

AN ANGLO-SAXON SCRAP METAL ASSEMBLAGE FROM SHAVARDS FARM, MEONSTOKE

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ABSTRACT

A programme of controlled metal-detecting around a number of prehistoric, Roman and Anglo-Saxon sites at Shavards Farm, Meonstoke recovered an Anglo-Saxon scrap-metal (lead) assemblage that probably comprises ploughed out workshop waste which may originally have been collected together for re-use. The finds offer fresh insights into Anglo-Saxon metalworking practices and the production of lead items for use in textile manufacturing crafts, such as spinning.

INTRODUCTION AND CIRCUMSTANCES OF RECOVERY

A discrete cluster of 37 lead pieces, with a collective weight of 861.65g, was recovered in 1988 by a metal-detectorist (R. Chambers) during a single afternoon from arable land situated near Shavards Farm, Meonstoke. The finder informed the farm owners and the artefacts were deposited within the Shavards Farm Collection, which since the 1980's has been available for study (Iles & Stedman 1998; Stedman & Stoodley 2000, 133; Ulmschneider 2000, 159; Entwistle *et al.* 2005, 136). The find spots were plotted using offsets based upon the National Grid and the distribution was found to extend over an area of c. 6.5 m on a NNW-SSE alignment being concentrated at the base of the slope of a low saddle-back ridge of Middle Chalk that rises to 70 m OD. The finds lay to the NNE of a series of prehistoric and Anglo-Saxon sites (Devenish & Champion 1977, 37; Hughes 1985; 1986; King 1986; 1987, 13; King & Potter 1990, 196; Stoodley & Stedman 2001, 129). With the field being regularly ploughed it seems likely that the assemblage had recently been disturbed from a location farther upslope.

The metalwork exhibits deep patination, clean unworn edges and a general absence of fresh surface abrasions; it had probably been re-deposited within colluvium hill-wash rather than originating from previous excavation spoil heaps.

SITE LOCATION AND ARCHAEOLOGICAL BACKGROUND

Shavards Farm lies directly to the NE of Meonstoke village (Corhampton & Meonstoke Parish). The site is low lying (65 m OD) and is situated at the edge of the Meon Valley terrace above the floodplain. The river is flanked by chalk downland ridges: on the east side the valley rises to an elevation of 195 m OD at Winchester Hill, while on the opposite side it ascends to a comparable height at Beacon Hill. Early Anglo-Saxon artefacts recovered on the lower western slopes of the Meon Valley, to the NW of the present village of Exton, are suggestive of cemetery and/or settlement sites (Biddle & Kjølbye-Biddle 2007, 199; Biddle 2007, 75; Stedman 2008, 130–1, fig. 2).

The assemblage was retrieved to the south of a 10.5 hectare arable field (SU 616207) which lies to the east of the River Meon. In addition to these finds, late-prehistoric and Roman pottery, late-Roman coins and medieval ceramics were also recovered (Entwistle *et al.* 2005, 138–40, 150). Seven mid to late Anglo-Saxon dress-accessories and an early Anglo-Saxon iron spear-butt ferrule have also been retrieved from the ploughsoil on the ridge (Ulmschneider 2000, 159; Entwistle *et al.* 2005, 140–3, fig. 7. 147). Four early Anglo-Saxon brooches were recovered from plough-soil at the base of the ridge and test-pitting over the findspots

revealed a post-hole and a pit feature that contained a worn early eighth-century AD *sceatta* coin (Stedman & Stoodley 2000; Stedman & Stoodley *in prep*; Entwistle *et al.* 2005, 138, fig. 7, 147).

An Anglo-Saxon settlement and a prehistoric ring-ditch (Hughes 1985; 1986) are situated on the ridge above the findspot. The Anglo-Saxon features consist of post-built structures, a sunken-featured building, numerous pits, a flint/chalk track or working area and a small-bowl furnace, which possibly dates from the eighth to ninth-centuries AD (Hughes 1985; 1986; Ulmschneider 2000, 44, 159). Stratified artefacts include middle to late Anglo-Saxon flint, chalk and calcite-tempered ceramics, Niedermeidig lava and sandstone quern-fragments plus faunal and organic plant remains. Ferrous iron-working activity was attested by slag. Three unused crucibles were also excavated which are indicative of non-ferrous metalworking. Textile working might also be demonstrated by finds of a bone comb and pin and a chalk spindle-whorl (Hughes 1985, 19; 1986, 2–8).

A Roman aisled building is situated c.100m to the NNE of where the assemblage was discovered and cut into its collapsed gable wall were several post holes and a sunken-featured building of early Anglo-Saxon date (King 1986, 56; 1987, 13; King & Potter 1990, 196). Metal-detectorists found two Anglo-Saxon artefacts of fifth-century date in the vicinity of the building (Ager 1996, 111–4; Stedman 2004, 113). A prehistoric ditch which was later incorporated into an Anglo-Saxon cemetery is situated c.200m to the NNE of the assemblage's location (Devenish & Champion 1977, 37; Hughes 1988, 13–16; Stoodley & Stedman 2001, 129).

THE METALWORK ASSEMBLAGE

The assemblage contains 37 lead pieces consisting of a single piece of scrap, six ingots/runners, two worked metal off-cuts, 24 spindle-whorls, two perforated discs, a copper-alloy ring and a possible spindle-whorl/bead/toggle or bag fastener. All the artefacts were unstratified. The artefacts were examined visually; no metallurgical analysis of metal composition took place. They have been categorised and

situated within their wider regional or national context. Their non-ferrous metalworking 'chain of operations', in which a given product is taken forward from the previous stage as raw materials, is given (Bayley 1992, 745–7, fig. 316; Caple 2006, 13–17). This is preferred to a metrical analysis which is more likely to elucidate final use or post-deposition deterioration than the actual manufacturing process itself (Scull 1990, 188). Rather than being cast in moulds, the majority of the artefacts were probably gently heated and pushed into shape before being allowed to cool. Several of the artefacts may have had complex life histories: being used for a variety of different purposes, before being assembled together as scrap metal for recycling or discarded as work shop waste (Hinton 2000, 19; Caple 2006, 13; Walton Rogers 2007a 25, 30).

Lead-alloy working debris

SFM 207. Fragment of lead-alloy runner/or spillage of sub-rounded section. L. 13 mm. W. 9 mm. T/E. 8 mm. T/E. 4 mm. W. 3.3 g. In good condition with no casting; flash marks present.

Discussion

Single examples of runners are not viewed as reliable evidence for copper-alloy working because they might have been produced when metals came into contact with any type of fire (Bayley 1992, 779, fig. 339. 4280; Bayley 1993, 1237). More secure evidence for non-ferrous metalwork waste is known from a number of Hampshire's Anglo-Saxon settlements. Finds of scrap bronze, slag and an assemblage of metalworking residues suggestive of both ferrous and non-ferrous metalworking were recovered from Chalton (Addyman *et al.* 1972, 13–31). Three lead fragments comprising a piece of melted waste, a rod and a piece of folded sheet were excavated from Abbots Worthy (Pit F7447; Context 7448) (Davies 1991, 42, fig. 32.6). Wider metalworking activities can also be inferred from ferrous slag and lead solder waste generated from pewter casting (Wilthew 1991, 45–6, 27, fig. 22, 76). Stratified copper-alloy and lead strip fragments indicative of possible metalworking waste were also recovered from Cowdery's Down (Millet

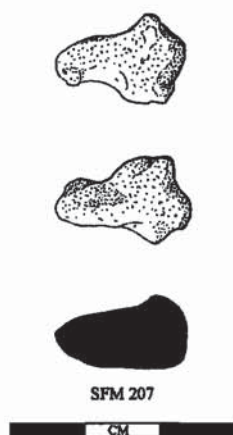


Fig. 1 Lead-alloy runner fragment

& James 1983, 151–276). While excavations at Faccombe Netherton produced evidence for late Anglo-Saxon casting of tin, bronze, leaded-bronze, gold ingots as well as possible mercury-gilding and silver-inlay work (Fairbrother 1990, 244–54, 269–272; Webster 1990, 254–267; Oddy *et al.* 1990, 267–9).

Lead ingot/runners

SFM 4. Cast lead piece with two equal flat-face sides forming a probable roughly sub-angular plano-convex bun ingot/runner. L. 32 mm. W. 25 mm. T. 8 mm. W. 21.48 g. Clean and unworn with some possible surface inscribed lines and edge cut-marks indicative of working.

SFM 5. Cast lead piece with two equal flat-face sides forming a probable roughly sub-angular plano-convex bun ingot/runner. L. 25 mm. W. 18 mm. T. 3 mm. W. 5.99 g. Clean and unworn edges present with some possible surface inscribed lines, possibly cut with snips.

