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10.2.6 Residue analysis

MHAIRI MAXWELL and CARL HERON

The absorbed and encrusted food residues on a selection of later prehistoric pottery vessels (and one Samian vessel) from Broxmouth were analysed, as part of a larger research project (including the sites of Traprain Law and Newmains). Gas chromatography-mass spectrometry (GC-MS) and compound-specific stable-isotope analysis was used, following established protocols (Steele and Heron 2009), to analyse 18 samples from nine vessels (V6, V29, V61, V117, V120, V122, V130, V132, SF142) from various phases (1, 3, 5, 5/6 and 6) and areas (interior, South-west Entrance, Inner Ditch) of activity at Broxmouth.

In the majority of the samples, GC-MS revealed negligible traces of archaeological lipids and most results were, therefore, negative. Preservation of lipids appears to have been detrimentally affected by post-excavation storage in plastic bags, without acid free tissue paper (which would explain the modern plasticisers in the results). Additionally, some squalene and cholesterol were found in the samples, probably deriving from handling.

Two samples from two different pots (V6 (Type 1), V117 (Type 2)) were nonetheless saturated with lipids. V117 was of a much finer fabric than V6, but both sherds had a comparable abundance of C16:0 and C18:0 fatty acids, hydrolysis products (MAG-16 and MAG-18) from the degradation of these fatty acids and traces of plant sterols. These two samples indicated the presence of terrestrial meat, with limited evidence for plants, and no evidence for aquatic resources. Significantly, there appears to be no difference in the extent of lipid absorption between the two different (coarse and fine) fabrics. On the basis of the albeit limited results, the difference between coarser (Type 1) and finer (Type 2) pottery does not seem to necessarily reflect function.

10.3 Worked bone and antler

FRASER HUNTER, ANNE-MARIE GIBSON and JULIA GERKEN

10.3.1 Introduction

The worked bone and antler assemblage from Broxmouth (360 items, comprising 190 objects and 170 pieces of working debris or part-finished items) is the largest collection from any prehistoric site in Scotland outside the Atlantic zone, and puts it in the same league in terms of quantity and range as classic assemblages from southern Britain such as All Canning’s Cross (c. 510 objects), Meare Lake Village (c. 420 and c. 800 from the east and west sites respectively) or Danebury (c. 380 objects). Such organic materials rarely survive in the predominantly acidic soils of southern Scotland, and this assemblage thus provides insights into aspects of material culture normally lacking in the area. It also goes some way to filling the continuing lacuna in our knowledge between the hotspots for bone artefact assemblages in southern England and Atlantic Scotland. The artefacts were well preserved, with good evidence of manufacturing traces and use-wear. Most of the types found at Broxmouth are consistent with assemblages at other Iron Age sites in Scotland, but there are some indications of regional patterning in certain artefacts.

The material was initially reported on by Anne-Marie Gibson. It was reassessed by Fraser Hunter, with the existing descriptions of both objects and categories modified or rewritten based on perspectives from significant publications since the initial report. The discussion also includes observations from Julia Gerken, who is undertaking doctoral research on Scottish worked bone artefacts; Hunter has edited all of the material presented. This discussion attempts to synthesise the material from the catalogue in terms of raw materials, technology, tool types and decoration, together with broader comparisons. The synthetic discussion of each group of artefacts (divided by function, where this can be reasonably inferred) precedes each respective catalogue.

10.3.2 Sources of raw materials

It was not always possible to identify heavily worked material to species or bone type. Of the 360 bone/antler items studied, 235 pieces were made of antler, 122 were certainly or probably of bone (including two of cetacean bone) and one was of tooth; two pieces could not be identified. This total includes antler fragments with no surviving working traces, but their discovery on site implies they were deliberately gathered and brought there. Osteological evidence suggests that horn was also probably worked on site (chapter 12), but did not survive. The choice of bone for utilisation would have depended on the following:

1. Availability of material. The preferred species for bone tools on a site normally reflects its relative frequency in the faunal assemblage. The avoidance or over-use of a particular species
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<th>humerus (1)</th>
<th>radius (4)</th>
<th>femur (4)</th>
<th>tibia (16)</th>
<th>fibula (4)</th>
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**Table 10.4**

Bone artefacts identified to species and/or bone type.
The finds in relation to its proportional representation in the unworked bone assemblage would suggest a specific cultural attitude towards those animals, but there is no evidence for this at Broxmouth. The quantity of animal bone from the site suggests that selection would not have been unduly restricted by availability, although the pattern of slaughter meant that ovicaprid and cattle bones were more readily available than pig or horse bone. One example of an object made of what is probably old, discoloured bone (SF200; illus 10.27), and three of reshaping existing objects (SF160, illus 10.14; SF217, illus 10.24; SF278, illus 10.27) are likely to be expedient use of handy or valued items rather than any systematic lack of raw material. The degree of modification was variable, with some barely modified and others heavily worked (making the identification of the raw material difficult). Raw material was readily available: sheep/goat and cattle bones were preferred.

<table>
<thead>
<tr>
<th>Body part</th>
<th>skull</th>
<th>scapula</th>
<th>vertebra</th>
<th>rib</th>
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<th>radius</th>
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<th>tibia</th>
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</table>

Many of the bone artefacts were made from long bone splinters derived from food refuse. The degree of modification was variable, with some barely modified and others heavily worked (making the identification of the raw material difficult). Raw material was readily available: sheep/goat and cattle bones were preferred.

2. Butchery technique. Most of the identifiable bones derive from the appendicular sections of the animal skeleton. The long limbs have limited food value, with some barely modified and others heavily worked (making the identification of the raw material difficult). Raw material was readily available: sheep/goat and cattle bones were preferred. Other bones were more readily available than any systematic lack of raw material. The degree of modification was variable, with some barely modified and others heavily worked (making the identification of the raw material difficult). Raw material was readily available: sheep/goat and cattle bones were preferred.
AN INHERITED PLACE

for artefact manufacture, with much more limited use of pig, horse and deer. The source of 85 bone artefacts could be precisely identified to species and/or bone type (table 10.4). Notably, sheep tibiae were preferred for socketed spearheads, pig fibulae for splayed pins, and thin, flat bone from scapula blades for the manufacture of discs.

There are two worked fragments of cetacean bone: a perforated disc made from a juvenile whale vertebra (SF300; illus 10.22), and an unidentified worked fragment (SF1204; not illustrated). Eleven further cetacean bones, lacking traces of working, are recorded in the faunal assemblage: nine whale and two seal bones.

Cetacean objects are more typical for Atlantic areas, but there must have been strandings around the Firth of Forth, as there are today. Occasional whalebone objects are known from Iron Age sites in the area at Fishers Road East, Castle Park (Dunbar), North Berwick Law and Muirfield (Lowther 2000a: 145; Cox 2000: 181; NMS: HD 1855 and HR 881).

10.3.3 Working evidence

Table 10.5 summarises the categories of items worked on site. This emphasises that this was essentially a site-based activity, rather than one requiring exchange contacts or specialist input from other groups.

The bulk of the surviving evidence is for antler-working, and this was clearly the preferred material for many purposes. Both roe and red deer antler and bone was recovered from the site, but roe deer was markedly rarer, with only nine certain fragments (unless specifically stated in the catalogue, antler is either certainly or most plausibly of red deer). This preference for red deer antler is probably because it is more massive, and thus the working possibilities are greater. Most of the red deer antlers were cast (24 out of 29 identifiable examples), and would have been gathered in a spring harvest. The large quantities indicate that the inhabitants knew well where the stag populations habitually shed their antlers each spring and collection could thus be organised.

<table>
<thead>
<tr>
<th>Category</th>
<th>Items</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pins – yoke-shafted</td>
<td>151–2, 154–5, 157–60</td>
<td>Bone</td>
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<td>Pins – expanded-head</td>
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<td>Bone – pig fibula</td>
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<td>Pins – other</td>
<td>161, 258, 267, 439, 441–2</td>
<td>Bone and antler</td>
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<td>Bead</td>
<td>284, 7321</td>
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<td>Needles</td>
<td>174–7</td>
<td>Bone (mostly splinters)</td>
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<tr>
<td>Scoops</td>
<td>286–9</td>
<td>Bone</td>
</tr>
<tr>
<td>Handles</td>
<td>194, 207, 297, 414, 420, 423, 427, 455, 494</td>
<td>Antler tine and beam</td>
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<tr>
<td>Spearhead</td>
<td>214</td>
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<td>Unidentified</td>
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Antlers of red and roe deer are grown annually by stags and are cast after the rutting season; red deer shed them in March–May, roe deer in October–December (Tuohy 1999: 10–12; table 2.1). Each year the antler develops in a standard pattern, the number of tines on the antler increasing with the age of the animal (MacEwen 1920). Of the 18 red deer coronets complete enough for determining age, 15 were mature and three immature, suggesting that larger antlers were preferentially selected.

On-site antler-working is represented by both unfinished artefacts, and numerous discarded antler offcuts. It was common in Phases 1, 3, 5 and 6; only small amounts of debris were recorded from Phase 2, and none securely from Phase 4 (table 10.6), but much of this is due to issues of deposition and survival. The distribution of working debris (a more reliable indicator than part-worked material) suggests rather dispersed production. This points to antler-working as a dispersed craft carried out at a household level rather than a specialist, centralised activity, although some of the items (such as the compass-decorated item SF278; illus 10.27) indicate people who are likely to have developed specialist skills.

During working, the antler rack was broken down into its constituent parts. Illus 10.11 presents the data by antler part for debris, part-worked and finished material; the first two categories give the most reliable picture, as much of the finished material cannot be closely identified to element (and tines are disproportionately recognisable). Sections of beam were the main targets, and tines (especially the larger brow and bez tines) were also often utilised. Occasional uses were found for other parts, especially the base and lower beam, but smaller tines, beam-tine junctions and terminals were normally discarded. Details of technology are discussed in the relevant catalogue section, but it is notable how much use was made of cleaving and splitting the antler rather than sawing it. It seems that split segments of beam were one of the key stages in the process, and many of the discarded beam-tine junctions have had the straight sections of beam stripped from one side, leaving only the U- or Y-shaped curve of the junction itself.

### Table 10.6
Summary of antler-working debris and part-worked material.

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</table>

Illustration 10.11: Distribution of antler components.
As with other bones, specific sections of the antler were selected for particular purposes. Coronets were used as hammers and, along with the lower section of the antler, as picks. Beam sections were used to make combs and larger handles, as well as various tools and fittings, while tines were used as smaller handles, for various small fittings and occasionally for points and rubbers. Often the material is too highly worked to be sure what part of the antler it derives from.

Bone in its fresh state is more easily worked than fresh antler, which is extremely resilient and more resistant to shock (Semenov 1956; MacGregor 1985: 23–9). Carving of antler is much easier when it has been soaked, and it is likely that the antler was subjected to some form of pre-treatment. Modern ethnographic parallels include softening the antler by boiling or by soaking in urine (Semenov 1956), although simple soaking of fresh antler in water is sufficient (MacGregor 1985: 64–5). Conditioning by heating after working can be seen on three bone projectile points/spearheads (SF212, SF214, SF222; illus 10.24) and a whittled tine (SF404; illus 10.20), all with their points hardened by charring.

10.3.4 Production technology and its development

The assemblage displays a wide range of toolmarks and wear patterns, which are described in the catalogue and summarised in illus 10.12. The toolmarks indicate the use of a range of iron tools, including heavy chopping implements (axes or cleavers), fine blades for whittling, bow-drills, a selection of saws (some very fine), and more rarely files and chisels. Objects were also worked by snapping and splitting them, sometimes quite brutally, while irregular scratches suggest that much of the abrading of objects to shape was done with pumice or sandstone, rather than files.

