072	52	lobate gravelly lining slags
				78	2	small fragments from SHCs

				628	23	ferruginous concretions, most with slag
				280	10	stones
				1168	68	iron slag pieces, too small to carry indications of being from SHCs or in discrete lumps
				218	5	vitrified oxidised ceramic
				10	1	slagged cermaic with inner smooth concave face - attached to tuyere? pebble? object
				2	2	fired clay
				149	1	puck or low density SHC; almost single large lobe of gravelly lining slag
				116	1	very irregular mass of poorly flowed gravelly lining slag (locally bright blue on fracture)
				78	1	dense slag puddle, with dimpled base, presumably not a whole SHC
				96	1	dense SHC; prilly/microprilly structure
				64	1	concavo-convex lump of gravelly slag - presumably SHC
				76	1	very prilly small dense mass
1014	Slot E			244	1	55x75x70mm; deep prilly SHC with charcoal; dense top plate with deeply impressed fuel moulds
				598	1	105x105x90(50)mm; complex SHC with possible displaced small SHC in outer part; charcoal impressed on top; mostly prilly and charcoal-rich below, but possible displaced SHC has slightly dimpled base
				544	1	110x100x50mm; dense SHC; rusty top, indurated ceramic under proximal half, prilly distally
				289	1	fragment from centre of SHC with flat top (puddle like, haematised); 100mm wide; very dense
				461	1	85x100x55mm; dense, well-formed deep SHC; lining layer on top folded hot on one side; base obscured by accretion
				387	1	rusted accretionary mass; probably part or all of a SHC
				196	1	most of a small very dense SHC; 65x60x30mm; possible tool mark on underside
				154	1	most of a small dense SHC; 50x75x40mm; slightly dished top
				60	2	stone
				100	1	gravelly low density SHC; 50x70x35mm
				127	1	prilly charcoal-rich SHC; 50x70x40mm
				147	9	fragments of prilly and blebby slags
				200	3	fragments of SHCs
				24	assm	debris
				106	5	rounded lumps of gravelly lining-influenced slag
				32	1	fragment of a low density SHC
				24	2	vitrified oxidised lining
				60	1	gravelly concretion
1014	slot E	1 of 3	3261	349	1	SHC with dense plate on very base; above which it is gravelly lining slag; dished top; maroon; 90x100x55mm
				263	1	80x80x60mm; rounded mass, apparently a deformed lining-rich SHC
				290	1	65x110x60mm; curious elongate rusty dense lump; probably a twisted dense SHC

				494	1	slightly incomplete concavo-convex SHC; very rusty, with large amount of exploding iron on base; 110x90x50mm
				294	9	blebby masses of gravelly lining slag; some quite dense but not in form of SHC or fragment of
				227	6	rounded, sometimes blebby lumps of dense rusty slag
				265	3	concretionary masses
				415	4	fragments of dense well-formed SHCs
				78	1	pyramidal probable SHC formed of loose prilly slag; 45x60x40mm
				73	1	flap of lining slag with attachment; might be proto-SHC but unclear
				130	1	55x75x50mm; small gravelly piece; probably small SHC
				148	1	small dense SHC formed of amalgamated prills and charcoal moulds; 55x80x50mm
				81	1	small probable SHC formed by prilly slag below with a single large lining slag rounded lobe covering the top; 50x60x30mm
				20	8	slag debris
				15	2	vitrified lining
				9	1	low density honeycomb slag fragment
				110	assm	bagged dust
1014	slot E	3 of 3	4046	230	1	prilly crudely triangular SHC; 70x95x50mm
				390	1	80x95x45mm; dense SHC; prilly, charcoal-rich, but well consolidated
				328	1	70x100x55mm; crude SHC-like mass formed entirely of lining slag
				133	1	50x75x40mm; small charcoal-rich SHC
				278	1	irregular mass involving fine charcoal rich slag and a large bulbous lobe; possibly result of hot extraction of SHC?
				307	7	fragments of SHCs with upper parts dominated by gravelly lining slag; mostly dense layer near base
				131	5	fragments of open, prilly, charcoal-bearing slags
				154	3	vitrified and slagged oxidised lining; largest piece is near blowhole
				236	8	concretions, mostly gravelly
				100	9	blebby, dense, but lining-rich lumps (small)
				18	4	stones
				13	1	lining slag in thin sheet with a planar rear attachment surface
				955	18	rounded masses of dense slag - not having the morphology of SHCs, just rounded lumps
				33	25	small slag debris
				143	assm	bagged dust
				193	1	rounded mass with indurated lining on one side; SHC 55x75x40mm; dense fuel-impressed top; finely prilly base with charcoal moulds
				166	4	fragments from conventional dense SHCs of probably small size
				117	1	irregular SHC with finely prilly charcoal-rich mass below and square upper plate that is slightly dished; 55x55x40mm
				119	1	55x70x35mm; finely prilly charcoal-rich plano-convex SHC