SFM 6. Cast semi-circular lead piece forming a probable roughly circular plano-convex bun ingot/nut/runner. L. 26 mm. W. 25 mm. T. 15 mm. W. 24.64 g. Worn molten surfaces present.

SFM 7. Cast lead piece with two equal flat-face sides forming a probable roughly sub-angular plano-convex bun ingot/runner. L. 49 mm. W. 35 mm. T. 6 mm. W. 35.16 g. Clean un-abraded surfaces with inscribed lines, a single cut-mark, and sparse tiny squared punch marks.

SFM 8. Cast lead piece with two unequal flat-face sides forming a probable sub-rectangular ingot/vessel plug of plano-convex section. L. 28 mm. W.

16 mm. T. 12 mm. W. 28.19 g. Smooth surfaces and clean edges, wider and thicker to one side.

SFM 9. Cast lead piece with two equal flat-face sides and clean edges with heavy surface pitting forming a probable roughly sub-angular plano-convex bun-ingot/runner. L. 27 mm. W. 22 mm. T. 3 mm. W. 11.95 g. Some sparse sub-angular ferrous hammer-scale inclusions and an adhering globular copper-alloy inclusion overlay a number of parallel tooling marks.

Discussion

Six plano-convex bun ingot/runners with a collective weight of 127.41 g. and a full-weight range of 5.99–35.16 g. can be characterised as fairly regularly shaped as-cast masses of metal (Bayley 1992, 779, 781, 785). Four out of six are distinctively sub-angular (SFM 4, 5, 7 & 8) whilst one is more circular (SFM 6) and the final example is semi-circular (SFM 9) (Bayley 1992, 785–6, fig. 346, 4216, 4282–3, 837, 839). Four (SFM 4, 5, 7 & 9) reveal scored/inscribed lines and edge-trimmed cut-marks, whilst SFM 7 exhibits tiny and sparse squared tool or punch marks. The surface marks of the artefacts indicate that they were used by craft workers as supports, tools or as working 'anvils' for cutting, decorating and 'working up' other metalwork pieces (Bayley 1992, 785–6, fig. 346, 4116, 814, 834, 839). SFM 8 was probably poured or cold pressed into a temporary cavity of a workshop floor to form the shape of a vessel plug or patch (Bayley 1992, 781, 785–6, fig. 346, 4216, 806, 837). SFM 9 has ferrous hammer scale and copper-alloy inclusions indicating that it was produced in a work shop or within its environs where other types of metals were worked.

There is a general absence of lead-ingots from Anglo-Saxon rural settlements in Hampshire, although a crude lead-ingot of Roman date was excavated at Neatham (Alton) (Millett & Graham 1986, 111, SF.153). Outside the county, five ingots/coin-stock pieces dating from the mid Anglo-Saxon period were recovered from the Royal Opera House, Covent Garden (London) (Malcolm & Bowsher 2003, 274, fig. 168, M.102, M.163; M.173; M.216; & M.411), whilst two further ingots excavated from Coppergate, York, are broadly similar to the Meonstoke examples (Bayley 1992, 785–6, fig. 346, 4282–3). A further piece

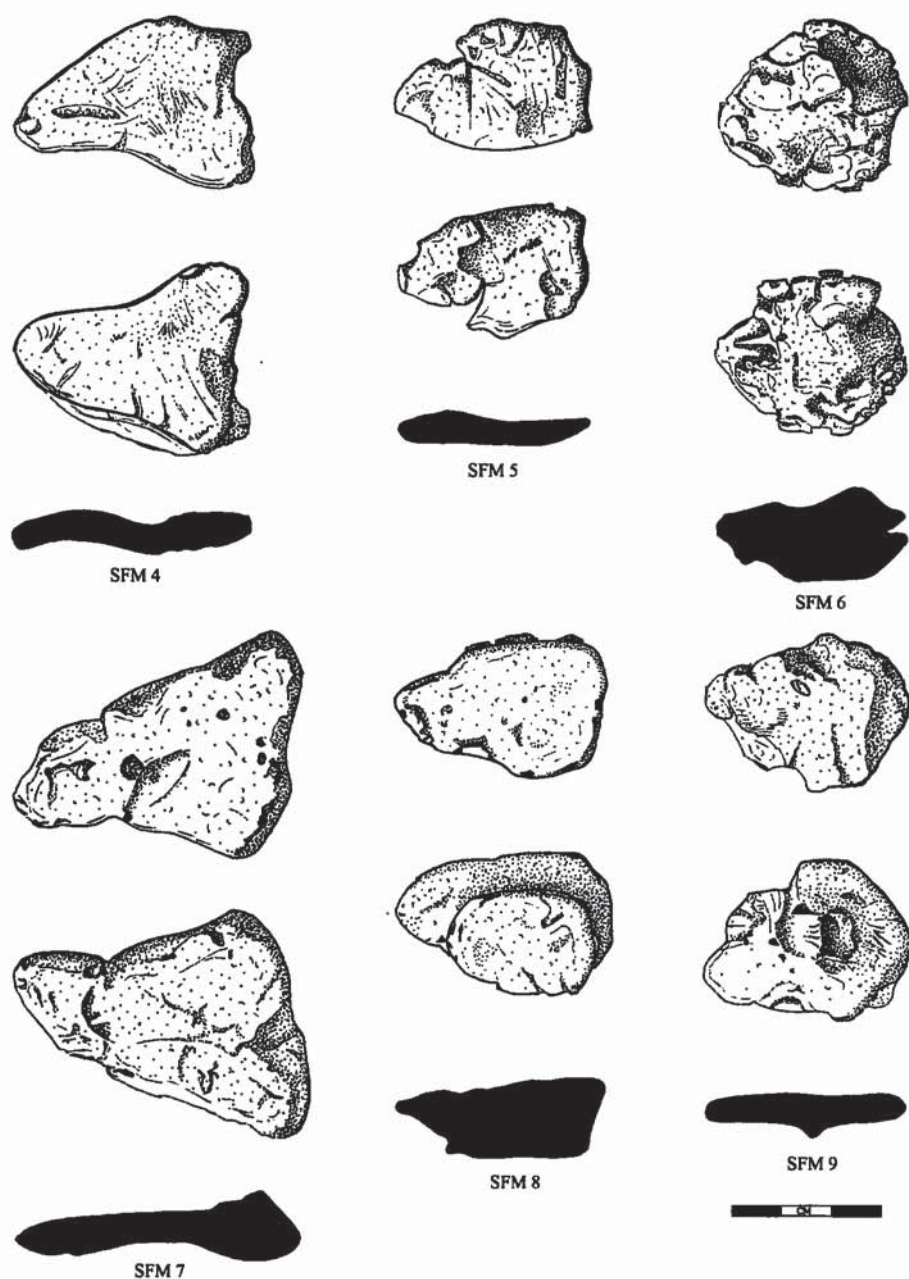


Fig. 2 Lead ingot/runners

reminiscent of the plano-convex bun-shaped ingots was recovered from Mucking (GH. 41) (Essex) (Hamerow 1993, 71, 171, fig. 59, 216, fig.104.1). The Meonstoke lead ingots were

probably used as 'anvils' to work up small metal items, like the jeweller's plate recovered from the late seventh-century smith's grave at Tattershall Thorpe, (Lincolnshire) and similar items

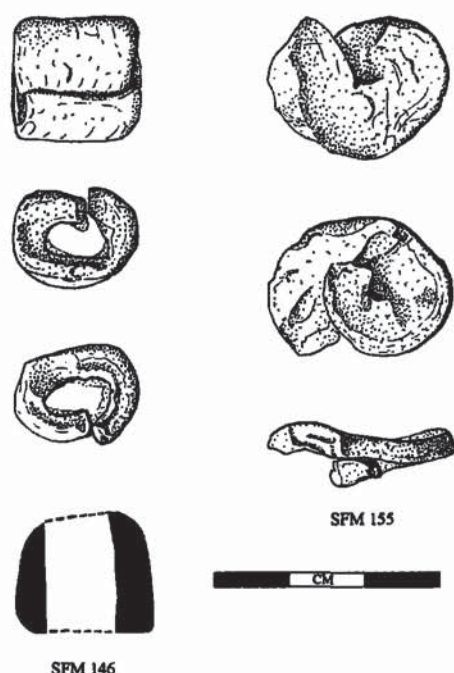


Fig. 3 Worked metal off-cuts

from Anglo-Scandinavian York (Hinton 2000, 5–7, 71–5, 106, 72, fig. 46, 117, 73, fig. 47, 74, fig. 48; Bayley 1992, 785).