There are some signs of technological change during the long occupation of the site. Study is biased by the range of different objects in different phases, so it is clearest if we focus only on the traces of dismemberment on antler-working debris and roughouts. Illus 10.13 presents the data for all phases where more than 10 objects are represented. This shows a number of patterns. Edged tools (ranging from fine knives to cleavers or axes) were commonest in all main phases, but show a gradual decrease over time, while saws show a marked increase; there is only one possible example in Phase 1. Splitting was most common in the earlier phases, while abrasion and punch marks (from re-use of discarded antler as working surfaces) occur at a low level throughout the sequence. The overall data-set is less clear, as it is affected by specific tools in particular phases, but the trends noted are similar.

Cylindrical drill-holes, implying the use of bow-drills, are found from the earliest phase onwards. The quantity of perforated objects from all phases, with the exception of Phase 5, is too small for reliable discussion of changing technologies through time (table 10.7), and there are only hints at preferred techniques. Some artefact classes show both drilled and other perforation forms (eg needles, both drilled and biconical; spearheads, drilled, conical and more crudely cut). Drilling was preferred where a neat finish was needed, for instance, in mounts or handles where antler pegs were to be inserted, and in some more personal items which may have been particularly
valued, such as the small comb (SF187; illus 10.16) and one of the long-handled combs (SF184; illus 10.17). The evidence for use of a compass to produce the ring-and-dot motifs on the antler drum (SF278; illus 10.27) is discussed more fully by Maxwell (section 10.3.9).

### 10.3.5 Object range

Table 10.8 summarises the distribution of worked bone and antler by broad artefact type and by phase.

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>1</th>
<th>3</th>
<th>3–6</th>
<th>5/6</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drill</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Biconical</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Conical</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Cut</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>16</td>
</tr>
</tbody>
</table>

Significant assemblages come from Phases 1, 3 and 5–6, though there is a little from all phases and areas. Tools and working debris dominate, but a notably broad range of material is represented. There are some chronological patterns (despite differences in the relative size of the assemblages for each phase), although it seems the traditions were quite conservative, as there are few substantial changes over the site’s occupation. Key patterns are as follows. Personal ornaments and weaponry are not present before Phase 3. Amongst the tools (table 10.9), antler picks are overwhelmingly from early contexts. Long-handled combs are found from Phase 2 onwards, an invaluable confirmation of the Early Iron Age date of this artefact type in this region. Similarly long-lived are everyday tools such as handles, hide-rubbers and points. Scoops are only recorded from Phases 4–6.

### TOOLS

The use of many tools cannot be closely identified – while some of the fine points are awls for leather-working, the heavier ones could have been used for a range of tasks. Crafts which can be securely identified from their associated tools are textile- and skin-working, as well as the manufacture of the bone and

| Table 10.7  
Patterns of perforation, by phase. |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drill</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Biconical</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Conical</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Cut</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>4</td>
<td>3</td>
<td>9</td>
<td>9</td>
<td>16</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>1</th>
<th>2 Pre-3b</th>
<th>3</th>
<th>3/4</th>
<th>3–6</th>
<th>4</th>
<th>5</th>
<th>5/6</th>
<th>6</th>
<th>?</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
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<td>18</td>
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<td>20</td>
<td>10</td>
<td>31</td>
<td>14</td>
<td>116</td>
</tr>
<tr>
<td>fitting</td>
<td>2</td>
<td>4</td>
<td></td>
<td>3</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>15</td>
</tr>
<tr>
<td>weapon</td>
<td></td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>6</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td>14</td>
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<tr>
<td>ornament</td>
<td></td>
<td>7</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>26</td>
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<tr>
<td>leisure</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
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<tr>
<td>bone-working debris</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>roughout (bone)</td>
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<td></td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>antler-working debris</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>14</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>antler-working – part-worked objects</td>
<td>8</td>
<td>3</td>
<td>1</td>
<td>13</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>11</td>
<td>17</td>
<td>11</td>
<td>79</td>
</tr>
<tr>
<td>?antler</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td>4</td>
<td>10</td>
<td>17</td>
</tr>
<tr>
<td>miscellaneous</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>32</td>
<td>7</td>
<td>2</td>
<td>63</td>
<td>12</td>
<td>5</td>
<td>8</td>
<td>52</td>
<td>40</td>
<td>88</td>
<td>51</td>
</tr>
</tbody>
</table>
antler objects themselves (as discussed above). Textile manufacture is represented by the long-handed combs (their role is discussed more fully in the catalogue), one probable whorl (SF302; illus 10.18), and a series of needles. The latter could also have been used for stitching skins together, and hide preparation is attested by a series of rubbing tools and awls. SF310 (illus 10.22) is an intriguing and unparalleled tool, a blunt-ended rod which was held in the mouth, with an oval perforation; a role in thong or thread preparation is possible (see catalogue), but it is puzzling. Comb SF296 (illus 10.22) is too crude to represent a personal item or to have been used in textile preparation, and was probably used to apply decorative patterns to some material – perhaps leather, since there is no decorated pottery from the site (the sole possible exception being V95). A further enigma is the function of two fine perforated discs SF298–9 (illus 10.27): there are parallels, as discussed in the catalogue, but the lack of any wear traces rules out obvious functions such as a thread-separator, and they may be spacers or strainers of some sort.

Twelve antler artefacts (both offcuts and tools) show evidence of re-use as working surfaces, with knife marks and, especially, punch marks. When well-preserved, these show the fine tip of a diamond-shaped blade, and presumably represent the expedient use of a handy surface which would support the material yet
not damage the tool. These items were recovered from Phases 1 (2), 2, 5 (6), 5/6 (2) and 6.

ORNAMENTS

Table 10.10 shows the range of ornaments by phase. There is an interesting series of pins, and small quantities of other decorative material. Most notable are the unique bone ring-headed pin from Phase 4 (a skeuomorph of a well-known early Iron Age type) and a series of yoke-shafted pins, the only known Scottish examples but with parallels from Wessex which are similar in concept but different in detail. These pin types are best seen as similar solutions to a common problem of holding cloth on a smooth shank (see catalogue). There is little clear chronological patterning, with both yoke-shafted and splayed-head pig fibula pins occurring in more than one phase and overlapping in currency.

There are some very unusual ornamental finds: a decorated cylinder which, on comparison with ethnographic parallels, may be a nose-plug (SF279; illus 10.16); a hollow cylinder like a napkin ring (SF277; illus 10.16) which is probably some form of fastener; and a small ‘drum’ with ring-and-dot decoration which has been cut down from a larger item (SF278; illus 10.27). The fragmentary nature of some of the other decorated items makes their nature obscure. More recognisable is a fragmentary small comb, pierced for suspension (SF187; illus 10.16) – a type often termed a ‘moustache comb’. Whatever its function, it points to a concern with personal grooming. Personal ornaments and decorated material increase in quantity and range from Phase 3. This is consistent with a more general trend towards increased ornament and concern with personal appearance in the later Iron Age (Hill 1997), although the Broxmouth dates indicate this was happening earlier than the first century BC/AD horizon which is the usual focus of scholarly discussion.

Chronological patterning is also seen in the three hemispherical gaming pieces, all from House 4 (SF272–4; illus 10.16), a coincidence which must indicate they were a deliberate deposit. All three have been coloured by charring, presumably to differentiate them from opponents on the board, and one (SF273) had an iron spike to further mark it out. Their Phase 6 context fits wider views of the advent of board games in Britain, which is plausibly seen as an innovation developed from Roman contact (Hall and Forsyth 2011; see catalogue).

WEAPONRY

Eleven socketed points, all but one made from sheep tibiae, can be identified as spearheads (illus 10.24). Most have a perforation for a fastening peg. Three (SF212, SF214, SF222) have been charred to harden them, while their active use is seen in the fractures and cuts which scar their edges. Three ferrules may also come from spears. Hallén (1994: 205-7) has reviewed wider parallels for such bone spearheads, and there is a local parallel from Gheghan Rock (see catalogue). They are securely attested only in Phases 5 and 6. The human bone from the site provides further evidence for inter-personal violence (chapter 11), and these spearheads are a valuable reminder of the range of weapons used in the Iron Age beyond the more visible iron swords and spears.

FIXTURES AND FITTINGS (ILLUS 10.25)
The range of fixtures and fittings is quite restricted compared to what is commonly found on Atlantic Iron Age sites, perhaps implying that wood rather than bone was used at Broxmouth for these items. The

<p>| Table 10.10 |
| Distribution of worked bone and antler ornaments and items with carved decoration, by phase |</p>
<table>
<thead>
<tr>
<th>(numbers in brackets denote multiple occurrences)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>Pin (definite examples)</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Incised decoration</td>
</tr>
</tbody>
</table>
AN INHERITED PLACE

few mounts are all fragmentary, but one (SF276) is highly decorated. Two perforated sheep metacarpals (SF308, SF309) are a well-known type, their wear patterns suggesting use as toggles in this instance. Most striking is an unfinished toggle with two perforations: one longitudinal, and one rectangular and transverse (SF285). The type is discussed in the catalogue, but it is widely distributed in central and southern Britain in the Late Iron Age and Roman periods; it is not known from Atlantic Scotland. Its specific function is unclear; some copper alloy versions were clearly used in horse harness, but the contexts of the bone examples point to a wider range of fastening uses.

OBJECT LIVES
It is easy to think of bone and antler as everyday, expendable items, and many of the finds are quite workaday, but considerable effort was expended in the manufacture of others. In a few cases, re-use and repair indicates that these were valued items. The long-handled comb (SF185; illus 10.17) must have been a favoured tool, as it was rehafted, and its use continued even after the loss of one tooth. A perforation on mount SF281 (illus 10.25) was redrilled to extend its life, while a few other items showed continuing use, even after damage, notably tool handle SF197 (illus 10.23) and spearhead SF217 (illus 10.24). Many of the tools clearly saw extensive use, given the degree of wear visible on the long-handled combs and on the V-toothed comb (SF296; illus 10.22).

10.3.6 Decoration
Decoration is an unusual feature of the assemblage, suggesting it was perceived to have particular, restricted values and meanings. Only 15 items have carved decoration (table 10.11), while five have evidence of deliberate colouring: in four cases the surface was blackened by deliberate charring (SF172, illus 10.18; SF272–4, illus 10.16), while Maxwell’s work (2012) recovered surviving microscopic pigment traces on the antler drum (SF278; illus 10.27; section 10.3.9). This is a valuable reminder that many more of these items

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Decoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>148</td>
<td>Ring-headed pin</td>
<td>Incised decoration on head and elbow</td>
</tr>
<tr>
<td>149</td>
<td>Yoke-shafted pin</td>
<td>Beaded head; incised chevron or grooves at top and bottom of yoke</td>
</tr>
<tr>
<td>153</td>
<td>Yoke-shafted pin</td>
<td>Incised lines define beaded head</td>
</tr>
<tr>
<td>154</td>
<td>Yoke-shafted pin</td>
<td>Beaded head</td>
</tr>
<tr>
<td>155</td>
<td>Yoke-shafted pin</td>
<td>Beaded head</td>
</tr>
<tr>
<td>156</td>
<td>Yoke-shafted pin</td>
<td>Beaded head</td>
</tr>
<tr>
<td>184</td>
<td>Long-handled comb</td>
<td>Transverse saw lines on butt and above teeth</td>
</tr>
<tr>
<td>190</td>
<td>Handle</td>
<td>3 parallel knife cuts – tally?</td>
</tr>
<tr>
<td>191</td>
<td>Handle</td>
<td>4 parallel saw cuts – tally?</td>
</tr>
<tr>
<td>275</td>
<td>Mount?</td>
<td>Form carved to decorative shape; saw-cut transverse decoration and borders</td>
</tr>
<tr>
<td>276</td>
<td>Mount</td>
<td>Panels of knife-cut decoration, including saltire</td>
</tr>
<tr>
<td>277</td>
<td>Cylindrical ?fastener</td>
<td>Carved circumferential grooves, openwork sawn slots, knife-cut crosses</td>
</tr>
<tr>
<td>278</td>
<td>Antler ‘drum’</td>
<td>Carved ring-and-dot motifs</td>
</tr>
<tr>
<td>279</td>
<td>Nose plug?</td>
<td>Knife-cut grooves on terminals</td>
</tr>
<tr>
<td>286</td>
<td>Scoop (unfinished)</td>
<td>Chevron incised at scoop/handle junction</td>
</tr>
</tbody>
</table>
could have been deliberately coloured, but little or no trace would remain.