1016	slot B	[1003]		464	1	irregular, dense SHC; base plate-like; missing edges; shows healed fractures; upper parts raised in ridge - presumably hot deformed; base highly polished; 80x100x55(35)mm
				200	1	60x60x50mm; prilly mass, presumably odd SHC
				161	2	fragments from dense SHCs
				40	1	quartz-rich pebble
				73	2	irregular rounded lumps of rusty slag, details not visible
1016	Slot C	[1003]	1980	243	1	hot deformed prilly SHC; now 100x60x60mm; deformation means hard to assess if any is missing
				191	1	very irregular SHC; formed of dense prills in lower part and open masses of gravelly lining slag above; 120x60x50mm
				100	1	small low-density SHC; dished lining-covered top; base amalgamated brown prills; 60x70x40mm
				92	1	very dense rusty small lump; shape suggests this is SHC, but crude; 50x55x30mm
				106	1	65x75x45(30)mm; biconvex SHC; lining on top; prills with fuel moulds below
				347	7	irregular masses of gravelly lining slag
				69	17	slag debris
				143	1	small dense rounded rusty mass, probably SHC; with accreted shale fragment
				241	3	dense rounded rusty masses, none convincingly an SHC
				57	3	vitrified oxidised lining
				30	2	grey fired clay
				41	1	SHC fragment
				39	1	vitrified and oxidised wall with possible low-density attachment
				209	7	fragments of denser iron slags
				72	assm	bagged dust
1016	Slot D	[1003]		569	1	quartz cobble
				155	1	85x50x50mm; unclear if this is a whole SHC; it is deformed; coarsely prilly
				242	1	70x70x60mm; unclear if this is a whole SHC; very coarsely prilly, with charcoal moulds
				509	1	85x115x70mm; large dense SHC; probably has earlier small SHC pushed down below; burr whole 115mm width,
				339	1	100x100x70mm; open textured SHC formed of fine prills; moderately large charcoal moulds
				188	1	deformed SHC with dished smooth hematised top; 50x85x60mm
				92	1	45x70x40mm; small SHC formed of fine open prills; planar rear attachment
				104	1	70x70x25mm; slab-like lining-dominated SHC or tongue
				41	4	stones
				89	1	concretionary lump
				368	9	lumps of blebby iron slags, not themselves SHCs
				54	12	slag debris
				36	2	vitrified oxidised lining

				52	1	small coarsely prilly slag lump with maroon surface, possibly incipient SHC
				270	3	fragments of dense SHCs
				46	1	lumpy gravelly lining slag
				76	assm	bagged dust
1016	Slot D	[1003]	bag 4 27-36	177	1	most of a fragmented dense SHC
				312	4	similar elongate masses of gravelly lining slag
				36	1	gravelly lining slag lump
				89	1	equant blebby gravelly lining slag lump
1016	Slot D	[1003]	piece 27	282	1	fragmented slab of vitrified oxidised wall, passing forwards into attached lining slag (part of something now fractured away)
1016	Slot D	[1003]	piece 28	187	1	block of open-textured prilly slag; locally rusty; probably most/all of an SHC, but no contact or obvious fracture
1016	Slot D	[1003]	piece 30	174	1	the margin of a dense open finely prilly SHC; could even be a whole SHC but not obviously so
1016	Slot D	[1003]	bag 5 37-46	85	2	large rounded gravelly slag lumps
				87	1	slag piece with a dimpled base extending laterally into a crude rod; internally appears microprilly, so likely to be SHC-related and not from smelting
				91	1	rather equant slag lump; 35x50x35mm; probably an SHC fragment
				57	1	dense prilly open-textured slag - presumably SHC fragment
				49	2	vitrified pale lining
				47	3	smaller fragments of dense open-textured prilly slag
1016	Slot D	[1003]	piece 43	69	1	concretion
1016	Slot D	[1003]	piece 38	78	1	irregular iron-bearing concretionary lump
1016	Slot D	[1003]	bag 5 (47-56)	41	1	spall of pebble (quartz-tourmaline rock?)
				112	4	irregular blebby masses of gravelly lining slags
				145	3	irregular blebby and rusty iron-rich dense slags
				74	1	fragment from the margin of a tapslag cake
				8	4	debris
				52	1	fragment of irregular small SHC; prilly base, lobate and maroon on top
1016	Slot D	[1003]	bag 6 57-66	76	3	blebby/prilly iron slag lumps