Worked metal off-cuts

SFM 146. Worked metal off-cut with two flat-faces of equal size and vertical sides. L. (extent) c. 45 mm. D. (of worked object) 16 mm. H. (of object) 16 mm. T. (of worked object wall section) 5 mm. Diameter of tapered end and flat-face 'D' shaped hole 7 mm. W. 20.71 g. Worked around a former, possibly a rod, into a thinner bar with overlapping mildly-tapering terminal corners.

SFM 155. Worked metal off-cut counter form with two equal flat-face and straight-edge sides. L. (of worked object) 25 mm. W. (of worked object) 20 mm. T. (of worked object) 5 mm. W. 15.99 g. Object worked around a former, possibly a bar with cut terminal ends, into an object with an overlapping folding section.

Discussion

The worked metal off-cuts have a collective weight of 36.70 g. The uniform thickness of

the rectangular-cross section of SFM 146 is indicative of an off-cut from a larger piece that like SFM 155 had been worked around a former, possibly a bar (Bayley 1992, 785, fig. 345, 4089). The objects are reminiscent of a folded lead-sheet/net-weight recovered from a Roman pit (43) cut by a shallow later Saxon feature at Portchester (Webster 1975, 84–5, 232–3, fig 123.167). An offcut or melting stock piece found at Brook Street, Winchester, might date to the early ninth-century AD (Biddle 1990, 170.29.172, fig. 37). The metal off-cuts could relate to rods, sheets or strips that were worked down from smithing ingots (Bayley 1992, 781).

Spindle-whorls

Coppergate form (A1)

SFM 115. Coppergate Form (A1) flattened hemispherical lead spindle-whorl with one flat slightly convex face and single curved domed face. D. 33 mm. H. 5 mm. W. 27.95 g. D. (of the tapered-end circular central hole) 10 mm; (circular fluting recessed flat-face central hole) 8 mm. Sparse surface sub-angular ferrous hammer-scale inclusions are present. Serrated notching associated with tapered end and perforation holes, as well as a single deep transverse notch running from the upper central-hole to the section edge suggesting reuse. Exterior flat-face surface has two parallel-scored lines alongside a deep scoring line associated with snapped faceting edge removal.

SFM 3. Coppergate Form (A1) miscast/misshaped or misshaped flattened hemispherical lead spindle-whorl of one flat-face side. D. 28 mm. H. 10 mm. W. 26.74 g. D. (of the slightly off-centre sub-rounded hole) 7 mm (at the flat-face); diminishing to 6 mm (at the tapered-end). Clean exterior surfaces, although the worn unsymmetrical sides were edge-clipped. Worn transverse notch and scored line present on the flat-face and serrated notching associated with the tapered end suggest reuse.

SFM 147. Coppergate Form (A1) flattened hemispherical lead spindle-whorl with one flat slightly convex face and single curved domed face. D. 25 mm. H. 6 mm. W. 15 g. D. (of flat-face circular fluting hole) 10 mm; (tapered-end central-fluting sub-rounded hole) 10 mm. A few surface abrasions present alongside a single pitting impression. The perforation holes and tapered-end have two serrated notched grooves suggesting possible reuse. Oblique

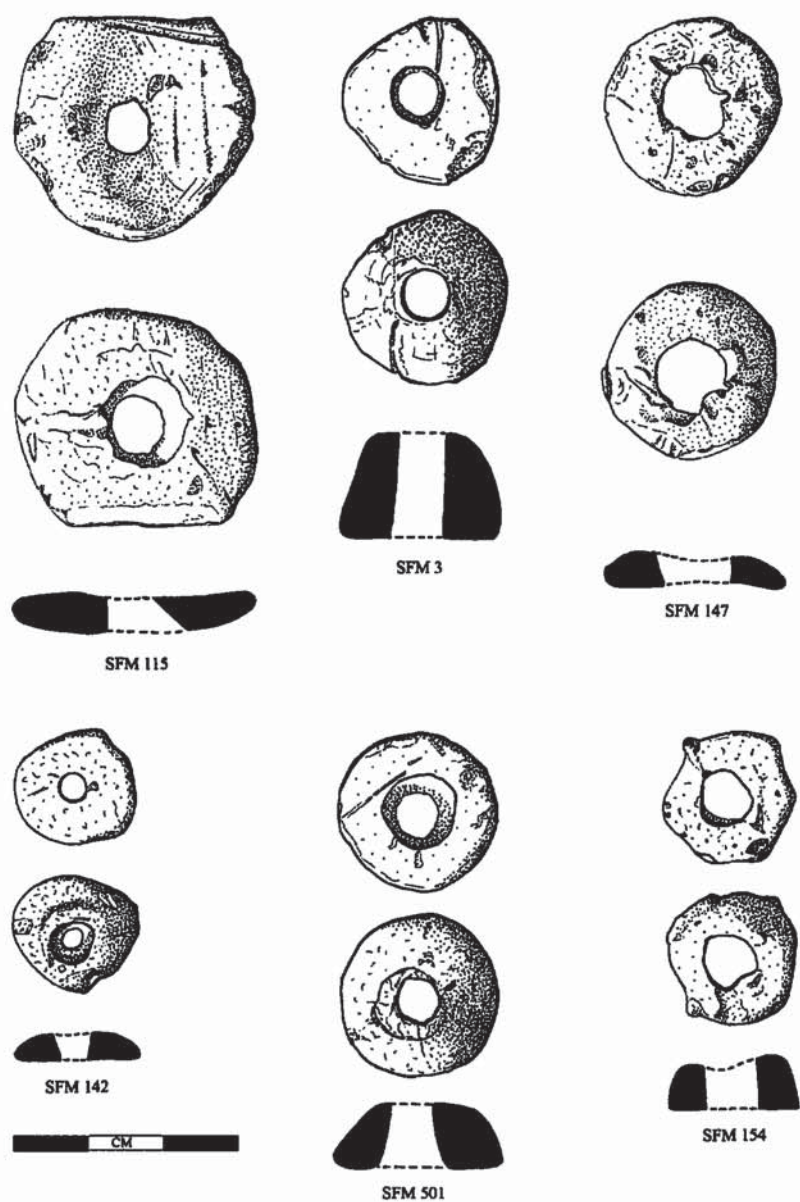


Fig. 4 Coppergate Form (A1) spindle-whorls

transverse score line, or notch, is present running from central hole to section edge. Sparse surface sub-angular ferrous hammer-scale inclusions are present.

SFM 142. Coppergate Form (A1) miscast/misshaped or misshaped flattened hemispherical lead spindle-

whorl with one flat-face side. D. 15 mm. H. 3 mm. W. 4.20 g. D. (of single stepped off-centre sub-rounded hole, possible drilled countersunk perforation, tapered end hole) 6 mm; diminishing to 3 mm (flat-face). Inscribed notches present on the edges of the tapered end sub-rounded hole. Worn and heavily

pitted single step profile with a single upper concentric ridge with four radial grooves or inscribed lines on the flat-face. Edge clipped in antiquity at right-angles.

SFM 501. Coppergate Form (A1) cast or cold-pressed hemispherical lead spindle-whorl with one flat-face side. D. 23 mm. H. 10 mm. W. 19.66 g. D. (of central sub-rounded fluting hole) 9 mm (at the flat-face hole); diminishing to 8 mm (tapered-end). Flat-face and tapered end exhibits serrated notches indicating reuse. Clean surfaces and edges; general surface pitting and scoring/inscribed lines evidence of wear in antiquity.

SFM 154. Coppergate Form (A1) miscast/misshaped or misshaped hemispherical lead spindle-whorl with one flat-face side. D. 18 mm. H. 5 mm. W. 8.98 g. D. (sub-angular to irregular straight-sided hole) 7 mm (at the flat-face); diminishing to 6 mm (at the tapered end). A single serrated notch present at the tapered-end with four flat-face radial-lines or notches configured in a semi-cruciform shape around the flat-face indicating possible reuse. Badly worn and pitted with angular-faceted sides; edge-clipped in antiquity.

SFM 144. Coppergate Form (A1) cast or cold-pressed hemispherical lead spindle-whorl with one flat-face side D. 20 mm. H. 10 mm. W. 15.90 g. D. (of central sub-rounded fluting hole) 10 mm (at the flat-face); diminishing to 7 mm (at the tapered end). Little evidence for surface wear although edge-clipped in antiquity. Flat-face exhibits possible punched marks arranged in a semi-cruciform configuration. Four serrated notches present on the upper edges of the tapered-end hole might indicate reuse.

SFM 153. Coppergate Form (A1) cast or cold-pressed hemispherical lead spindle-whorl with one flat-face side. D. 22 mm. H. 17 mm. W. 33.54 g. D. (sub-rounded perforation) 8 mm (at the flat-face); diminishing to 6 mm (at the tapered end). Single inscribed concentric ring around the flat-face with a barely perceptible single notch present at the tapered end. Clean surfaces and some deeply scored abrasions and chipping present. Side wall of the spindle-whorl scored with two transverse lines.