Objects which are certainly or probably personal ornaments – pins (illus 10.14), the fastener (SF277; illus 10.16), and the possible nose-plug (SF279; illus 10.16) – dominate the list, as might be expected, but they are not the only items on it. Simple incisions on two handles (SF190, SF191; illus 10.23) might be tallies, or might be an owner’s mark. Slightly more complex decoration is found on two tools – a long-handled comb (SF184; illus 10.17) and a scoop (SF286; illus 10.18) – and two mounts (SF275, illus 10.27; SF276, illus 10.25). The decoration falls into two broad types: plastic (the shaping of the object’s form), and incised (with simple knife- or saw-cut linear geometric patterns, and a single example (SF278; illus 10.27) with curvilinear ring-and-dot motifs). As is typical, there are no pieces decorated in the styles normally termed ‘Celtic art’ – the motifs often found on decorative metalwork. These are present on one artefact from Broxmouth – the harness strap junction (SF518; illus 10.55; section 10.6) – but were not applied to bone and antler. While there are rare exceptions (such as the combs from Gheghan Rock and Langbank; MacGregor 1976: nos 274–5), it was clearly deemed inappropriate, in general, for such decorative styles to adorn bone and antler, and indeed this is true in a Scottish context for stone, wood and pottery too. The ‘swirly’ styles (sensu Garrow 2008: 17–19) were almost exclusively restricted to metalwork.

The issue of deliberate colouring raised by Maxwell’s (2012) identification of pigment on one item (SF278; illus 10.27; section 10.3.9) is difficult to contextualise at present, as the evidence so rarely survives. The deliberate blackening by charring seen on gaming pieces SF272–4 and needle SF172 can, however, be discussed, since this would be expected to survive more readily, if present. This technique has a rare but widespread distribution, and has been noted occasionally on other items, especially on pins, where a desire to emulate the appearance of jet has been suggested. Such pins are known in Scotland from Kilellan (Islay), MacArthur Cave (Oban, Argyll), Archerfield (East Lothian) and Dun Cuiér (Barra), while there is a blackened point tip from Borness (Kirkcudbrightshire) (Hunter 2005, with the addition of NMS: GU 297 and HN 81). There are also Romano-British parallels for the blackening of bone in order to emulate jet (eg Allason-Jones 2002: 125). Examples from Carlisle include a needle as well as pins (Padley 1991: 190); as needles appear never to have been manufactured from jet, this suggests that decoration, rather than emulation of a desirable material, was the aim. It is unlikely that the gaming pieces were intended to emulate jet. Although morphologically similar domed gaming pieces are known in jet-like materials, these are typically pegged (unlike the current examples), and current evidence suggests they are rather later, dating to the third to seventh centuries AD (Caldwell et al 2006: 78–9). Instead, it is likely that these examples were coloured in order to distinguish them in a game.

10.3.7 The assemblage in context

How does Broxmouth compare to other lowland Scottish sites, and to the more plentiful material from the Atlantic Scottish and southern English Iron Age? We shall consider first the local, East Lothian context, before turning to other lowland Scottish sites and finally looking more broadly. Although Broxmouth dominates the picture, other assemblages are available for comparison from East Lothian. The broad picture of the area’s Iron Age material culture has been reviewed elsewhere (Hunter 2009: 143–50). Worked bone and antler is known from 14 sites, albeit in small quantities, with no other site producing more than 20 artefacts (table 10.12). The working of bone and antler was clearly a ubiquitous, everyday craft, as almost every site with bone preservation has produced such evidence. There are specific parallels (discussed below in the relevant sections) where the Broxmouth finds resonate with other sites, such as the small comb and spearhead from Gheghan Rock, the deliberate colouring of a bone object at Archerfield, the tool with multiple perforations from North Berwick Law and the whalebone artefacts from various sites. These items also find broader geographical parallels; they are not distinctive regional traditions. There are broad similarities in character between the assemblages: bone and antler were most frequently used for ornamental material and tools (notably for textile- and skin-working, and the ubiquitous points and handles). Again, this is shared with most Iron Age worked bone assemblages. The more distinctive aspects of the Broxmouth material do not, so far, find local parallel, probably due to the small assemblage sizes: there are no other examples of long-handled combs, gaming pieces, double-perforated toggles, or scoops, for instance. The more unusual pin types also find no local parallel, although most pins from other assemblages are too fragmentary or unfinished for their true form to be identified: of the recognisable ones, there is a barrel-headed pin from St Germaines, a possible headless pin and a nail-headed pin from Castle Park, Dunbar (nos 437, 439), and roughouts with expanded heads from Gheghan Rock and Pincod.
Table 10.12

Worked bone and antler from East Lothian sites, based on re-examination of material held in NMS (except for Eweford, Fishers Road and Castle Park, which rely on published catalogues).

<table>
<thead>
<tr>
<th>Site</th>
<th>Ornaments</th>
<th>Tools textile</th>
<th>skin</th>
<th>other</th>
<th>Fittings</th>
<th>Roughouts (r/o) and working debris</th>
<th>Other</th>
<th>Total</th>
<th>Ref</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gheughan Rock</td>
<td>Small comb; composite comb frag; toggle (see roughouts)</td>
<td>Needle</td>
<td>Awl; hide-rubber?</td>
<td>Spatulate tool; point</td>
<td>Pins, points, pegs</td>
<td>Spearhead</td>
<td>20</td>
<td></td>
<td>Laidlaw 1870</td>
</tr>
<tr>
<td>Archfield 1</td>
<td>Toggle (see roughouts)</td>
<td>Whorl (decor)</td>
<td>Antler ‘pick’</td>
<td>Unfin pin (blackened)</td>
<td></td>
<td></td>
<td>4</td>
<td></td>
<td>Cree 1909</td>
</tr>
<tr>
<td>Archfield 2</td>
<td>(See roughouts)</td>
<td>Whorl</td>
<td>Antler ‘picks’; handle?</td>
<td>Ring</td>
<td>Tines; pin; antler-working debris</td>
<td></td>
<td>13</td>
<td></td>
<td>Cree 1909</td>
</tr>
<tr>
<td>Craig’s Quarry Dirleton</td>
<td></td>
<td>Whorl</td>
<td>'Implement'</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td>Piggott 1958: 76, fig 6</td>
</tr>
<tr>
<td>Eweford</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>Lelong and MacGregor 2008: 142</td>
</tr>
<tr>
<td>St Germains</td>
<td>Pin frag; bead?</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Bone-working debris?</td>
<td>4</td>
<td></td>
<td>Hunter 1998: 238–9, ill 18</td>
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<tr>
<td>Castle Park Dunbar (phases 1–6)</td>
<td>2 pins</td>
<td>Whorl; rib tool</td>
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<td></td>
<td></td>
<td>Antler-working debris</td>
<td>6</td>
<td></td>
<td>Cox 2000: 179–181</td>
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<td></td>
<td>Whorl</td>
<td></td>
<td></td>
<td></td>
<td>Whalebone obj</td>
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<td></td>
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<tr>
<td>N Berwick Law</td>
<td>Antler bead</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Roughouts and antler-working debris</td>
<td>15</td>
<td></td>
<td>Richardson 1907: 424–8 and NMS records</td>
</tr>
<tr>
<td>Pincod</td>
<td>2 pierced boars’ tusks</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pin Part-worked tooth</td>
<td>4</td>
<td></td>
<td>Anon 1910: 102</td>
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<tr>
<td>New Mains, Whitekirk</td>
<td>Awl</td>
<td>2 points</td>
<td></td>
<td></td>
<td></td>
<td>Antler r/o and working debris</td>
<td>7</td>
<td></td>
<td>NMS records</td>
</tr>
<tr>
<td>Fishers Rd East</td>
<td>Hide-rubbers</td>
<td>Point</td>
<td></td>
<td></td>
<td></td>
<td>Antler-working debris</td>
<td>5+</td>
<td></td>
<td>Lowther 2000a</td>
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<tr>
<td>Fishers Rd West</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Antler offcut; ?bone-working debris?</td>
<td>1+</td>
<td></td>
<td>O’Sullivan 2000</td>
</tr>
<tr>
<td>Dryburn Bridge</td>
<td>Handle</td>
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<td></td>
<td></td>
<td></td>
<td>Antler-working debris</td>
<td>2</td>
<td></td>
<td>Hunter 2007d</td>
</tr>
<tr>
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<td></td>
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<td>7</td>
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</tbody>
</table>

Total (n=14) 7 5 3 8 1 12 5 86+
Turning to the wider southern Scottish picture, the small numbers of finds from a range of sites merit synthesis. That cannot be attempted here, but table 10.13 is compiled from a selection of southern and eastern Scottish sites with reasonable bone assemblages: a series of Ayrshire crannogs, notably Buiston and Lochlee (Munro 1882); Borness Cave, Kirkcudbrightshire (Corrie et al 1874); Dunagoil, Bute (Mann 1925); and Sculptor’s Cave, Covesea (Benton 1931: 184–8, 197–8, figs 8–9, 18). Table 10.13 tallies up the occurrence of the most common categories of objects in the sample of 22 sites, and in a more restricted sample of assemblages of 20 or more objects (Broxmouth, Gheghan Rock, Borness, Covesea, Buiston, Dunagoil, Lochlee). This confirms the regular use of bone and antler tools for a range of everyday activities, notably textile and skin preparation. The ubiquitous points and handles point to a wide range of roles and tools, while the working of bone and antler was itself commonplace. The only common decorative items are pins; the occurrence of specific types of pins, and combs, is strongly chronologically patterned.

Comparison of the seven larger assemblages in relation to Broxmouth proves very interesting. The only one with close parallels to Broxmouth is Borness cave. This assemblage of some 120 worked osseous objects has a very similar range. As well as the normal range of tools, such as needles, awls, handles and pegs, it has long-handled combs, two hemispherical gaming pieces, spearheads, scoops and double-perforated toggles (Corrie et al 1874). All these types find parallels beyond lowland Scotland as well, but Borness is the only other southern Scottish site to have toggles, and one of only two other Iron Age sites with long-handled combs. These more unusual aspects also find parallel in the Romano-British assemblages of the Settle caves in north Yorkshire (eg Dearne 1998), hinting at broader central British traditions of bone-working. The lack of parallels from the Buiston assemblage is not surprising, since much of this is Early Medieval in date, but other Ayrshire and Wigtownshire crannogs, some with secure Iron Age dates, also fail to provide parallels. The rich assemblage from Dunagoil (Bute) is also notably different, with its own idiosyncrasies and unusual items (such as a decorated whistle and antler cheek-pieces), but with none of the distinctive material known from Broxmouth and Borness Cave; differences are seen also in details of pin and point types. Dunagoil is not closely dated but is likely to be similar in range to Broxmouth, so the differences are striking. This suggests a degree of regionality in bone-working traditions.

It is hard to compare Broxmouth with the north-east Scottish material, since the only significant assemblage comes from Sculptor’s Cave, Covesea (Benton 1931: 184–8, 197–8, figs 8–9, 18). This has material dating to both the Late Bronze Age and Roman Iron Age, though the division needs renewed work in the light of recent radiocarbon dates on the sequence (Armit et al 2011). In addition to normal everyday types such as points, awls, needles and hide-rubbers, there is an unusual range of pins, as well as netting needles. A miniature comb, a scoop and a bead provide parallels for some of the distinctive Broxmouth finds, but the split metapodial points which are the most common form at Covesea are unknown at Broxmouth, and at Borness and the Ayrshire crannogs, although they are common elsewhere; these are further signs of regional and chronological patterning in this understudied material.