				24	1	dense iron slag with shiny SHC base
				24	1	blebby gravelly slag lump
				33	1	vitrified sandy/gravelly pale lining - little clay at all
				121	4	stone
1016	Slot D	[1003]	bag 7 67-76	12	1	stone
				138	7	blebby slags, lining-influenced and gravelly
				2	3	debris
				107	2	rusty accretionary lumps, probably blebby iron slags
1016	Slot D	[1003]	ore 69	32	1	pebble fragment - coarse aplite?
1016	Slot D	[1003]	bag 8 (77-92)	29	1	dense slag fragment, probably SHC fragment
				25	2	vitrified oxidised lining
				61	5	blebby gravelly lining slag
				78	5	blebby iron-rich slags mostly of only moderate density
1016	Slot D	[1003]	bag 5 9 93-97	885	1	95x115x85mm; complex rusted slag ball, including well-formed burr, dense slags (SHC) and rusted charcoal-rich slags; unclear relative roles of depression and deformation in creating this odd piece
				300	1	80x70x65mm; SHC with planar attachment; prilly charcoal rich slag below; blebby/graelly lining on top
				180	1	85x90x40mm; very irregular and oblique this concavo-convex SHC; wide burr; prilly below; bowl smooth on top where not obscured by more prilly slag
				217	1	65x90x54mm; finely prilly below; wider maroon surface prills above; some lining on upper surface
				9	1	stone
				76	2	prilly and charcoal-bearing slags in irregular fragments
1016	slot D	[1013]	BTIH21 3 and 4/4	1118	56	low-density slags, mostly blebby and gravelly
				138	1	tapslag
				17	1	slagged stone
				453	14	stones
				58	4	slagged and vitrified oxidised lining
				310	8	slag of rusty concretionary appearance, forming rounded lumps
				52	1	rusty dense piece - unclear if metallic iron, or stone with magnetic rust attached
				49	2	dense slags in a sheet-like morphology; small pieces
				438	20	dense slag fragments, prilly and charcoal bearing
				480	4	fragments from very dense SHCs, with dished hematised tops on thick dense layer; bases finely prilly/dimpled, possibly with tool marks

				328	4	other lower density SHC fragments
				42	1	small concavo-convex puck in low-density slag; just possibly an SHC
				79	1	small gravelly irregular mass in somewhat tongue-like form
				270	1	dense SHC with well-formed burr and dished hematised top; folded in half
				105	1	60x70x40mm; coarsely prilly SHC with glazed top; low density
				175	1	extremely irregular probable SHC formed of lobes of low-density gravelly slag
				444	1	75x115x75(50)mm; rather irregular dense SHC; hematised top with irregular raised lobes; base finely prilly
				456	1	85x100x45mm; very dense SHC; uncertain if complete; internally finely prilly with lobate margin
1016	slot D	[1013]	BTIH21 1 and 2/4	1153	1	120x130x110mm; very odd SHC; shows vertical hearth wall with flows, separated from dense, but vertically orientated SHC bowl, by more charcoal-rich slag with blebby lining slag inclusions; it is unclear f ths was formed in a very narrow hearth, or more likely by rotation of the lower part during extraction
				386	1	dense biconvex lump, probably an accreted SHC
				343	1	75x100x60mm; irregular prilly biconvex mass, probably hot deformed SHC
				369	1	65x95x60mm; prilly SHC attached to large slab of hearth wall
				882	11	stones
				236	1	65x80x40mm; plano-convex SHC; internally lobate
				168	1	70x80x30mm; dense prilly slag forming SHC with smooth dished hematised top; small fragment missing
				70	1	60x55x25mm; low density gravelly slag, planar glazed top; lobate/impressed base
				150	1	65x80x25mm; neat dense SHC; flat topped; slightly prilly base
				574	7	slag of rusty concretionary appearance, forming rounded lumps
				72	4	slagged and vitrified oxidised lining
				412	22	smaller lumps of gravelly low-density slag
				895	10	larger lumps of gravelly low-density slag; some of these could be crude open textured SHCs or parts thereof
				31	9	slag scraps
				318	1	approximately cubic lump of low-density slag; unclear if a deformed SHC or something else
				376	9	fragments of dense, prilly slag, often with charcoal
				524	3	fragments from small dense SHCs
				213	3	rounded lumps of dense slags, possibly SHC fragments
1016	Slot D	[1003]	BTIH21	100	4	stones
				118	3	stones with slight slagging?
				126	2	vitrified oxidised lining
				264	5	rounded rusty slag lumps/concretions
				800	14	dense slag, mostly finely prilly, some with charcoal
				481	16	low density gravelly slag in blebby morphologies