SFM 148. Coppergate Form (A1) miscast/misshaped or misshaped hemispherical lead spindle-whorl with one curved flat-face side. D. 23 mm. H. 25 mm. W. 70.50 g. D. (central straight-sided sub-rounded hole) 6 mm (at the flat face); diminishing to 4 mm (at the tapered end). Appending molten lead deposit associated with the flat-face. Clean surfaces with no chipping or damage present. Serrated notches present on the tapered end and flat-face perforation which might indicate reuse. Single transverse score line running from tapered end to flat-face.

SFM 143. Coppergate Form (A1) miscast/misshaped or misshaped hemispherical lead spindle-whorl with one flat-face side. D. 27 mm. H. 16 mm. W. 43.07 g. D. (circular sub-rounded to straight-sided central hole) 9 mm (at the flat-face); diminishing to 5 mm (at the tapered-end). Worn condition with possible practice drill-marks present on all exterior surfaces. Deep flat-face perforation leaving a recessed internal tapered end hole with notches associated with both tapered end and flat-face holes indicating possible reuse.

SFM 140. Coppergate Form (A1) miscast/misshaped or misshaped lead hemispherical spindle-whorl with one flat-face, curved side and truncated conical-tapered end. D. 25 mm. H. 25 mm. W. 43.95 g. D. (squared sub-angular recessed sub-rounded perforation) 8 mm (sub-rounded flat-face hole); diminishing to 6 mm (tapered end-hole). Flat-face and sidewall molten deposit forming a sub-angular recessed-flange. Sparse sub-angular ferrous hammer-scale inclusions present. Two inscribed lattice lines situated midway of wall-section forming a possible inverted 'V'. A broad flat-face score mark emanates from the perforation hole. Serrated notches associated with both perforations indicating possible reuse.

SFM 2. Coppergate Form (A1) cast or cold-pressed lead conical spindle-whorl with one flat-face side and truncated tapered end. D. 15 mm. H. 17 mm. W. 20.07 g. D. (sub-rounded recessed 'D' shaped hole) 7 mm (at the flat-face); diminishing to 6 mm (at the tapered-end). Flat-face surface exhibits inscribed line. Deep scored surface abrasions and chipping present around the tapered-end could suggest truncation with the presence of later serrated-notching possibly indicating reuse.

SFM 139. Coppergate Form (A1) miscast/misshaped or misshaped conical lead spindle-whorl with one flat-face side. D. 20 mm. H. 20 mm. W. 32.84 g. D. (off-centre sub-rounded hole) 6 mm; (flat-face sub-angular hole) 6 mm (tapered-end). Clean surfaces exhibiting some deep surface abrasions, scoring marks and pitting impressions. The flat-face exhibits possible tool compression damage. Serrated notches associated with both perforation holes indicate possible reuse.

SFM 172. Coppergate Form (A1) miscast/misshaped or misshaped conical lead spindle-whorl with one flat-face side and truncated tapered end. D. 24 mm. H. 25 mm. W. 45.03 g. D. (circular to sub-rounded straight-sided) 6 mm; (flat-face hole to straight-sided off-centre) 4 mm (tapered hole). Highly abraded condition with traces of surface pitting. Serrated notches associated with both perforation holes indicating possible reuse.

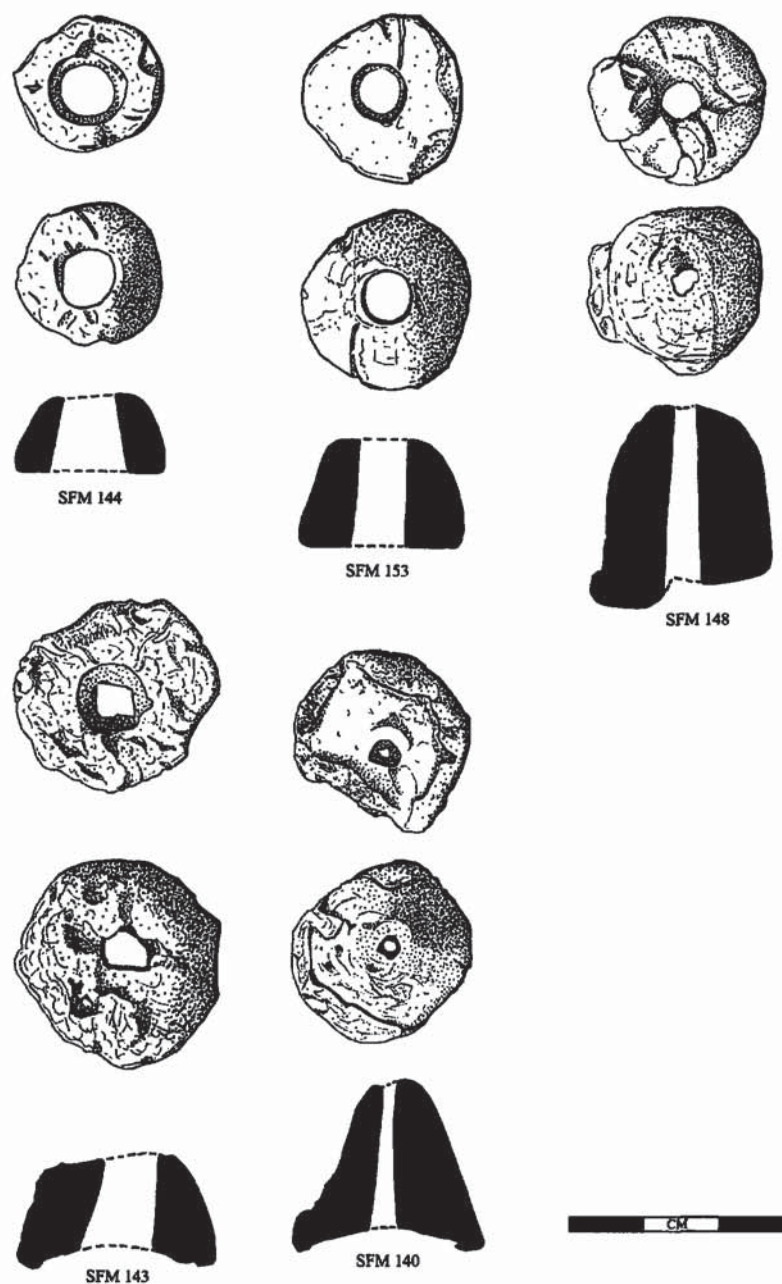


Fig. 4 (*cont.*) Coppergate Form (A1) spindle-whorls

SFM 150. Coppergate Form (A1) miscast/misshaped or misshaped lead conical spindle-whorl with one flat-face side and truncated conical tapered end. D. 20 mm. H. 20 mm. W. 32.24 g. D. (central sub-rounded

and straight-sided flat-face hole) 6 mm; diminishing to 5 mm (sub-rounded tapered-end hole). Worn sparse pitting and abrasions present with a single-inscribed line running from flat-face hole to section

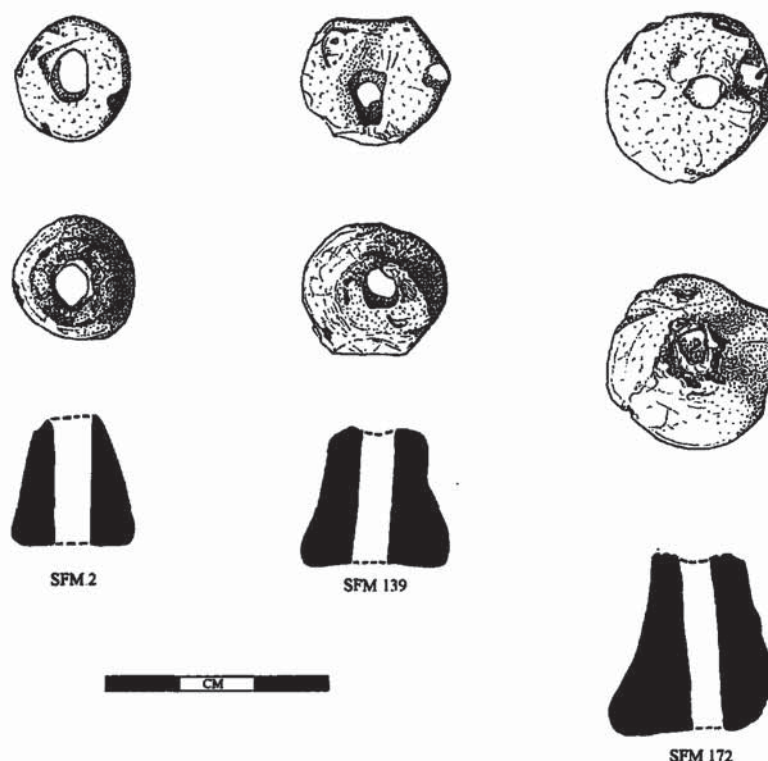


Fig. 4 (cont.) Coppergate Form (A1) spindle-whorls

edge. Serrated notches associated with both perforation holes possibly indicating reuse.