The more everyday aspects of the Broxmouth material find ready parallel among a wide range of Iron Age assemblages. Parallels for types such as the points, handles, needles, and so forth are common among the rich assemblages of both Atlantic Scotland and Wessex. A more detailed comparative study to identify any specific regional differences in terms of proportions of types, manufacture, or use patterns lies beyond the scope of this work, though some suggestions have been given above. Of the more unusual features of the Broxmouth assemblage (such as long-handled combs, double-perforated toggles, spearheads and hemispherical gaming pieces), most find wider comparisons in lowland and Atlantic Scotland, and indeed, elsewhere in Iron Age Britain. Details of the treatment of bone, such as deliberate colouring by charring, are also an expression of wider practice. In contrast to earlier scholarship, the links to southern British material can now be seen as representative of this broader milieu of worked bone and antler use in the British Iron Age. The material was worked and used in essentially similar ways across Britain, but we can also spot regional differences: there are broad regional patterns in long-handled combs (discussed below), while the rectangular-perforated toggles of Late pre-Roman and Roman Iron Age date are common in western and central Britain, but are not found in the Atlantic regions. Equally, some artefact types found in Wessex (such as the decorated, trimmed scapulae from Meare; Gray 1966: 305–7, pl LV, B143, B86; Coles 1987: 52, B59) are not found elsewhere. Differences in the availability of raw materials also generate regional patterning: cetacean bone is, for instance, exceedingly rare in Wessex and uncommon in lowland Scotland,
but abundant in the Atlantic zone, leading both to its preferential employment for items such as long-handled combs (Tuohy 1999: 13–14, 38) and to its use as a sturdy surrogate for wood in tools and fittings (Clarke 1971: 33–8). This gives Atlantic assemblages a very distinctive character. In contrast, red deer antler in Atlantic areas was smaller than in lowland Scotland, thus constraining the size of antler objects.

Broxmouth also shows variants which suggest the development of local, and even site-specific traditions. This is seen most clearly in the yoke-shafted pins, a type otherwise unknown in the area but which represents a functional adaptation of normal pin types; this would have been a distinctive identifier of people from Broxmouth, when seen in use. Parallels are found in a similar, rare modification in some Wessex pins (see catalogue), which differ in detail but are similar in concept, and suggest another local solution to the similar problem of keeping bone pins in place. Such local working traditions have also been noted by Clarke (1998: 389) in relation to patterns of coarse stone tool use, with certain types specific to a single site or a restricted region. This again suggests the development of distinctive local practices. We must allow also for the development of expedient one-off solutions, especially in a ubiquitous raw material such as bone. In this lies the origin of many of the finds labelled ‘miscellaneous’, which are hard for us to classify today: one-off adaptations to a specific need.

We remain at an early stage in our understanding of this wider picture. As yet, we can say little about chronological variation, and regional patterning would undoubtedly reveal more if subjected to detailed scrutiny. Yet the Broxmouth material reminds us of the need to consider this material at a variety of scales: from types which draw on the common repertoire of the British Iron Age, to regional variants (at various scales), and site-specific adaptations and developments.

10.3.8 Catalogue

The catalogue is organised into functional categories, as far as these can be established, with a summary of the group and relevant comparanda preceding the detailed entries.

PINS (ILLUS 10.14–10.15)

The Broxmouth pins are an unusual assemblage. There are only a few of the normal Iron Age types, such as pig fibula pins. Instead, the group is dominated by an unusual set of yoke-shafted pins (illus 10.14) and a remarkable skeuomorph of a ring-headed pin (SF148). This has a humped shaft to retain the cloth, although the slenderness of the shank makes one worry for its security, and indeed it is broken at the bottom. The head is a complete circle, decorated with linear incisions over half of its circumference and on the elbow below the ring; these would have been the most visible areas when the pin was in use, with the hump concealed by cloth and the concave side of the pin thus facing forward.

Iron and copper alloy ring-headed pins are known from Iron Age sites across Britain, but this is the only known bone example. The development of ring-headed pins is something of a typological classic, though the quest for a logical development sequence has rather obscured regional variations. It is a wholly British form which developed from the Late Bronze Age swan’s-neck pin (Dunning 1934; Fowler 1960: 156), with northern variants – projecting ring-headed pins – representing a further development. In fact, regional variation in form is increasingly recognised, both spatially and temporally, thus making traditional typological dating (Dunning 1934: 265–9; Coles 1959) unreliable. Sadly, most examples are from unsecure or poorly dated contexts, and so the Broxmouth dates are of considerable value: the pin was recovered from Phase 4, which dates to the third century BC. Its features are readily paralleled elsewhere. Heads with similar incised decoration are known from Hammersmith (Middlesex), Woodeaton (Oxon) and Co Antrim (Dunning 1934: fig 3.5, fig 4.11; Raftery 1984: fig 84.5–6), while the humped (or involute) profile is seen on the Woodeaton pin and on examples from Cold Kitchen Hill (Wils) and Meare East (Somerset) (Dunning 1934: fig 4.11 and 13; Coles 1987: fig 3.12). The Woodeaton pin is a particularly close parallel for the Broxmouth artefact, in head decoration and shank form. Although the shafts of the known Scottish examples are generally straight or nearly so, one Dunagoil example is notably curved (Dunning 1934: fig 7.5). The southern parallels need carry no particular significance, as the type is increasingly recognised as widespread. Scottish finds do not need to be seen as imports, and there are Scottish metal examples with cast rings (Simpson and Simpson 1968: fig 3; the caption is transposed with fig 1) and decorated heads (sometimes ornately so) (Dunning 1934: fig 7.4), which could have served as models for the bone pins. Indeed, there is a copper alloy version from Broxmouth itself (SF514; Phase 2; section 10.13), although of a different form – it has the swan’s-neck profile, but the end is turned over into an open loop rather than a ring.
Illustration 10.14
Pins: ring-headed and yoke-shafted.
**Table 10.13**
Most common artefact types, ranked by frequency, in a sample of 22 assemblages (the East Lothian ones from table 10.12, and others as noted in the text); and from seven southern and north-eastern Scottish assemblages with 20 or more finds.

<table>
<thead>
<tr>
<th>category</th>
<th>type</th>
<th>tally (from 22)</th>
<th>tally (from 7)</th>
</tr>
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<tbody>
<tr>
<td>working evidence</td>
<td>antler</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>personal</td>
<td>pin</td>
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<tr>
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<td>point – ?</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>tool – other</td>
<td>handle</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>tool – textile/skin</td>
<td>rubber</td>
<td>8</td>
<td>6</td>
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<tr>
<td>working evidence</td>
<td>bone</td>
<td>8</td>
<td>4</td>
</tr>
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<td>6</td>
<td>6</td>
</tr>
<tr>
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<td>point – shaft</td>
<td>6</td>
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<td>tool – other</td>
<td>point – splinter</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>tool – textile/skin</td>
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<td>6</td>
<td>2</td>
</tr>
<tr>
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<td>pick</td>
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<td>1</td>
</tr>
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<td>personal</td>
<td>comb 1-piece</td>
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<td>fitting</td>
<td>toggle – dumb bell</td>
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<tr>
<td>tool – other</td>
<td>point – split metapodial</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>decoration</td>
<td></td>
<td>7</td>
<td>6</td>
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</table>
The yoke-shafted pins are a very unusual type; as far as we know, they are otherwise unknown in bone in the Scottish Iron Age, though a closely similar copper alloy pin was found near Edinburgh (Newman 1995: fig 1). All of the Broxmouth examples are from Phases 3 and 5. The yoke is a simple but effective device to retain the cloth and prevent the pin from slipping when in use; it is the functional equivalent of the curved or humped shanks of ring-headed pins. Of the 12 such pins, seven are unfinished; in one case (SF160), it was being reworked from another item (a bone point). Some of the pins have a pronounced hump, like a yoke, while others simply have a concave notch abraded into one side. These types exploit the inherent physical strength of the bone and would therefore be less liable to breakage. The technology involved is simple – knife-cutting, abrasion, and polishing – and less skilful than that for the fragile, ring-headed pin; it is notable, however, that five of the pins were decorated, which is unusual in the assemblage and indicates they were seen as special in some way. The range of decoration varies in execution; it focuses on the head and comprises some form of beading or segmentation, in some cases with simple light incisions (eg SF153), in others grooved sufficiently deep to form beads (eg SF154–6). On the most ornate example (SF149), the decoration includes a chevron motif, with further incisions also at the base of the yoke. Beaded or grooved decoration finds parallels elsewhere (eg Howe, Orkney and Foshigarry, North Uist; Ballin Smith 1994: ill 134, no 2927; Hallén 1994: 210, ill 9, no 6); it is the form of the pin, not the decorative style, which is unusual.

Parallels for these yoke-shafted pins are rare. There is a related type in Wessex, although only a few examples are known, and here the notch is typically rectangular rather than concave. Gray (1966: 299, fig 83) discusses the six examples from Meare West, Somerset, while Wheeler (1943: 308, fig 105, no 10) illustrates a plain example from Maiden Castle and reviews the few known parallels; only one Meare pin, and a further example from the later excavations at Maiden Castle (Sharples 1991: fig 188.26), have a concave yoke like the Broxmouth ones. This difference suggests a local response to a similar problem of retaining the pin. Although Gray and Wheeler equivocate over the function of these items, the decorative heads on four of the Meare examples suggest they were pins. There are also a few copper alloy examples of humpbacked/yoke-shafted pins (some stray finds, others from Iron Age sites) which provide parallels. The stray find from near Edinburgh (Newman 1995: fig 1; see above) is notable, not just as a local parallel, but because it has both a beaded head and low-relief beading at the base of the ‘yoke’, similar to SF149. There is a more southerly example from Ham Hill, Somerset (Dunning 1934: 271, fig 2.4); in other examples illustrated by Dunning, the hump lies near the top of the shaft and is better seen as a decorative feature.
The pins with splayed heads (Phases 3–6) use the natural form of pig fibulae for decorative effect, with minimal modification; SF161 appears to be shaped to mimic this form. These are a much more typical pin type, which is common over a long time period: there are examples from the Late Bronze Age levels of Sculptor’s Cave, Covesea, Moray (Benton 1931: fig 8.8; also fig 18.5, from later levels); from Iron Age sites such as Keil Cave (Ritchie 1967: fig 2) and Dun an Fheurain, Argyll (Ritchie 1971: fig 2); Foshigarry, North Uist (Hallén 1994: fig 10.8), and Lochspouts, Ayshire (Munro 1882: 175, fig 171); and from Viking sites such as Keil Cave (Ritchie 1967: fig 2) and Dun an Fheurain, Argyll (Ritchie 1971: fig 2); Foshigarry, North Uist (Hallén 1994: fig 10.8), and Lochspouts, Ayshire (Munro 1882: 175, fig 171); and from Viking assemblages, such as Freswick, Caithness (Curle 1939: pl LXXIII). The final pin type at Broxmouth (SF178) is very plain and very short, although the fact that it is so well finished supports its identification as a pin, rather than a point or peg.

Six further items (SF258, SF267, SF312, illus 10.15; SF439, SF440, SF442, illus 10.29) are likely to be unfinished pins. Four are in antler and two (SF258, SF312) in bone. They are too far from completion for any typological discussion apart from SF312; this is a further pig fibula pin but the head is perforated, suggesting that it was intended to attach a cord for looping round the tip in order to prevent the pin from coming loose.

**Ring-headed pin**

SF148 (illus 10.14) Decorated ring-headed bone pin with angular humped shank, broken after second bend in shaft. The head (slightly oval, with a biconical perforation, angled in section internally and rounded externally) is decorated with eight or nine transverse knife-cut incised lines, restricted to the half of the head on the concave side of the bent shank. An X-motif is incised on the ‘knee’ of the bend itself. The shank is worn but shows a general polish. Length: 43.5mm. Shank diameter: 4mm. Head: (externally) 15 × 17mm; (internally) 8 × 9mm. Phase 4. Context: CEQ (ash deposit within Structure C).

**Yoke-shafted pins (all of bone)**

SF149 (illus 10.14) Yoke-shafted, humpbacked decorated pin. Six beads are defined on the slightly tapering cylindrical head by knife-cut grooves; below these is a V-shaped motif which intersects two transverse grooves on the front (concave) face just above the yoke; two further grooves mark the base of the yoke. Shank tapers to fine point and has rounded section. Displays general polish. Length: 54mm. Width: 8mm. Thickness: 3.5mm. Yoke length: 20mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).