				13	12	slag debris
				296	3	large fragments of small SHCs
				72	1	60x60x40(20)mm; small puck; rusted accretionary base; top flat with deep fuel impressions and a raised lobe
				120	1	60x90x40mm; irregular lump of gravelly slag, not morphologically certainly an SHC
				239	1	60x105x40mm; dense SHC with sharp basal angle; charcoal on top; probably a discrete SHC, but could be a fragment of something larger
				161	1	irregular tongue-like piece; gravelly on top, lobate below
				67	1	plano-convex mass formed of large low-density lobes; probably a small proto-SHC
				269	1	very irregular SHC; wall attachment one side; upper maroon lobate surface appears bent - probably hot deformation
1016	Slot D	[1003]	BTIH21 bag1 of frag 1 and 2	319	1	(now 3) sheet of vitrified oxidised-fired hearth wall
				1470	1	complex mass wih SHC-like top, but it rests on prilly slags angling down into hearth; slightly incomplete on distal edges; top surface shows raised maroon lobes; 105x170x90mm
1016	Slot D	[1003]	BTIH21 bag2 frags 3 to 10	277	1	complex piece formed of narrow rod-like masses with tubular vesicles and dense hard shiny surfaces; maybe a hot deformed piece scarped from bottom of smithing hearth?
				295	1	complex piece formed of imbricated crust fragments; probably a discrete hot deformed SHC
				154	1	arcuate concavo-convex piece; probably a thin highly dished SHC; 45x90x25mm
				134	1	attachment of SHC onto oxidised fired wall
				131	1	unusual tongue-like piece; gravelly on top; base smooth with thin veneer of maroon (blast penetrated below tongue?); 65x110x35mm
				86	1	irregular (contorted?) mass of gravelly lining slag
				194	1	70x65x45mm; smooth topped mass; probably an SHC; prilly base
				152	1	55x75x40mm; small slightly irregular plano-convex mass; probably a discrete SHC
1016	Slot D	[1003]	bag 10 frags98-102	210	2	bulbous lumps of lining slag
				208	1	corroded iron - appears to be bar turned through 180 degrees; bar may be 15mm diameter and 80mm folded length; so c180mm long originally (frag 100)
				130	1	gravelly ferruginous concretion with iron slag
				112	1	small puck; lobate base deeply impressed charcoal moulds on top; possibly discrete SHC
1016	Slot D	[1003]	frags 21-26	10	3	vitrified oxidised-fired ceramic
				4	1	ferruginous concretion with slag
				10	3	small scraps of iron slag
1016	Slot D	[1003]	bag 3 frags 11-20	100	2	flowed slags with shiny and dimpled base - unclear if these are from smithing or smelting

				100	3	blebby low-density slags
				46	2	fragments of porous iron slag
				221	3	lumps of dense but lobate and 'gravelly' slag
1016	Slot D	[1003]	frag 16	80	1	ferruginous concretion on iron starting to explode
	slot G	[1013]		649	1	gravelly concretion showing dimpled slag surface; probably an SHC but it is not known if the iron in the concretion is inside the SHC or not
				1747	1	large mass of slag extending to hearth floor below latest SHC; a very complex block; prilly slag, probably at least 2 phases of development; not a single work period
				47	2	small ferruginous concretions, presumably on iron
				167	1	stone
1019	NE quadrant	[1018]	BTH21	220	1	fragment from tapslag cake, base has sandstone and gravel inclusions, slag locally honeycomb
				33	1	concretion in gravelly clay around (apparently, but not seen) iron
				100	1	curving sheet of slag; exterior shows sandy contact; interior shows smooth maroon surface; shrunken onto underlying fibrous crystals; 10-12mm thick.
1019	NW quadrant	[1018]	BTH21	84	1	tapslag in fairly small flows; vesicular in core; weathering slightly greenish
				127	1	exploded concretion on iron, now in several fragments; iron probably an irregular piece -bloom fragment?
1026	slot A	[1003]		511	1	stone
				33	1	heavily worn small fragment of tapslag
1028		[1017]	BTH21	22	1	gravelly concretion on iron
				36	1	fragment of well-formed fired gravelly clay; exterior buff; slight footring-like elevation; interior more orange, doesn't reach good surface; interpretation uncertain, not necessarily metallurgical
				6	1	small abraded fragment of similar fired clay
1031	Slot F	[1003]		261	10	small gravelly concretions - probably most/all on small slag fragments
				1166	1	equant block of slag; probably largely a coherent SHC, with a lining-rich indurated top overlying a thick layer of open-textured small prills
				348	2	slag attached to hearth wall
				175	11	fragments of prilly iron slag
				16	assm	debris