SFM 18. Coppergate Form (A1) miscast/misshaped or misshaped lead conical spindle-whorl with one flat-face side and truncated conical tapered end. D. 16 mm. H. 16 mm. W. 20.73 g. D. (circular hole: flat-face) 3 mm; (off-centre sub-angular tapered-end hole) 3 mm. Clean surfaces exhibiting occasional sparse sub-angular ferrous hammer-scale inclusions with lightly scored abrasions. Straight-sided perforation with serrated-notches associated with both perforation holes indicating possible reuse.

SFM 157. Coppergate Form (A1) miscast/misshaped or misshaped lead conical spindle-whorl with flat-face side and truncated conical tapered-end. D. 25 mm. H. 30 mm. W. 60.14 g. D. (central straight-sided sub-rounded hole) 6 mm; (tapered-end diminishing to flat-face off-centre straight-sided sub-angular hole) 5 mm. Compressed tool damage with appending flat-face flange deposit with abundant visible abrasion marks and pitting. Possible scored transverse mark

on side with flat-face 'V' mark present. Serrated notches associated with both perforation holes indicate possible reuse with transverse notching on flat-face.

SFM 152. Coppergate Form (A1) miscast/misshaped or misshaped lead conical spindle-whorl with one flat-face side and truncated conical tapered-end. D. 24 mm. H. 20 mm. W. 29.77 g. D. (off-centre straight-sided sub-rounded hole) 6 mm; (flat-face with tapering end) 6 mm. Abrasions present with abundant surface pitting. Flat-face exhibits molten casting distortion and four linear drill marks. Serrated notches associated with both perforation holes indicate reuse.

SFM 149. Coppergate Form (A1) miscast/misshaped or misshaped lead conical spindle-whorl with one flat-face side and curved conical/hemispherical tapered-end. D. 20 mm. H. 15 mm. W. 22.03 g. D. (flat-face sub-rounded central straight-sided drill hole) 3 mm; (central straight-sided sub-rounded tapered-end drill-hole) 2 mm. Clean with single inscribed-line running from tapered

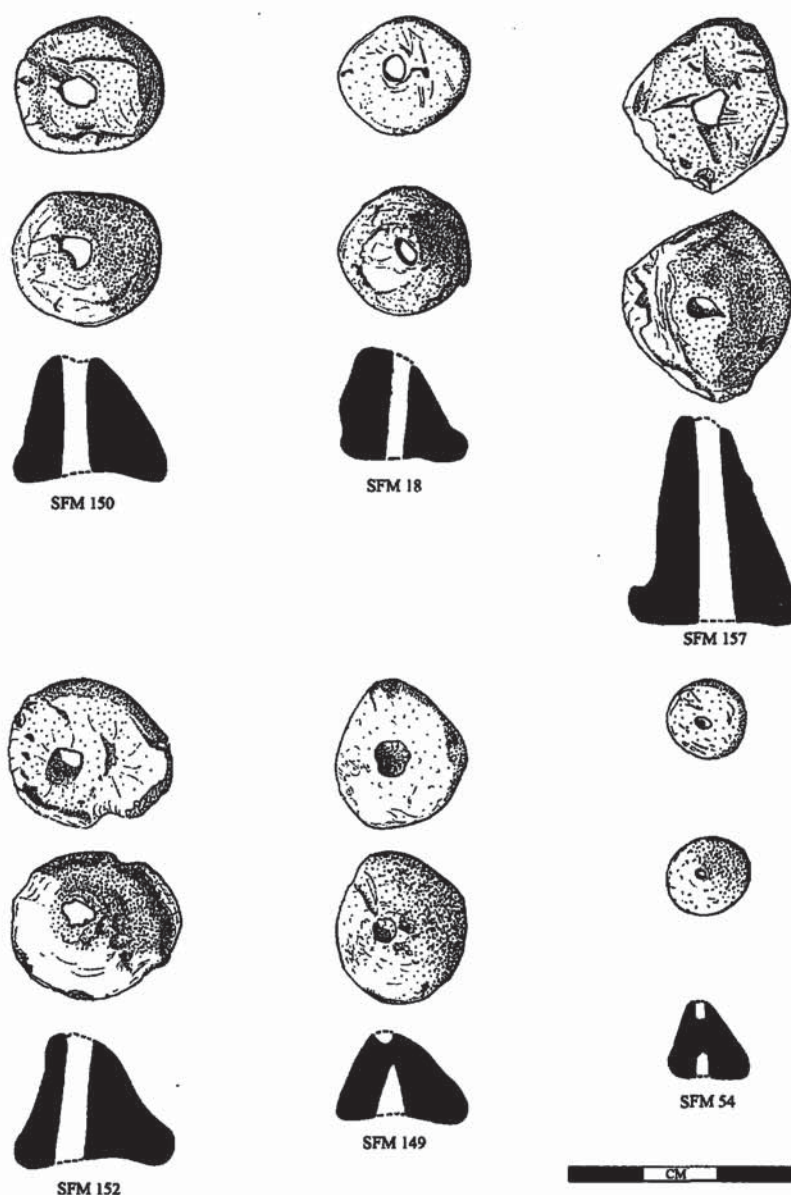


Fig. 4 (cont.) Coppergate Form (A1) spindle-whorls

end to flat-face. Unfinished flat-face and tapered-end drill perforation marks present indicating a possible trial piece or wider reuse as a gaming counter.

SFM 54. Coppergate Form (A1) miscast/misshaped or misshaped/unfinished lead conical spindle-whorl with one flat-face side and truncated conical to

curved-tapered end. D. 10 mm. H. 10 mm. W. 5.35 g. D. (sub-rounded shallow central drill hole, flat-face) 1 mm; (sub-rounded tapered-end central hole) 1 mm. Clean exterior-surfaces exhibit sparse pitting or abrasions. Unfinished flat-face and tapered-end drill perforation marks indicating a possible trial piece or reuse as a gaming counter.

Coppergate form (A2)

SFM 151. Coppergate Form (A2) lead hemispherical to conical spindle-whorl with two flat-faces of unequal size and thin-walled curved sides. D. 25 mm. H. 18 mm. W. 35.90 g. Sub-rounded and straight-sided central hole. D. (flat-face perforation hole; cannot be accurately assessed due to compressed-section damage) c. 7 mm; (flat-face perforation hole) 7 mm. Clean exterior surfaces exhibit wear-marks but no visible pitting. The tapered-end displays four radial notches suggesting reuse. Two scored lines present around the section-wall circumference. Sparse sub-rounded ferrous hammer-scale surface inclusions noted.

SFM 137. Coppergate Form (A2) hemispherical to conical lead spindle-whorl with two flat-faces of unequal size and rounded vertical sides. D. 26 mm. H. 20 mm. W. 43.42 g. Off-centre straight-sided sub-rounded hole. D. (flat-face circular hole) 7 mm; diminishing to 4 mm (tapered-end hole). Heavy surface deterioration: notches associated with the perforations, possibly indicating reuse.

SFM 141. Coppergate Form (A2) cast or cold-compressed flattened hemispherical lead spindle-whorl with two unequal flat-face sides. D. 20 mm. H. 8

mm. W. 10.08 g. D. (of the central straight-sided sub-rounded hole) 8 mm (at the flat-face); diminishing to 6 mm (at the tapered-end). Pitted and worn surfaces with faceted edge present. Flat-face has a single uneven inscribed crescent-shaped ring and possible scorching to surface. Worn notches associated with both perforation edges is indicative of reuse.

SFM 113. Coppergate Form (A2) miscast/misshaped or misshaped flattened lead hemispherical spindle-whorl with two unequal flat-face sides. D. 18 mm. H. 5 mm. W. 7.60 g. D. (of the sub-rounded hole) 7 mm (at the flat-face); diminishing to 6 mm. Stepped-edge appearance, clean surfaces, with sparse sub-rounded surface pitting. Worn inscribed radial-line and single inscribed concentric ring with traces of notching associated with the flat-face perforation holes is indicative of reuse.