SF151 (illus 10.14) Unfinished yoke-shafted and slightly humpbacked pin. Head squared. Shank tapers to point and has sub-square section. Displays general polish, but visible abrasion scars indicate it is unfinished; a noticeable facet at the tip is either unfinished or broken. Length: 61mm. Shank: 4mm. Hump: 6.5mm. Yoke length: 13.5mm. Phase 3. Context: LAD (midden infill into northern part of the Outer Ditch, East Entrance).

SF152 (illus 10.14) ?Unfinished yoke-shafted pin with tapered and slightly rounded head. Shank tapers to fine point. Shaft has irregularly rounded section. Displays general polish and abrasion from manufacture, suggesting the final polishing was unfinished. Dimensions: 52 × 4 × 3.5mm. Yoke length: 15mm. Phase 3c. Context: BBA (midden infill into western terminal of the Middle Ditch, South-west Entrance).


SF154 (illus 10.14) ?Unfinished yoke-shafted pin with decorated head. Shank only slightly yoked and slightly curved. Flat-topped head is decorated by grooves, giving a segmented effect, with seven segments. Shaft has irregular rounded section. Yoke extends onto beading (which stops short on one edge, implying this was planned). Two opposed yokes near the tip give a rather sinuous end; this unusual feature suggests it is unfinished. Displays general polish but no specific use-wear. Length: 49mm. Diameter: 5mm. Hump: 5.5mm. Yoke length: 16.5mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF155 (illus 10.14) Unfinished yoke-shafted pin, point broken and head ?snapped square. Head divided into three squared pellets by incised grooves. Shank has squared section, with cancellous tissue visible on one face. Broken just below well-defined hump of yoke. Displays general polish. Dimensions: 43 × 6 × 4mm. Yoke length: 17mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF156 (illus 10.14) Yoke-shafted pin, slightly humpbacked. Flattened head divided into three squared pellets by two knife-incised grooves, more pronounced on the yoke.
side. The third pellet is formed on one side by the cut of the yoke. Shank has sub-square section, oval below the yoke. Displays general polish; tip rounded from use. Length: 50mm. Diameter: 5.5mm. Yoke length: 15mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF157 (illus 10.14) Unfinished yoke-shafted pin, slightly humbacked. Rounded section; striations covering it indicate that its manufacture was incomplete. Dimensions: 82 × 11.5 × 8mm. Yoke length: 20mm. Phase 5. Context: CBM (secondary midden in Inner Ditch, over Structure D).


SF160 (illus 10.14) Unfinished yoke-shafted pin, manufactured from a broken bone point. Splinter of bone, use-polish on the tip indicating it had been utilised previously. Reworked to give a narrow squared spatulate head; incipient notch abraded for yoke (Length: 12mm). Dimensions: 75 × 10 × 7mm. Phase 5. Context: CBM (secondary midden in Inner Ditch, over Structure D).

Plain pins with splayed heads

SF161 (illus 10.15) Unfinished pin with slightly splayed flattened head; slight constriction at shank, which tapers to fine point and has oval section. Displays overall polish, but all-over abrasion scratches indicate it is unfinished. Length: 63mm. Head: 7 × 2.5 × 13mm. Shank diameter: 3mm. Phase 5. Context: CBM (secondary midden in Inner Ditch, over Structure D).

SF162 (illus 10.15) Flared head formed by articular end of pig fibula. Oval-sectioned shank tapers gently into tip, which is slightly rounded and polished from use. Length: 65mm. Head: 11 × 3mm. Shank diameter: 4mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

SF163 (illus 10.15) Flared head formed by articular end of pig fibula; steps into oval-sectioned shank. Point broken, rounded and slightly polished from use. Shaft has round section and displays general polish. Dark surface. Length: 68mm. Head: 12 × 3mm. Shank: 3 × 5mm. Phase 3/4. Context: BBJ01 (midden infill into eastern terminal of the Inner Ditch, South-west Entrance).

SF164 (illus 10.15) Splayed head formed by articular end of pig fibula. Point broken. Shaft has round section and displays general polish. Length: 48mm. Head: 12 × 3.5mm. Shank diameter: 4mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).


SF312 (illus 10.15) Unfinished pin. Pig fibula; articular head has drilled perforation (Diameter: 3.5mm); shaft tapers to square section and is slightly polished; point broken. Square section and presence of extensive manufacturing striations indicate it is unfinished. Length: 57mm. Head: 12 × 4mm. Shank: 5.5 × 4.5mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

Other pins (see also antler roughouts, SF439, SF440, SF442)

SF178 (illus 10.15) Flat-topped pin, slightly swollen below the head; tapers to a point which is rounded and polished from use. Head has faceted section, body section is round. Short but well-finished, supporting identification as a pin. Length: 37mm. Diameter: 4.5mm. Phase 6. Context: JDM/JDN (House 4, between stage 2/3 and stage 4 walls).


SF267 (illus 10.15) Unfinished antler ?pin; faceted shaft steps into near-rectangular head and tapers to point. Dimensions: 50 × 8 × 5.5mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

OTHER PERSONAL AND ORNAMENTAL EQUIPMENT

Comb (illus 10.16)

Broxmouth produced a fragmentary miniature comb (SF187), for personal grooming, from Phase 5. It has a perforation for suspension, suggesting that this was a personal item. This is a recognised Iron Age type. MacGregor (1974: 80) notes examples in Atlantic Scotland from Burrian, Midhowe and Borwick in Orkney, and Bowermadden and Kettleburn in Caithness; to this can be added more recent Orcadian finds from Howe (phase 7; first to fourth centuries AD); St Boniface, Papa Westray; and Balfour Castle, Shapinsay (Ballin Smith 1994: 177, ill 100, no 4907; Wilson 1998: 140, ill 170; DES 2005: 100). The distribution is broadened by an example from the Sculptor’s Cave, Covesea, Moray,
AN INHERITED PLACE

and by a series of humpbacked examples from Gheghan Rock, East Lothian; Langbank, Renfrewshire; and Close ny Chollagh, Isle of Man (Benton 1931: 198, fig 9.1; MacGregor 1976: 143, nos 274–5; Gelling 1958: fig 4, no 10). These have parallels in Ireland, from Lough Crew, Lagore and Knowth, Co Meath (Raftery 1984: 210–13). One of the items from Borness cave, published by Tuohy (1999: 36, BOR3) as a long-handled comb fragment, is more plausibly an unfinished miniature comb, given its thin, flat section. The Burrian and St Boniface examples are plain and unperforated, but Bowermadden and Midhowe have an openwork loop for suspension, while the Howe and Shapinsay examples are both decorated and perforated; Covesea is decorated but imperforate, Close ny Chollagh plain and perforated. An unusual example from Mangersta, Lewis, appears to be a long-handed comb in the process of being cut down into a miniature comb (Carson 1977: 370, fig 1.1). The Broxmouth artefact is valuable in broadening the type’s distribution. The idea finds local parallel in the humpbacked decorated example from Gheghan Rock, rather larger and of a different form, but showing a
similar concern with fine personal grooming, and also perforated for suspension (MacGregor 1976: no 274). A unique copper alloy example from Tanworth in Arden, Warwickshire, decorated in the Mirror Style of Celtic art, shows that similar combs were in use elsewhere in Britain (PAS WAW-250340).

SF187 (illus. 10.16) Single-sided miniature antler comb fragment with a straight back and seven surviving fine teeth 10mm long, the end one broken. It has broken where there is a drilled perforation (Diameter: 3mm) through the plain band above the teeth. The back, very slightly angled to the tooth line, is sawn; the V-profile of the tooth notch bases indicates they were sawn from two sides. The teeth display general polish and rounded tips; all show fine horizontal relatively even-spaced grooves (up to 12–14 over the first 16mm of the teeth). The narrow strip above the teeth indicates this is a single-piece rather than a composite comb (which is unknown in the Iron Age), the perforation positioned centrally for suspension (implying a length of c. 38mm). Length: 19mm. Height: 18mm. Thickness: 4mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

**Personal ornaments**

Ornamental material is otherwise rare. A near-circular pendant (SF283), perforated pig incisor (SF280) and bead roughout (SF284) find occasional Iron Age parallels (eg Hallén 1994: 225, illus 16, 1–3). The decorated cylinder (SF277) has proved more elusive to parallel, but its form suggests that it acted as a fastener (the decoration implying this was a personal ornament, perhaps a clothes or belt fastener). A more speculative interpretation is that of SF279, a cylinder ornament, perhaps a clothes or belt fastener (the decoration implying this was a personal ornament, perhaps a clothes or belt fastener). A more speculative interpretation is that of SF279, a cylinder ornament, perhaps a clothes or belt fastener.

SF277 (illus. 10.16) Decorated antler cylinder, ends sawn and cancellous tissue removed. Decorated with three circumferential grooves, the end ones knife-cut, the central one comprising two opposed sawn slots which penetrate the cylinder's wall; knife-cut crosses lie at their junction. All surfaces have some polish, but the lack of use-polish in the slots indicates they are decorative. Diameter: 32mm. Height: 24mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

SF279 (illus. 10.16) Nose-plug? Cylinder made from compact antler, tapering to both ends which are decorated with double knife-incised grooves. One end is blunted, the other, slightly longer, is broken, its form thus unclear. The object is covered in striations and is slightly polished. A most unusual item; its form and decoration suggest it is an ornament, perhaps a body ornament such as a nose-plug (compare Miles 1963: fig 5.35 for native American parallels). Length: 57mm. Diameter: 7.5mm. Phase 6. Context: KAS (House 1, mixed deposit).

**Gaming pieces**

One complete and two fragmentary antler domes were found in closely related contexts in House 4 (Phase 6). They are made from the very compact bone from the pedicle of red deer. The raw material thus comes from a hunted male deer and might have carried some symbolic meaning, although it was a typical material for gaming pieces in other periods (MacGregor 1985: 135). All three are deliberately blackened (probably as the result of careful and deliberate heating) and polished; similar evidence of deliberate colouring is attested on other finds and at other sites (see above). The core of one dome (SF273) is stained with rust, suggesting that it had contained an iron spike. This had projected from the convex rather than the flat side, implying that the artefact was not a pin-head or a peg; it may have served to discriminate a particular playing piece. The lack of evidence for pegs means that they are not analogous to the morphologically similar ‘jet’ playing pieces (eg Curle and Cree 1920: fig 20.55; Callander 1927: fig 5), nor to pegged bone domes (eg Stevenson 1955: 292; Alcock 1963: 177; MacGregor 1974: 71), although the blackening and polish evident on the Broxmouth domes may reflect an attempt to simulate the colour and glossy appearance of polished jet. Instead, they find close parallel in two very similar gaming pieces from Borness Cave, Kirkcudbrightshire (Corrie et al 1874: 497, pl XXIII, no 114 (decorated); NMS: HN 271.
Long-handled combs

Hide-rubbers

Illustration 10.17
Tools: textile- and skin-working.
THE FINDS

69). From Burrian, Orkney, comes a further parallel (MacGregor 1974: 88, fig 16, no 207; inspection suggests it is unfinished), while another Orcadian example, from Burray (NMS: GC 30) has an iron spike (similar to SF273) protruding from the convex rather than the flat side, thus suggesting that it too was a marking device rather than a pin head.

The restriction of gaming pieces to Phase 6 (Late Iron Age/Roman Iron Age) fits broader patterns. Such pieces likely to relate to board games are thought to be a Late Iron Age phenomenon, and indeed were probably inspired by contact with the Roman world and knowledge of the games played there (Hunter 1998b; Hall 2007: 7–19; Hall and Forsyth 2011).

SF272 (illus 10.16) Antler pedicle dome; smooth, with all surfaces highly polished. Around two-thirds of the surface is blackened by charring, probably a deliberate colouring. Height: 19.5mm. Diameter: 32.5–34mm. Phase 6. Context: JDM/JDN (House 4, between stage 2/3 and stage 4 walls).