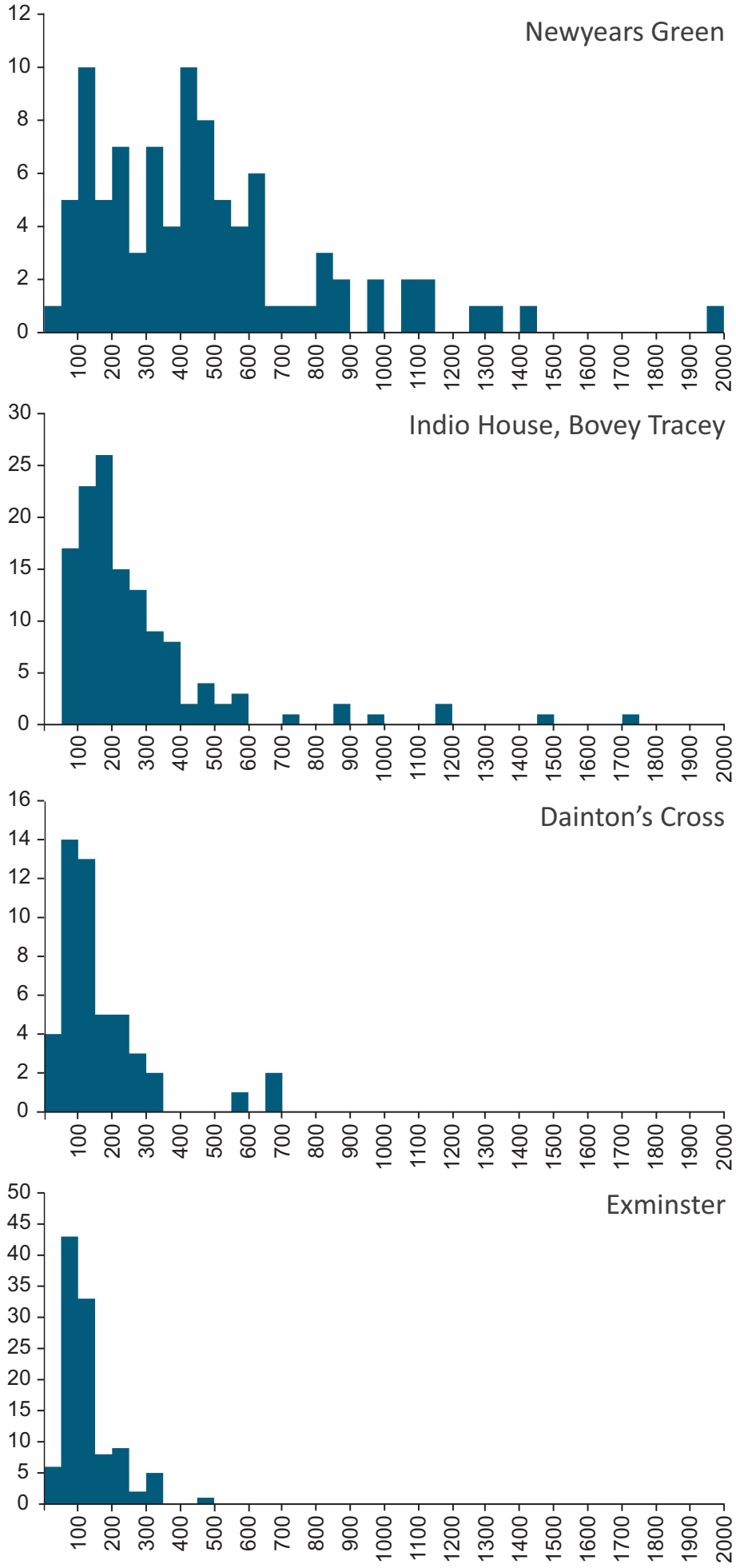
1035		[1006]	BTIH21	88	1	dense vesicular slag in two layers - upper layer highly vesicular with irregularly lobate top, lower layer columnar fabric with possible tubular vesicles; probably but not certainly a fragment from an SHC
1046	slot H	[1003B]		72	1	low-density slag in gravelly iron concretion
				74	2	blebby low-density slag lumps
				12	1	iron slag with charcoal moulds
1047		[1046]	BTIH21	121	7	small sandy concretions, mostly straight and rod-like; hint of head on two, one curved - so potentially nails; largest piece less clear morphology