Discussion

In all probability the spindle-whorls were manufactured at Meonstoke. Exactly two-thirds of the pieces are miscast or misshaped which may point towards metal workshop debris or scrap being gathered together for re-use. Moreover,

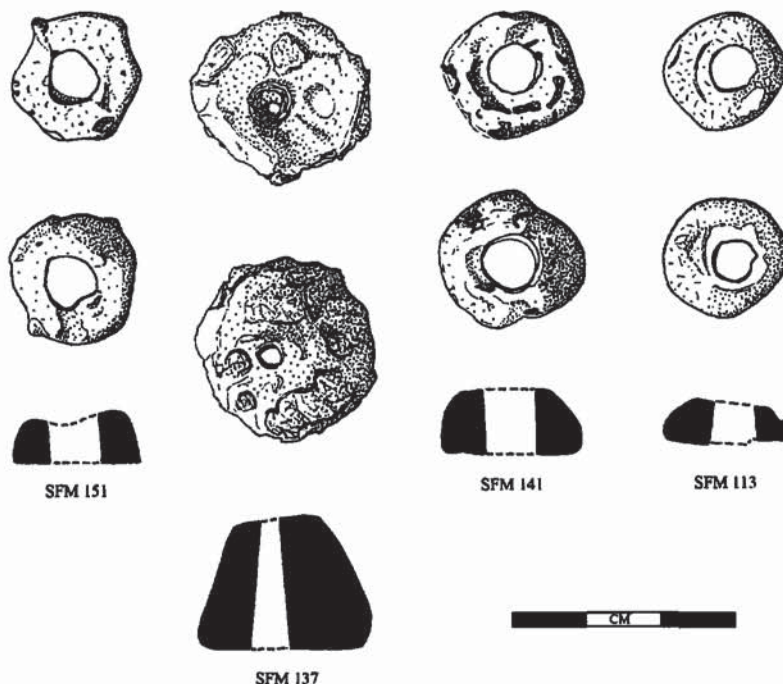


Fig. 5 Coppergate Form (A2) spindle-whorls

Table 1 Coppergate Form (A) spindle-whorls

SFM No.	Form	Desc.	W. (g)	D. (mm)	H. (mm)	T/End Hole (mm)	F/Face Hole (mm)
115	A1	F. Hemispherical	27.95	33	5	10	8
3	A1	F. Hemispherical	26.74	28	10	6	7
147	A1	F. Hemispherical	15.00	25	6	10	10
142	A1	F. Hemispherical	4.20	15	3	6	3
501	A1	Hemispherical	19.66	23	10	8	9
154	A1	Hemispherical	8.98	18	5	6	7
144	A1	Hemispherical	15.90	20	10	7	10
153	A1	Hemispherical	33.54	22	17	6	8
148	A1	Hemispherical	70.50	23	25	4	6
143	A1	Hemispherical	43.07	27	16	5	9
140	A1	Hemispherical	43.95	25	25	6	8
2	A1	Conical	20.07	15	17	6	7
139	A1	Conical	32.84	20	20	6	6
172	A1	Conical	45.03	24	25	4	6
150	A1	Conical	32.24	20	20	5	6
18	A1	Conical	20.73	16	16	3	3
157	A1	Conical	60.14	25	30	6	5
152	A1	Conical	29.77	24	20	6	6
149	A1	Conical	22.03	20	15	2	3
54	A1	Conical	5.35	10	10	1	1
151	A2	H. Conical	35.90	25	18	7	Indeterminate
137	A2	H. Conical	43.42	26	20	4	7
141	A2	F. Hemispherical	10.08	20	8	6	8
113	A2	F. Hemispherical	7.60	18	5	6	7

two out of four Form (A1) flattened-hemispherical whorls (SFM 115 & 147), a single Form (A1) hemispherical (SFM 140), a single Form (A1) conical (SFM 18) and a single Form (A2) hemispherical/conical (SFM 151) spindle-whorl exhibit ferrous hammer-scale inclusions which might be indicative of organised metal-working activities/or zoning. Eight of the nine Form (A1) spindle-whorls are also miscast or

misshaped and their survival could also point to their manufacture and retention by craft workers as potential recycled materials. Five of the spindle-whorls also produced evidence for edge-clipping, three (SFM 115, 3, 142) were Form (A1) flattened-hemispherical forms, whilst the remaining two (SFM 154 & 144) were Form (A1) hemispherical whorls. Such evidence might hint at the later retention of

Table 2 Surface Markings on Coppergate Form (A) spindle-whorls

No.	Form	Desc.	Miscast/ misshaped/ Misshaped	T/End Serrations	F/Face Serrations	Inclusion	Surface Markings
115	A1	F. Hemispherical		Yes	Yes	Yes	Two parallel score-lines, deep transverse notch; edge-clipping removal.
3	A1	F. Hemispherical	Yes	Yes	Yes		Radial score lines & edge-clipping removal.
147	A1	F. Hemispherical		Yes	Yes	Yes	Oblique transverse scored notch running from perforation hole to section edge.
142	A1	F. Hemispherical	Yes	Yes	Yes		Four scored radial-lines & edge-clipping removal
501	A1	Hemispherical		Yes	Yes		Lightly inscribed score lines.
154	A1	Hemispherical	Yes	Yes	Yes		Four radial score lines & edge-clipping removal.
144	A1	Hemispherical		Yes			Punch-marks, serrated notches & edge-clipping removal.
153	A1	Hemispherical		Yes			Single transverse scored notch with sidewall exhibiting two transverse score lines.
148	A1	Hemispherical	Yes	Yes	Yes		Transverse scored notch.
143	A1	Hemispherical	Yes	Yes	Yes		Practice drill marks.
140	A1	Hemispherical	Yes	Yes	Yes	Yes	Inscribed score-lines situated midway along wall-section, with flat-face and sidewall molten deposit.
2	A1	Conical		Yes			Lightly scored line abrasions.
139	A1	Conical	Yes	Yes	Yes		Tool compression damage.
172	A1	Conical	Yes	Yes	Yes		
150	A1	Conical	Yes	Yes	Yes		Single inscribed scored line running from terminals.
18	A1	Conical	Yes	Yes	Yes	Yes	
157	A1	Conical	Yes	Yes	Yes		Possible scored lines on wall section & flat-face, with flange molten deposit.
152	A1	Conical	Yes	Yes	Yes		Four linear drill-marks. Molten flat-face deposit & transverse notch marks.
149	A1	Conical	Yes				Unfinished tapered-end & flat-face perforations.
54	A1	Conical	Yes				Unfinished tapered-end & flat-face perforations.
151	A2	H./ Conical	Yes	Yes		Yes	Tapered-end radial transverse notches.
137	A2	H./ Conical		Yes	Yes		
141	A2	F. Hemispherical		Yes	Yes		
113	A2	F.Hemispherical	Yes	Yes	Yes		Worn transverse scored lines

earlier spindle-whorls as useable heirlooms, or even the traditional continuance of such design forms.

Eight out of 24 spindle-whorls were well cast or probably cold-pressed from their moulds. Of these, two were Form (A1) flattened-hemispherical (SFM 115 & 147), three were Form (A1) hemispherical (SFM 501, 144 & 153) examples, with the remainder being singular

Form (A1) conical (SFM 2), Form (A2) hemispherical-conical (SFM 137) and Form (A2) flattened-hemispherical spindle-whorls (SFM 141). These have a full-weight range between 10.08–43.42 g. with an average weight of 23 g. The whorls, except Form (A2) (SFM 137) and Form (A2) (SFM 141) demonstrate a range of surface treatments pertaining to finishing, potential later use as 'anvils', and edge-clipping

which might be indicative of original function and later reuse as scrap metals.

Surface treatments on the spindle-whorls hint at their wider reuse, or point towards the presence of work shop debris. Emphasis can be placed upon the Form (A1) flattened-hemispherical and hemispherical spindle-whorl groups that exhibit scoring, inscribed lines and tooling; ten Form (A1) spindle-whorls and a single Form (A2) example having scored/inscribed surfaces. Of these 11 examples, three out of four Form (A1) flattened-hemispherical spindle-whorls (SFM 115, 3 & 142) demonstrate scoring marks, alongside four out of seven (SFM 501, 154, 153 & 140) Form (A1) hemispherical examples. Only three out of nine Form (A1) conical (SFM 2, 150 & 157) and one (SFM 113) out of four Form (A2) flattened-hemispherical examples exhibit such surface-treatments. Five of the Form (A1) group produced distinctive evidence for unfinished perforations, punch marks or practice drill-marks with two hemispherical (SFM 144 & 143) and three conical examples (SFM 152, 149 & 54) revealing such surface treatments. The presence of transverse notches is also noteworthy, with two (SFM 115 & 147) out of four Form (A1) flattened-hemispherical examples, two Form (A1) hemispherical (SFM 153 & 148) and one Form (A2) hemispherical/conical (SFM 141) demonstrating evidence. Both Form (A1) type conical spindle-whorls (SFM 54 & 149) have unfinished flat-face and tapered-end drill-perforations, and along with their form and small size indicates their re-use as practice pieces, gaming counters or as balance weights (Malcolm & Bowsher 2003, 188, fig. 143.M337, 203, 304–5; Ambrosiani 1981, fig. 82.7; Rees *et al.* 2008, 245, fig. 131. 1662; Ottaway & Rogers 2002, 2705, fig. 1317, 14512). Just under two thirds (18) of the spindle-whorls have distinctive surface markings indicative of potential multi-functional or later reuse: sharp serrated tapered-ends and flat-face notch marks associated with their perforations.