SF273 (illus 10.16) Incomplete, fragmented antler pedicle dome, the surfaces smooth and highly polished. A piece of corroded iron found adhering to an inner fragment is no longer present, but corrosion traces imply it was inserted vertically in the convex surface, suggesting it was not a pin or designed as a peg (for which the flat surface would make more sense), but perhaps a marker to discriminate a particular piece. The dome appears to have been lightly charred to colour it; the resulting dark stain extends into the core. Height: 25mm. Diameter: 45mm. Phase 6. Context: JDM/JDN (House 4, between stage 2/3 and stage 4 walls).

SF274 (illus 10.16) Incomplete, fragmented but mostly intact antler pedicle dome. Outer surfaces smooth and highly polished. The base appears to have been lightly charred (to colour it?), the resulting dark stain extending into the core. Height: 26mm (surviving). Diameter: 45mm. Phase 6. Context: JIS01 (House 4, stage 2 pit).

TOOLS: TEXTILE- AND SKIN-WORKING (SEE ALSO AWLS, BELOW)

Long-handled combs (illus 10.17)

Four long-handled combs were recovered from Broxmouth. This is almost a type-fossil of the British Iron Age, being numerous in the areas of good bone preservation in southern England and on Scottish Atlantic Iron Age sites. The function of these items has seen considerable debate. They were long interpreted as weaving combs, used to beat up the
weft during the weaving process. Subsequently it was argued that the often irregularly set teeth and curved sections would distort the warp and apply uneven pressure to the weft; thus, a role as hair ornaments was suggested (Hodder and Hedges 1977: 99), whilst other suggested uses included removing the wool from sheep, preparing fibres or defleshing hides (reviewed in Tuohy 1999: 56). Detailed study of wear traces and experimental work has suggested that they are indeed appropriate for use in textile-working; the consistent and distinctive use-wear can be explained in terms of weaving, but makes little sense in relation to hair combs (Sellwood 1984: 375–8; Tuohy 1999: 56–9).

In the most recent consideration of the problem, Tuohy (1999: 97) characterises them as ‘multi-functional tools used in various aspects of weaving’; her detailed discussion argues that many saw use in making braids or webbing (which could be used as strapping, decorative finishes, or starting borders for weaving), but the heavier-duty examples could have been used for combing wool prior to spinning, or for beating up the weft in coarser fabrics (such as rug-making) or fine basketry.

Three of the Broxmouth combs are well preserved; their designs and wear patterns (table 10.14) indicate some variation in their use. SF183 has short, strong, regular, and widely spaced teeth, characteristics Tuohy (1999: 40–1) sees as typical of wool-combs which are often found in the northern specimens. The wear is symmetrical and the tips blunted. SF184 has closely set, more irregularly spaced, comparatively delicate teeth, the irregular end indicating asymmetrical wear, with the tips worn to varying degrees. SF186 has clearly seen extensive use, because it has been used after some of the teeth have broken, although its poor condition prevents detailed study.

Comb SF185 has had the most complex history, and bears the clearest wear patterns. As discussed in detail below, it has seen extensive wear (with use continuing after one outer tooth broke) and repair, with the butt being reshaped into a tang to take a handle after it broke. There are also distinctive asymmetrical wear patterns in both polish and grooving from threads, which indicate it was consistently and habitually used at an angle in the same direction. This suggests its aim was to straighten and separate fibres rather than to beat down a weft, since for this task the tooth plane should be parallel to the weft.

Although previous generations saw the distribution of long-handled combs, concentrated in southern England and on Atlantic sites, as reflecting diffusionist impulses from south to north, this is largely a factor of the distribution of favourable soils for preservation. Broxmouth is a valuable dot on the map in the gap between the two, and it provides some useful comparative material. Although Tuohy’s corpus of long-handled combs is very useful, a number of aspects of the analysis are rather unhelpful. Her geographical division is idiosyncratic, dividing Britain at Hadrian’s Wall (and thus splitting even Roman military finds into two categories), when her distribution map (Tuohy 1999: fig 2) suggests that central Britain would be a more useful analytical category. She gives little consideration to chronology or context, considering the material as essentially Iron Age. This seems to be true for the vast majority of the southern English material, but it is clearly not the case for either central Britain (where there are many finds from Roman sites, as her catalogue shows), nor for the Atlantic zone, where recent finds demonstrate that the style continued until the mid-first millennium AD (Sharples 2003: 154). This is not the place to consider the implications of this for styles of textile working, although Tuohy (1999: 59) suggests that tablets and heddles were introduced in the Roman period and were more efficient ways to make braid. It should be noted, however, that tablets for tablet weaving have been recovered from various Scottish sites, although they are generally poorly dated (Henshall 1950: 148, 161; MacGregor 1974: 80, fig 10, no 148; Sharples 2003: 154). Here, however, attention will focus on what may be seen as the central British finds from the Humber to the Forth, of which 51 are known to the writer.

The bulk of finds derive from Roman military sites, such as Newstead, South Shields, Corbridge and Chester, but they come also from Romano-British rural sites, such as Catcote (Co Durham) and the Settle caves, with firmly pre-Roman examples from Garton Slack, East Yorkshire. Broxmouth is important, along with other southern Scottish examples from indigenous sites at Borness Cave, Kirkcudbrightshire and the Dod, Roxburghshire (Corrie et al 1874: pl XIX; Smith 1982: 133), in confirming that such combs were in indigenous use, rather than requiring us to see them as an introduced tradition. At Broxmouth, one comb (SF183) is from a Phase 2b context, one (SF185) is from Phase 3c, and two (SF184, SF186) are from Phase 6. The Phase 2 context (490/430–395/375 cal BC at 68% probability) puts SF183 in the early horizon of such long-handled combs in Britain (Tuohy 1999: 102–3; for earlier, Late Bronze Age versions see
Savory 1980: 71, fig 51, no 505). Other Early Iron Age Scottish examples come from Bu, Orkney and Sandwick, Shetland (Hedges 1987: 43, fig 1.14, no 2; Goldberg and Hunter forthcoming).

A number of features suggest these central British combs may be seen as a regional tradition. The butts are overwhelmingly of Tuohy’s type F, expanded rectangular or near-rectangular (Tuohy 1999: fig 12); apart from Broxmouth (where only one is a variant of this type; table 10.14), the only exceptions to this are single finds from Newstead, Chesters, Wallsend, Binchester, Malton and Castleford. This is a marked contrast to the southern English and Atlantic material, which show much more diversity; indeed, while F-butts are well attested in the south, Tuohy records only a single Atlantic example, from Orkney (Tuohy 1999: 32–4, 39–40, 42). The diverse range of decoration may be seen as variations on a theme, being dominated by horizontal divisions of the shaft and butt, by zones with zigzags, chevrons and cross-hatching, and, more rarely, by the use of ring-and-dot motifs. The majority (65%) of the combs are decorated.

Broxmouth varies from the central British norm in the diversity of butt forms and the preponderance of plain combs (table 10.14). Both are likely to relate to the extended chronology of the site. The Broxmouth decorated comb (SF184) is late (Phase 6), reflecting the increasing prevalence of decorated material in the later Iron Age. The diversity of butts may also reflect a broader earlier Iron Age tradition (more similar to the diversity seen in the south), with the Late Iron Age/Roman tradition being more restricted; only further finds will help to confirm this.

SF184 (illus 10.17) Decorated antler long-handled comb. Rough exterior surface of antler has been removed; the exposed surface is abraded. It has a pronounced curve in cross-section and an expanded oval butt, its curve following the natural antler, decorated with two roughly parallel sawn transverse lines flanking a drilled perforation (Diameter: 5mm). A further sawn line (double-cut at one end) demarcates the base of the dentition. The nine teeth are closely set, of fairly regular thickness (2–3mm) apart from the thicker edge ones; they are cut to slightly varying length (average: 35mm). The tips of the teeth form a sinuous line, indicating asymmetrical wear, those which are more worn down having sharpened tips, the others rounded. The butt is closest to Tuohy (1999: fig 7) type S, although a number of the ones she classifies as type F have a rather similar rounded rectangular form to this one (eg Tuohy 1999 vol II: CAR 2, DOG 1, YOR 4). Length: 118mm. Width: 37mm. Thickness: 15mm. Phase 6. Context: JCR03 (House 6, pit).

SF185 (illus 10.17) Antler long-handled comb. The rubicose surface of the antler has been removed and the surface smoothed and highly polished. Pronounced curve in cross-section. In its present form this comb has an unusual shouldered form at the butt end, leading into a short damaged tapered tang (Length: 10mm; Width: 11mm) for a lost handle, indicating repair of the butt after breakage. There are seven teeth, with one outer one broken, its stump worn and polished from continuing use. The remaining teeth (average length 26mm) vary in thickness and length: both tips and notches form a convex curve, the line of the notches flattening at the sides; some use-polish extends to the base of the notches, and the outer ones are angled rather than squared, with a groove extending from one. The tips are asymmetrical, rounded from wear, and slightly discoloured over their first 10mm (from oil in the wool perhaps). Viewed teeth downwards, the third tooth from the left also shows pronounced fine grooved wear, with two dominant grooves 5mm apart, two slighter ones equidistant between these, and a fifth some 8mm lower; these U-sectioned grooves extend asymmetrically and at an angle onto the tooth sides, being more extensive on the side towards the broken tooth.

This is an object with a complex history, marked by wear and extended by repair. Even after one tooth broke, it continued in use. The evidence of repair of the handle end to take a secondary handle is extremely unusual; there are no parallels for this in Tuohy’s (1999) corpus. It may have only been the final fracture of the tang which led to its discard. The curve to the tooth line and pronounced, angled wear on particular teeth indicates consistent use at a particular repeated angle. This was clearly a favoured, valued, and probably very personal,
tool. Length: 96 mm. Width: 42 mm. Thickness: 14 mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF186 (illus 10.17) Antler long-handled comb with eight teeth, the body tapering gradually to a rounded rear (Tuohy 1999: fig 7, type A). Abraded and broken, with part of the rear edge and three teeth lost. The rough surface of antler has been partially smoothed. The comb has a pronounced curve in cross-section, with the cancellous tissue hollowed. Of the four intact teeth, only two survive to the original length (33 mm). The other two (23 mm and 26 mm) have broken but continued in use, being worn to a point like the others. The poor condition precludes detailed assessment of wear, but a remnant of polish survives. Although there are no closely similar examples from central Britain, there are parallels elsewhere (eg from Atlantic Scotland – Burrian and Howmae; Tuohy 1999 vol II: 29, BUR3 and 31, HAE1). Length: 104 mm. Width: 49 mm. Thickness: 16 mm. Phase 6. Context: JDO/JDN (House 4, stage 4 wall).

Hide-rubbers

Hide-working tools are surprisingly sparse on the site, with only five certain or probable hide-rubbers. These have rounded, often polished or bevelled ends, from rubbing oils into hides to make them supple and durable, and are usually a common find on sites of this period (Hallén 1994: 207–9). The other certain hide-working tools are awls, discussed below under points.

SF231 (illus 10.17) Hide-rubber? Cattle metatarsal, split diagonally and abraded to a rounded, slightly bevelled end. Point and shaft worn and slightly polished. The epiphysis has been chopped square and the end flaked to make it regular in order to haft or hold more easily. Edges of point flaked, possibly from use. Dimensions: 117 × 31 × 30 mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).


SF1201 (illus 10.17) Hide-rubber. Robust splinter of bone, one end with a highly polished bevelled edge, the polish extending along the edges; other end broken. Dimensions: 69 × 21 × 10 mm. Phase 1. Context: OCY (midden sealing House A).

SF411 (illus 10.17) Broken blunt point made of antler tine; perhaps a hide-rubber. Surface abraded. Smoothed oblique facet on tip possibly deliberate; it is worn smooth, suggesting use as a rubber. Probably broken in use. Dimensions: 42 × 15 × 15 mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF1202 Rounded and bevelled tip of a hide-rubber (broken recently), made by abrading a split cattle long bone. Polished from use. Dimensions: 34 × 20.5 × 9.5 mm. Unstratified.