*Table 2: facies of archaeometallurgical residue by context. Weights in g. * = probably mislabelled, [1046] is a cut, should be a fill of [1003b],.*

Context	Cut	Notes	Residue							Other		
			SHC	dense smithing	low density smithing	hearth ceramic	tapslag	slag rod	Indet.	*total*	ore?	conc.	iron
707		G1	1599	121	63		18			*1801*	121	656	
707/708					18					*18*		55	
708		G3		48	80		130		261	*519*		38	186
1008	[1004]	surface		55						*55*		360	125
1009	[1004]	Slot I	397						266	*663*			
1011	[1004]	Slot 2	1124				1350		30	*2504*			13
1012	[1004]	Slot 2	1954	159		165	1103		24	*3405*	341		
1014 (S3)	[1004]	Slot 3	14158	3741	5247	1522	261	48	636	*25613*		2739	
1014 (SE)	[1003]	Slot E	10939	2966	2304	547				*16756*		1545	
1016 (SB)	[1003]	Slot B	825	73						*898*			
1016 (SC)	[1003]	Slot C	916	450	347	126				*1839*			
1016 (SD)	[1003]	Slot D	15778	3531	3535	1010	212		100	*24166*		762	208
? (SG)	[1003b]	Slot G	1747							*1747*		696	
1019	[1018]	NE + NW					304		100	*404*		33	127
1026	[1003]	Slot A					33			*33*			
1028	[1017]					42				*42*		22	
1031	[1003b]	Slot F	1166	523						*1689*		261	
1035	[1006]		88							*88*			
1046 *	[1003b]	slot H		12	74					*86*		72	
1047	[1046]									*0*		121	
	Total		*50691*	*11679*	*11668*	*3412*	*3411*	*48*	*1417*	*82326*	*462*	*7360*	*659*
	% of residue		62%	14%	14%	4%	4%	0%	2%				

Table 3: Comparison of the overall SHC weight-frequency distribution with that of other selected Romano-British assemblages from southern Britain, ordered by mean weight. Weights in gram.

Site:	**Cleevelands**	**Exminster**	**Uffington**	**Ipplepen**	**Ebrington**	**Neath**	**Ware**	**Bovey Tracey**	**Newyears Green**	**Mantles Green**	**Kingstone**	**Dymock**
Source:	Young 2016a	Young 2014b	Young 2015	Young 2025	Young 2016b	Young 2013, 2014a	Young 2014d	This report	Young 2021	McDonnell 1985	Young 2012	Young & Kearns 2010
Site type	Rural	Rural	Rural	Settlement	Rural	*Vicus*	Small town	Mixed	Iron making	Iron making	Iron making	Iron making
count	176	107	57	49	37	47	70	131	93	29	15	10
min. wt	44	32	36	44	53	74	36	52	46	200	230	112
max. wt	530	482	614	640	628	630	952	1747	1975	1700	1035	3885
mean wt	125	127	137	159	180	244	246	279	472	550	565	1032
% <150g	73%	77%	72%	63%	46%	32%	44%	31%	17%	-	-	20%
% <500g	99%	100%	98%	94%	97%	89%	82%	89%	65%	59%	47%	60%
% >1000g	-	-	-	-	-	-	-	3%	9%	7%	7%	20%
% >3000g	-	-	-	-	-	-	-	-	-	-	-	10%


Newyears Green
Indio House, Bovey Tracey
Dainton's Cross
Exminster
0 2 4 6 8 10 12
0 5 10 15 20 25 30
0 2 4 6 8 10 12 14 16
0 5 10 15 20 25 30 35 40 45 50
100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000

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