The 24 Type (A) spindle-whorls from Meonstoke have an average diameter of 21.75 mm and a full-diameter range of 10–33 mm. The 20 Form (A1) spindle-whorls have a full-diameter range of 10–33 mm and the four Form (A2) examples have a full-diameter range of

18–26 mm. The pair of Form (A2) hemispherical/conical and the two flattened-hemispherical spindle-whorls measure 25–6 and 18–20 mm in diameter respectively. The pair of (A2) whorls have narrower full-diameter ranges and relate well to the lower end of the full-diameter range of the Form (A1) hemispherical examples and the upper part of the full-diameter range of the Form (A1) conical examples. The Form (A1) hemispherical SFM 140 with a diameter of 25 mm and the four Form (A1) conical spindle-whorls (SFM 139 (20mm), 150 (20mm), 18 (18mm) & 54 (10mm)), with their individual diameters that tally with their heights, might indicate that a number of spindle-whorls had been cast to exact measurement specifications, or were cold-pressed into moulds and then were filled to their given capacity.

The 24 Form (A) spindle-whorls recovered from Meonstoke have a collective weight of 674.69 g. Twenty of the 24 pieces have a collective weight of 577.69 g. and can be assigned to the Form (A1) category and have a single flat-face side. These whorls consist of four Form (A1) flattened-hemispherical, seven Form (A1) hemispherical and nine Form (A1) conical types. Four spindle-whorls, corresponding with the Form (A2) group, exhibit a collective weight of 97 g. and exhibit two unequal flat-face sides (Walton Rogers 1993, 1266–69, 1267, fig. 6257; 2007a, 24–5, fig. 218). The group consists of two Form (A2) hemispherical/conical and two Form (A2) flattened-hemispherical forms.

The Form (A1) spindle-whorls from Meonstoke have a full-weight range of 4.20–70.50 g. The four remaining Form (A2) whorls have a full-weight range of 7.60–43.42 g. The Form (A1) flattened-hemispherical group have a full-weight range of 4.20–27.95 g. and the Form (A1) hemispherical group have a full-weight range of 8.98–70.50 g. The remaining Form (A1) conical group have a full-weight range of 5.35–60.14 g. The two Form (A2) hemispherical-conical whorls have a full-weight range of between 35.90–43.42 g., whilst the remaining two examples in the Form (A2) flattened-hemispherical group record a full-weight range of 7.60–10.08.

The Meonstoke whorls compare well with the assemblage of 51 examples excavated from Mucking (Essex) whose full-weight range was

14–60 g. with the majority weighing between 25–45 g. (Hamerow 1993, 64–6, fig. 43). The full-weight range of the spindle-whorls from Coppergate fall between 10–55 g. (Walton Rogers 1997, 1743–75), while the full-weight range of spindle-whorls excavated at Flixborough (Lincolnshire) were markedly less at 10–20 g. (Walton Rogers 2007a, 26; 2007b, 106–11; 2009, 281–316).

The full-weight range of the Meonstoke spindle-whorls may be slightly misleading because two thirds are miscast or misshaped, five were edge-clipped and three exhibit adhering molten deposits. In particular, the Form (A1) hemispherical spindle-whorl (SFM 148), which weighs 70.50 g., has a significant adhering molten flat-face deposit which gives a full-weight range for the spindle-whorls of 4.20–70.50 g. A close inspection of the figures reveal that two thirds (18/24) weigh between 14–60 g., while just under half (11) come in at 25–45 g. Overall, the average-weight of the spindle-whorls is 28 g., this weight seems to be too light and suggests that the artefacts would have been unsuitable for spinning paired or plied yarns (Walton Rogers 2007a, 25; *pers comm.*). Nine examples that weigh between 10–20 g. could however have been suitable for fine weaving, such as those from the high-status estate centre at Flixborough (Lincolnshire) which might have been associated with a monastic institution at sometime during the Middle Saxon period (Walton Rogers 2007a, 26; 2007b, 106–11; 2009, 281–316). It is possible that they are net-sinkers, although several unusually large ceramic 'spindle-whorls' from Mucking have been interpreted as such in light of their central perforations being excessively large for a spindle (Hamerow 1993, 65; Walton Rogers 2007a, 25; *pers comm.*). Alternatively they might have been utilised as fishing weights (Ottaway & Rogers 2002, 2705; fig. 1317. 1451) and parallels might be sought in a number of lead rings excavated from Mucking (Essex) which were originally identified as loom-weights or ingots (Hedges 1980, 84–7; Hamerow 1993, 70–1; Walton Rogers 2007a, 30).

Individual spindle-whorls cannot be confidently categorised and dated on form alone (Walton Rogers 2007a, 23–4). The Coppergate Form (A) spindle-whorls appeared in the sixth

century AD and by the seventh-century were firmly established types. Such spindle-whorls were probably influenced in Britain by earlier Iron-Age and Gallo-Roman forms that are neatly turned hemispherical or saucer shaped examples often having central perforations with raised collars (Ferdière 1984, 216, figs. 19–21).

Forms (A1) and (A2) are typical of the 6th to 10th centuries AD. Examples can be cited from Anglo-Saxon graves, especially in Kent. Probable Coppergate Form (A) include a notable lead spindle-whorl from Grave 48 Buckland, Dover (Kent) (Evison 1987, 112–3; Walton Rogers 2007a, 25). A domed whorl, with an irregular piece of lead attached to a disc by ferrous corrosion, comes from Grave 105 (skeleton C), at Mill Hill, Deal (Kent) (Parfitt & Brugmann 1997, 159–60, 193). Finglesham has produced a number of examples: two Form (A1) clay spindle-whorls associated with a bone pin beater were recovered from Grave 8; a Form (A1) clay spindle-whorl came from Grave 16; two Form (A2) clay whorls were retrieved from Graves 69 and 163 and from Grave 202 came a Form (A1) bone whorl (Hawkes & Grainger 2006, 37–9, 41–2, 61, 114–15, 135). Outside of Kent, a Form (A1) clay spindle-whorl was found with a female (Grave 31) at Winnall II, Winchester (Hampshire) in a cemetery that was in use from the mid seventh century to later eighth century AD (Meaney & Hawkes 1970, 16, 27).

The diameters of the spindle holes became larger over time, although on its own this measurement does not provide secure dating evidence. The function, use and wear associated with spindle-whorls pressed out of soft lead would certainly impact on the size of their perforation diameters (Walton Rogers 2007a, 24). Even so, the intact spindle-hole diameters (excluding miscast/misshaped examples) between 7–10 mm are most like those from Middle and Late Anglo-Saxon collections (Walton Rogers 2007a, 23–6; *pers comm.*). The Wessex Region has produced an undated ferrous spindle with an 8–9 mm diameter mounted with a spindle-whorl from Sutton Courtenay (Berkshire) (Leeds 1947, 84–5; Walton Rogers 2007a, 23) and a further possible example measuring 10 mm in diameter

was associated with the remains of a casket deposited with a high-status female burial of the late seventh-century from Swallowcliffe Down (Wiltshire) (Speake 1989, 30–1; Walton Rogers 2007a, 23). The longevity of such spindle-whorl forms can probably be indicated by a 'plano-convex'/cone spindle-whorl recovered from a late-eleventh to early twelfth-century AD context from Winchester that was similar to the Meonstoke Form (A1) conical (SFM 2) and the Form (A2) hemispherical-conical example (SFM 151) (Keene 1990, 224, fig. 46, no.170). Plano-convex spindle-whorls manufactured out of stone, bone, ceramics and lead are also known from later Anglo-Saxon, Saxo-Norman and Medieval contexts at Winchester (Keene 1990, 218–225, fig. 46).

Perforated discs

SFM 204. Perforated lead disc with two unequal flat-face sides. D. 11 mm. H. 4 mm. W. 2.13 g. Worn and abraded with single-stepped chamfered edges. Sub-rounded off-centre straight-sided punched perforation: 5 mm at the apex; 5 mm at the base. A single sub-rounded ferrous hammer-scale surface inclusion present.