Table 10.15

<table>
<thead>
<tr>
<th>SF</th>
<th>L (mm)</th>
<th>Perforation</th>
<th>D (mm)</th>
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<th>Phase</th>
<th>Notes</th>
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<td>Pointed</td>
<td>6</td>
<td></td>
</tr>
<tr>
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<td>34</td>
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<td>1.5</td>
<td>Pointed</td>
<td>5/6</td>
<td></td>
</tr>
<tr>
<td>168</td>
<td>40*</td>
<td>Drilled</td>
<td>3</td>
<td>Rounded</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>169</td>
<td>44</td>
<td>Drilled</td>
<td>1.5</td>
<td>Rounded</td>
<td>5</td>
<td>Several attempts at perforation</td>
</tr>
<tr>
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<td>77</td>
<td>Drilled</td>
<td>1.5</td>
<td>Rounded</td>
<td>5</td>
<td></td>
</tr>
<tr>
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<td>Pointed</td>
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<td>?</td>
<td>6</td>
<td>Coloured black</td>
</tr>
<tr>
<td>173</td>
<td>55*</td>
<td>Biconical</td>
<td>2</td>
<td>?</td>
<td>5</td>
<td>Several attempts at perforation</td>
</tr>
</tbody>
</table>

Needles

The characteristics of the eight bone needles recovered from Broxmouth are summarised in table 10.15. The variation in length (34–77 mm) and
Needles

Incomplete needles or pins

Scoops

Whorl

Illustration 10.18
Tools: needles/pins, whorls and scoops.
perforation diameter (1.5–3mm) indicates variety in the thread used and the material sewn. The main difference in form is between rounded and pointed heads, the latter tending to have shorter shanks. The quality of preservation differs greatly. Some are highly polished, while others are charred and very weathered. All needles come from Phase 5 or Phase 6 contexts, but given the essential nature of the tool, this is probably due to the smaller excavated samples from the earlier phases. Four further items are either unfinished needles or pins; their form tends to suggest the former. One of these (SF176) is from Phase 3.

SF166 (illus 10.18) Pointed head slightly swollen with smooth biconical perforation (Diameter: 3mm). Shank has sub-rectangular section, the edges rounded. Point broken and chewed. Displays general polish. Length: 54mm. Head: 6 × 2.5mm. Shank diameter: 3.5mm. Phase 6. Context: HAB02 (House 7, terminal infill deposits).

SF167 (illus 10.18) Very short diamond-shaped head, circular drilled perforation (Diameter: 1.5mm). Shank has oval section, highly polished. Length: 34mm. Head width: 5mm. Shank diameter: 2mm. Phase 5/6. Context: BGG/BFC (metalled roadway surface in South-west Entrance area).

SF168 (illus 10.18) Flat-pointed head, swollen around drilled perforation (Diameter: 3mm). Point broken. Highly polished. Length: 40mm. Head: 7 × 2mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

SF169 (illus 10.18) Rounded head formed by slightly flattened swelling with circular drilled perforation (Diameter: 1.5mm). Shank has oval section. Highly polished. Length: 44mm. Head width: 4.5mm. Shank diameter: 2.5mm. Phase 5. Context: CBD01 (primary midden in Inner Ditch, over Structure C).

SF170 (illus 10.18) Head formed by slightly flattened swelling, with small circular drilled perforation (Diameter: 1.5mm) slightly off-set to one side; traces of earlier attempts at more central perforation, and further hollow lower down the shaft from another attempt. Shank has rounded section. Point broken. Highly polished. Length: 77mm. Width: 5.5mm. Phase 5. Context: CBD01 (primary midden in Inner Ditch, over Structure C).

SF171 (illus 10.18) Pointed head has small drilled circular perforation (Diameter: 2mm) within a lenticoid countersunk area on one side. Perforation broken at edge, and faces whittled in this area after breakage, creating a triangular section; the reasons for this modification are unclear. Shank has squarish section with rounded tip. Surface worn. Length: 36mm. Diameter: 4mm. Phase 6. Context: JDO/JDN (House 4, stage 4 wall).

SF172 (illus 10.18) Broken at both ends. Head has remains of smoothed biconical circular perforation (Diameter: 1.5mm). Shank has squarish section. The needle is black and appears to have been deliberately burnt, with longitudinal abrasion scars on the surface. Length: 36mm. Diameter: 3mm. Phase 6. Context: DIO (midden over House 8).

SF173 (illus 10.18) Head broken across smoothed biconical perforation (Diameter: 2mm) where the section flattens out towards head. Incipient perforation below successful one on one face. Shank has sub-oval section and extensive abrasion scars from manufacture. Highly polished from use, especially at tip. Length: 55mm. Diameter: 5mm. Phase 5. Context: CBD01 (primary midden in Inner Ditch, over Structure C).

Incomplete needles or pins


SF175 (illus 10.18) Unfinished needle or pin made from bone splinter. Slightly swollen rounded head, tapering to a point. Abrasion scars all over. Dimensions: 50 × 6.5 × 3.5mm. Phase 5. Context: CBJ (secondary midden in Inner Ditch, over Structure C).

SF176 (illus 10.18) Unfinished needle made from bone splinter. Slightly swollen head, flattened in section. All-over abrasion scars. Dimensions: 44 × 7 × 2.5mm. Phase 3c. Context: BBC01 (middlen infill into eastern terminal of the Middle Ditch, South-west Entrance).

SF177 (illus 10.18) Unfinished needle or pin made from bone splinter; barely modified. Badly worn. Dimensions: 49 × 5.5 × 4.5mm. Phase 6. Context: JAH02 (House 3, wall-slot, north sector).

Whorl

SF302 (illus 10.18) Perforated femur head, probably a whorl. Proximal epiphysis of cattle femur, cut square from shaft, with longitudinal perforation (Diameter: 6.5mm) drilled from the two ends (narrower, diameter 3mm, from the cut end not shown in illustration). It shows use-polish, and the exposed cancellous surface is worn on one edge. Diameter: 44.5 × 41.5mm. Height: 33mm. Phase 6. Context: KEM02 (pit associated with House 1, not part of hoard).

SCOOPS

Four unfinished bone scoops were recovered from Phases 4–6. Two (SF286, SF288) were intended to have curved scoops, while the other two (SF287, SF289) were made without a curve.
SF289 were flat (illus 10.18). A fragmentary antler scoop of different form (SF438; not illustrated) was also recovered. Scoops of varying size and form are found in other Iron Age bone assemblages: examples from Jarlshof (wheelhouse phase) have a rather rectangular blade (Hamilton 1956: 59, fig 29.8–9), whilst examples from Borness cave, Kirkcudbrightshire are more oval (although one very unusual example has a triangular U-sectioned broken scoop and ring terminal). Flat, more circular scoop ends come from the Sculptor’s Cave, Covesea, Moray (Benton 1931: 198, fig 18.4), Dun Mor Vaul, Tiree (MacKie 1974: 145, fig 13, no 132) and Lochlee, Ayrshire; one of those from Lochlee had a perforated bowl (Munro 1882: fig 76–7). The Northern Isles provide examples where the handle merges with the scoop in a more ovoid profile: a unique example from Mine Howe, Orkney, is decorated with a seal carving (Harrison 2005: 16; Gerken and Hunter in prep), and similar, undecorated examples have been recovered from Keiss, Caithness and Scalloway, Shetland (NMS: GA 463; Sharbles 1998: 153, 155, fig 99, no 10). North Uist sites have produced three notably small examples, with gently curved, sub-circular scoops: two from Old Cattlefold, Vally, and one from Sithean Mor (NMS: GT 149, 197, 372). An unusual example comes from Skirza, Caithness, where attempts were made to convert a scoop into a long-handled comb (Tuohy 1999 vol II: 35; NMS: GA 784). The variety of size and form strongly indicates this is no homogeneous type, but implements designed for a variety of roles.

SF286 (illus 10.18) Unfinished bone scoop with pointed handle, slightly swollen towards the tip. The scoop has a squared end, and is curved in section from the natural medullary cavity. The reverse is decorated by a knife-cut chevron at its junction with the shaft. The handle and reverse are covered in manufacturing striations, suggesting it is unfinished. The lip of the scoop is slightly polished, and the object has a slight lustre, perhaps from handling during manufacture. Length: 88mm. Scoop width: 22mm. Shank length: 60mm; diameter: 6mm. Phase 6. Context: JDL01 (House 4, ‘tucked under’ stage 1 wall).

SF287 (illus 10.18) Unfinished bone scoop, with irregular handle tapering to a point and flat, circular scoop. Clear manufacturing striations all over indicate it is unfinished. Length: 87mm. Head width: 16mm. Handle width: min 5mm. Phase 4. Context: CEG/CEX (Structure D, ash-rich deposit).

SF288 (illus 10.18) Unfinished bone scoop. The rectangular head has the natural curve of the medullary cavity on one face. Slightly waisted at shoulder. Clear manufacturing striations all over. Length: 91mm. Head width: 15mm. Handle width: 7mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).


SF438 End fragment of a scoop made from hollowed antler, with remains of the curved end. Use-polish on inner surface and edge; the latter also has a dark stain. Dimensions: 68 × 25 × 7.5mm. Phase 6. Context: KBW (pit associated with House 1).

POINTS AND AWLS

Points are abundant in the Broxmouth assemblage, in a wide range of shapes and sizes and with a variety of tip forms (table 10.9). These must reflect a range of different uses: some are very likely to be awls, but for many the use is unclear. Attempts have been made to break this broad category down according to the way that the bone was worked (the few and rather varied antler points are considered as a separate category).

The main division is between those where a complete long bone was cut or split across the shaft to produce a point (termed ‘shaft-points’ here), and those utilising a segment or splinter of bone (‘splinter points’). They can be further sub-divided according to the tip form, whether fine or heavy. Those fine shaft-points which survive intact (three of six) can themselves be further sub-divided according to whether the articular end was retained (two instances) or removed (one case), the latter indicating more effort being put into manufacture. Many of the fine points are likely to have been awls for leather-working, given the sharpness and fineness of the tips. The seven heavy shaft-points have blunt, robust tips, most showing use-wear; flaking and fracture on the tips indicates some heavy-duty use. The diversity of possible functions for heavy points makes it difficult to suggest how they may have been used; ethnographic parallels are attested as basketry battens, bark peelers and fish splitters (Miles 1963: fig 3.86), while other uses can easily be imagined, such as decorating leather.

Splinter points are the most common type, with 20 examples. They encompass a wide range of sizes (the intact ones from 50–110mm long) and tip forms: fine (sharp) and blunt, heavier tips (as on the shaft-
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points) are present, but so too are fine rounded tips (the rounding often from use-wear). There are two individual variants of splinter points: a flat tip with a rounded end, and a flat tip with a pointed end. No attempt has been made to sub-divide the category, given this variety.

A further clearly defined category is the ‘point/pin’, used in previous work to characterise items which are well finished all over, unlike points, but lack the more elaborate or decorative character of pins (Hallén 1994: 215). The three Broxmouth examples are all broken, making classification awkward, although they are rather heavier than other pins from the site.

A final category, ‘miscellaneous’, covers a variety of points which take advantage of naturally pointed bones, with minimal modification. A few points are too fragmentary to classify.

There are signs of regional or chronological patterning in the use of different point types: for instance, it is notable that other types of heavy shaft-point are not represented at Broxmouth, such as those made from ulnae with the epiphysis intact, or from a metapodial split longitudinally through the epiphysis.

Fine shaft-points, probably awls


SF221 (illus 10.19) Sheep tibia, distal end removed and end rounded off. Shaft split at angle and tapered to long, very fine point. Bone appears slightly burned and is mottled blue, black and grey. Length: 95mm. Width: 12.5mm. Thickness: 9.5mm. Phase 6. Context: JGJ02 (House 3, stage 1 posthole).