SFM 205. Perforated lead disc with recessed flattened-hemispherical face of two unequal sides. D. 18 mm. H. 3 mm. W. 2.29 g. Punched and recessed sub-angular sided-hole with serrated apex and basal notches of perforation edges: 3 mm at the apex; 5 mm at the base. Upper surface edges of circumfer-

ence scored with deep tapering radial-grooving. Clean surfaces with little evidence of abrasions and chipping present.

Copper-alloy ring

SFM 158. Cast copper-alloy ring. D. 20. H. 4 mm. W. 10.06 g. Diameter of circular straight-sided apex: 10 mm; basal fluting central-hole: 10 mm. Facetted and angular 'D'-shaped section with raised flanged edge surrounding central perforation that exhibits potential wear marking. The overall thickness of the 'D'-shaped section is less than one third of the ring diameter, with the clean upper face having two zones of deeply notched transverse lines running across the diameter of each ring section. The base ring section surface has two heavily abraded areas of localised damage.

Discussion

The perforated disc (SFM 204) exhibits ferrous surface inclusions and is similar in form to an example excavated from a sunken-featured building (GH18) at Mucking (Essex) (Hamerow 1993, 70–1, 115, 206, fig. 94.1). The disc might have functioned as a spindle-whorl bead with its perforation diameter being indicative of an Iron-Age or Roman date (Walton Rogers

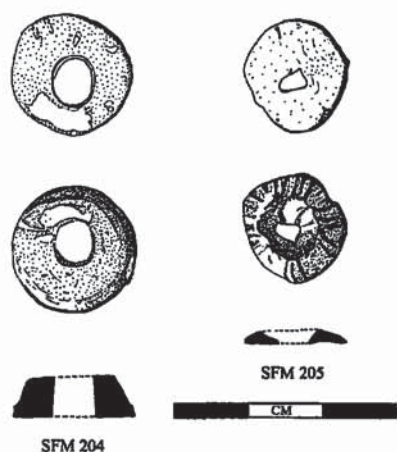


Fig. 6 Perforated discs



Fig. 7 Ring

2007a, 23–4). Further Mucking examples include four perforated discs recovered from sunken-featured building GH (66) (Hamerow 1993, 70–1, 134, 235, fig. 123.1/2/4 & 5). Alternatively, SFM 204 might have been utilised as a gaming counter or playing piece, as suggested for SFM 149 and SFM 54.

The perforated disc (SFM 205) is reminiscent of a crude mount or washer excavated from Hamwic (Hinton 1996, 54, 52, fig. 22.169/2960; 55, fig. 23.38/38), while its recessed form is reminiscent of the Form (A1) spindle-whorl (SFM 142). It appears to have notching present on its recessed perforation section-edge which is indicative of wear (Walton Rogers 2007a, 24–5; fig. 2.18). A lead ring excavated from Mucking, along with two other recessed examples recovered from sunken-featured building GH (17), have similar scored radial-grooves (Hamerow 1993, 203–4; fig. 92.4; 114).

The copper-alloy ring (SFM 158) may have functioned as a washer with the notching on its perforated section-edge also indicative of wear; while the transverse surface-notching is comparable to similar markings on the tapered end surfaces of the Form (A1) spindle-whorl (SFM 115). Undiagnostic copper-alloy rings/washers have been recovered from numerous Roman and Anglo-Saxon sites, such as Shakenoak (Oxfordshire) and Abbots Worthy (Hampshire) (MacGregor & Bolick 1993, 258–60).

Unidentified object

SFM 145. Cast copper-alloy biconical object with two flat-faces of equal size and a pronounced carinated ridge at its widest girth. D. 12 mm. H. 12 mm. W. 5.07 g. Diameter of straight-sided sub-rounded cylindrical central perforation: 5 mm at the tapered end; 5 mm at the flat-face. Some surface pitting present, with a single abraded and worn carinated edge. Two serrated notches associated with the tapered-end and flat-face perforation edges.

Discussion

SFM 145 could be either a spindle-whorl/ bead/ belt toggle or bag fastener of Anglo-Saxon or earlier date. A smaller variant of a Type (B3) biconical spindle-whorl is suggested here, because it has two flat-faces of equal size, carinated sides and a 5 mm perforation diameter

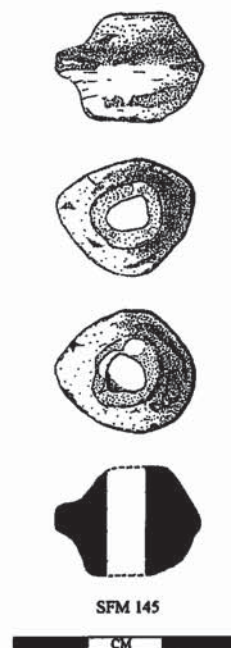


Fig. 8 Unidentified object

and is broadly reminiscent of the chalk, clay and ceramic spindle-whorls recovered from Portchester (Cunliffe 1975, fig. 139.333, 139.330, 139.332) and a shale example recovered from Chamberlains Barn II (Anglo-Saxon cemetery (Bedfordshire) (Geake 1997, 283, fig. 419). Type (B3) biconical spindle-whorls are known to date from the Iron-Age/Roman period into the sixth-century AD (Malim & Hines 1998, 55, 122).

CONCLUSION

The circumstances of discovery, the condition and the spatial characteristics of the scrap-metal assemblage indicate that the artefacts derive from a recently disturbed archaeological context. The assemblage was located c.120 metres NNE of a partially excavated Anglo-Saxon settlement that produced a sunken-featured building, the fill of which contained textile and metalworking artefacts, a working surface and furnace features and pits associated with metalworking-type activities. It seems likely that the

settlement contained a workshop. The finds probably derived from metalworking waste and may have been deposited in a bag which was subsequently disturbed from the feature that it had been placed in.

The assemblage consists of a wide variety of objects, including objects in various stages of completion, plus associated metalworking residues that together point towards a metalworking 'chain of operation' which drew upon the Roman masonry building complex as a source of raw materials.

The ingots/runners are indicative of lead being cast or cold-pressed as metal masses, with later use as 'anvil' supports; their wider surface treatments are certainly reminiscent of examples recovered from Coppergate (York) and the 'jeweller's plate' excavated from the smith's grave at Tattershall Thorpe (Lincolnshire). The metal off-cuts worked around a former suggests the working-down of objects of thin-sheet. Wider copper-alloy working activities or their close spatial proximity, is further indicated by the globular copper-alloy and ferrous hammer-scale inclusions present within the lead-ingot/runner (SFM 9). The three unused 'crucible'-type objects recovered from the Anglo-Saxon settlement can be particularly linked with wider copper-alloy working activities. The well finished cold pressed/cast spindle-whorls alongside the miscast/misshaped examples were probably reused as ingots (Hamerow 1993, 70–1). Lead ingots of ring form are certainly known from Anglo-Saxon sites across the south-east and East Anglia (Walton Rogers 2007a, 30). The Meonstoke perforated discs and copper-alloy ring reinforces the wider scrap metal interpretation. The lead-lining of a Roman stone coffin recovered from the nearby late-Roman masonry building also demonstrates that ample quantities of lead were probably available for later recycling and reuse (King 1987, 13; *forthcoming*; Hurst 1980, 13; Teague 2005, 64).

The 24 spindle-whorls are particularly significant for the dating and chronology of the scrap metal assemblage. Form (A1) spindle-whorls compare well with examples from early Anglo-Saxon cemeteries in Hampshire and Kent that date from the sixth-seventh centuries AD onwards. The four Form (A2) spindle-whorls

are probably comparable to the 'plano-convex', hemispherical and truncated conical forms excavated from later Anglo-Saxon urban contexts in Winchester (Walton Rogers 2007a, 23–6, 2.18; Keene 1990, 218–225; Rees *et al.* 2008, 243–7). With eight of the nine Form (A1) conical spindle-whorls and two thirds of the wider assemblage being miscast or misshapen, the evidence is indicative of production and use in the later Anglo-Saxon period with possible changes of function and retention for recycling before they were discarded as workshop waste. This interpretation is possibly supported by the fact that it is only the Form (A1), flattened hemispherical and hemispherical, spindle-whorls that are edge-clipped, while there is a general absence of worn edges and surface damage associated with the artefacts across the wider assemblage.

The activities of spinners in rural settlements, such as Meonstoke would have probably been harnessed by estates serving the international trading centre at Hamwic and emerging ecclesiastical centres, such as Winchester (Rees *et al.* 2008, 247; Biddle & Kjølbye-Biddle 2007, 189; Birbeck *et al.* 2005, 203). Sources refer to a lost Anglo-Saxon charter of Edgar which describe the donation of the manor of Exton to the church of Winchester with this estate being situated directly to the NW of Shavards Farm (Yorke 1994, 13; Biddle 2007, 75).

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