SF223 (illus 10.19) Sheep tibia, butt formed by fused distal articulation. Irregular angd cut across shaft around mid-point, tapers to a fine point towards proximal end, with abrasion scars. Point and shaft show light handling and use-polish, more pronounced towards the tip. Dimensions: 134 × 2 × 17mm. Phase 3c. Context: BBC04 (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).


-heavy shaft-points

SF228 (illus 10.19) Broken tip of robust blunt bone point; cattle long bone. Abraded to shape and polished. Dimensions: 127 × 27.5 × 15mm. Phase 3. Context: Trial Trench, Outer Ditch infill.

SF229 (illus 10.19) Cattle metatarsal shaft, split longitudinally. Head lost, though slight abrasion on one edge indicates it was rounded off. End abraded into robust blunt point; polish and some edge-flaking from use. Dimensions: 115 × 24 × 15mm. Phase 3d. Context: BBD01 (midden infill into western terminal of the Outer Ditch, South-west Entrance).

SF230 (illus 10.19) Cattle radius, split diagonally, compact bone abraded into heavy point with extensive use-polish; broken at other end. Dimensions: 110 × 30 × 21mm. Phase 5/6. Context: BBZ (construction trench for enclosure revetting wall, South-west Entrance area).

SF232 (illus 10.19) Broken tip of robust point made from sheep or roe deer tibia; shaft split and diagonally tapered to point at distal end, rounded, polished and flaked from use. Appears slightly burned; mottled blue, black and grey. Dimensions: 78 × 16.5 × 15mm. Phase 6. Context: JAB (House 4, uncertain context).

SF234 (illus 10.19) Broken; shaft split diagonally, with minimal further working; tip smoothed and flaked from use. Compact bone and medullary cavity slightly polished. Dimensions: 43 × 19.5 × 13mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).


SF244 (illus 10.19) Broken; possibly sheep femur; split longitudinally and end abraded to sturdy point with use-polish. Dimensions: 77 × 11.7 × 7.5mm. Phase 3c. Context: BBC06a (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).

Splinter points

SF227 (illus 10.19) Tip of bone point formed from flat splinter. Fine, well-polished point. One side formed by
Fine shaft-points

Heavy shaft-points

Splinter points

Illustration 10.19
Points and awls.
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SF245 (illus 10.19) Irregular long bone splinter, one end worn and polished into flat rounded tip. Dimensions: 110 × 17 × 8.5 mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).


SF247 Broken point; long bone splinter, the fairly heavy tip abraded to shape and bearing heavy use-polish. Dimensions: 51 × 7.5 × 4 mm. Phase 6. Context: JAC02 (House 5, terminal infill deposits).

SF248 (illus 10.19) Fine point made from long bone splinter, the slightly damaged head tapered and squared; shaft slightly swollen, then tapers to the point which is slightly rounded from use. Object has dark surface. Dimensions: 65 × 5 × 3 mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF249 (illus 10.19) Broken; abraded to shape; reasonably heavy tip, faceted, with some use-polish. Dimensions: 70 × 7 × 3.5 mm. Phase 6. Context: HIC (paving sealing House 8).

SF250 (illus 10.19) Flat, squared head, shaft lentoid in section, edges abraded, blunt point worn and slightly polished. Length: 64 mm. Width: 8.5 mm. Phase 6. Context: JG01 (House 4, stage 2 pit).

SF251 Fine point; head squared, flat rectangular-sectioned body, abraded to circular-sectioned point; tip lost (in use?) in step-fracture. Point worn and slightly polished. Dimensions: 50 × 6 × 2 mm. Phase 5. Context: CBQ (primary midden in Inner Ditch, over Structure F).

SF252 Naturally curved in section from original long bone; head irregular and pointed; tapers to fine point which is worn and slightly polished. Length: 67 mm. Width: 7 mm. Phase 5. Context: CBQ (primary midden in Inner Ditch, over Structure F).

SF253 Broken tip; short blunt point abraded to shape, bearing use-wear. Dimensions: 52 × 7.5 × 4.5 mm. Phase 6. Context: HIA (paving sealing House 8).

SF254 Broken tip of heavy point, abraded to shape, with use-polish. Dimensions: 47 × 6.5 × 4 mm. Phase 6. Context: JIU02 (House 4, stage 3 hearth).

SF255 Expedient point, with flat-sectioned heavy tip, abraded minimally to shape it; use-polish. Dimensions: 78 × 10 × 6 mm. Phase 6. Context: JAC02 (House 5, terminal infill deposits).
SF263 (illus 10.19) Tip of heavy point; abrasion scars, extensive use-polish. Dimensions: 32 × 7 × 5mm. Phase 5. Context: BBO (Grave 3, South-west Entrance).

SF265 (illus 10.19) Point made from flat (?)rib bone splinter; one end broken, other cut at angle, with edges abraded to a point showing use-polish. Length: 100mm. Width: 18.5mm. Phase 5. Context: CBG (unspecified).


SF269 (illus 10.19) Broken tip of fine point made from flat long bone splinter; curved section. Post-depositional wear. Dimensions: 66 × 14 × 5mm. Phase 5/6. Context: BCB01 (paving immediately outside entrance into enclosure, South-west Entrance).

SF270 (illus 10.19) Fine point made from flat, slightly curved long bone splinter, head snapped and rounded, edges roughly whittled. Use-polish at head end; tip rounded. Dimensions: 75 × 13.5 × 6mm. Phase 6. Context: JAB03 (House 4, terminal infill deposits).


Points/pins

SF181 (illus 10.20) Broken well-finished point/pin. Shank has squared section and tapers to a fine point. Head lost. Shank shows abrasion scars and use-polish. Dimensions: 60 × 4.5 × 3mm. Phase 6. Context: JCR03 (House 6, pit).

SF182 (illus 10.20) Tip of broken, well-finished point/pin. Shank has trapezoidal section and tapers to a triangular-sectioned fine point. Displays general polish. Dimensions: 36 × 5 × 3mm. Unphased. Context: Unstratified.

Miscellaneous and broken unclassified bone points

SF239 (illus 10.20) Small blunt point; tip and shaft worn and polished, head cut square and abraded; slightly battered from use. Upper shaft triangular in section from natural bone form; lower shaft has circular section. Slight green staining along one side. Length: 76mm. Diameter: 11mm. Phase 3d. Context: BBD03 (midden infill into western terminal of the Outer Ditch, South-west Entrance).

SF241 (illus 10.20) Point made from splint bone of horse, the articular end forming the head. Tapers to a sturdy point at distal end. Slightly polished. Length: 76mm. Head: 12.5mm. Shank: 7mm. Phase 5. Context: CBA02 (sand associated with paving in Inner Ditch, over Structures E and F).


SF262 (illus 10.20) Tip of bone point, shaft faceted, tip worn and blunted from use. Dimensions: 24 × 5 × 3mm. Phase 6. Context: JCW01 (House 6, pit).

Antler points

SF261 (illus 10.20) Tip of blunt antler point; shaft faceted, tip rounded, fractured and polished from use. Dimensions: 28 × 6 × 5.5mm. Phase 5/6. Context: BAX04 (terminal rubble infill into north part of South-west Entrance area).

SF404 (illus 10.20) Point. Burnt antler tine, the tip whittled to a point; surface abraded and polished smooth. Tip rounded from use, base broken (in use?). Dimensions: 77 × 15.5 × 14mm. Phase 3. Context: BB05 (midden infill into eastern terminal of the Inner Ditch, South-west Entrance).

SF412 (illus 10.20) Point of antler tine split longitudinally. One snapped end has handling polish; the other seems to have broken in a step fracture, creating a naturally tapering point (there is no sign of modification) with use-polish. Tip lost. Dimensions: 84 × 22 × 12.5mm. Unphased. Context: Unstratified.

SF507 (illus 10.20) Point made from the antler of a hunted young roe deer. Pedicle cut from skull, with the remaining skull edges neatly rounded for comfortable handling. The smaller branch tine was snapped off after the remaining surface worn smooth; the main tine was subtly abraded into a sharp point, polished and rounded from wear. Length: 155mm. Phase 1. Context: OFM04 (midden sealing House A).

ANTLER PICKS/HAMMERS

Seven antler picks and/or hammers were found at Broxmouth. Two (SF350, SF396) were made from re-used offcuts from the base or terminal of the antler, but the remainder appear to have been deliberate creations, with the antler stripped to leave the brow or bez tine as a working point. Four examples (SF330–2, SF338) served as both picks and hammers, the burr serving for the latter purpose; one offcut (SF350) was used solely as a burr-hammer, and two (SF336, SF396) only as picks. Picks are markedly more common in Phase 1 deposits, suggesting other (iron?) tools.
supplanted their role later. Care has been taken in trying to differentiate human from animal wear – too often in previous work, the wear left by the antler’s original user has been interpreted as significant rather than incidental.


SF331 Pick/hammer. Cast left antler of mature red deer. Brow, trez and one of terminal tines chopped off; other side of terminal broken away. Bez tine retained, but splintered and broken from use. Brow tine stump has a battered and smoothed appearance; trez and terminal tine stumps all worn smooth from handling. Posterior part of burr battered and missing. The whole artefact is covered in blackened sooty areas. Length: 585mm. Coronet: $64 \times 50$mm. Phase 1. Context: OFD (House B, unspecified context).

SF332 Pick/hammer. Cast left antler of immature red deer. Brow tine broken, bez tine absent, trez tine chopped off and remaining rough edges of stump subsequently smoothed ?from handling. Much of beam remains, roughly chopped at end; a drill hole in the end appears to be a modern sample. Coronet smoothed from use and part of it damaged, implying use as hammer. Longitudinal cracks on beam indicate heavy use. Series of knife marks around the junction of trez tine and beam; diamond-shaped punch marks on beam between trez and brow tines suggest expedient use as working surface. Length: 410mm. Width: 93mm. Coronet: $72 \times 56$mm. Phase 1. Context: OFK (House B, stage 2 paving).

SF336 Pick. Cast left antler of immature red deer. Tip of brow tine fractured and worn with use-damage. Branched terminal neatly chopped off. Three groups of punch marks on beam, either side of the brow tine and just below the terminal tine stump, imply use as a working surface. Length: 280mm. Width: 119mm. Coronet: $58 \times 57.5$mm. Phase 3c. Context: BBC06d (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).

SF338 Pick/hammer. Cast right antler of mature red deer. Brow tine split and worn from use; bez tine chopped and broken off, leaving a stump. Beam split off at an angle above bez tine stump, the fracture surface worn smooth and polished from use after the beam broke. Posterior part of burr battered from use as hammer. Three groups of punch and cut marks on beam near coronet suggest use as working surface. Length: 235mm. Width: 110mm. Coronet: $60 \times 52$mm. Phase 1. Context: OFK (House B, stage 2 paving).

SF350 (illus 10.21) Hammer, probably made from an offcut. Cast right coronet and brow tine of red deer, detached by sawing and snapping just above brow tine, with adjacent knife-trimmed facet. Exposed area of tissue rounded and worn. Pedicle charred and knife-
trrimmed flat, its edge rather battered from use. Tip of brow tine cut off, end abraded and polished from use as a handle, the wear on the base suggesting it was a soft hammer. Some subsequent surface loss; sample drilled from tine after breakage. Length: 235mm. Coronet: 55 × 47mm. Phase 3/4. Context: BBJ01 (midden infill into eastern terminal of the Inner Ditch, South-west Entrance).

SF396 Pick made from red deer antler terminal (trez tine and branched crown), detached from beam by chopping and snapping. This probably represents expedient re-use of an offcut. Branched terminals show natural wear but extreme tip of trez tine detached, with knife-trimming facets on underside; tip worn smooth, with scratch marks all over. Area of file marks near branched terminal. Length: 270mm. Phase 1. Context: OFM (midden sealing House A).

OTHER TOOLS
The detailed function of a number of tools cannot readily be identified. The relative crudity of comb SF296 (illus 10.22), compared to long-handled and miniature combs, indicates that it had a rather different role; this is supported by the V-shaped teeth. The breakage of one tooth and continued use thereafter suggests quite a heavy-duty function, but the nature of this is unclear. Such items have been interpreted as potters’ tools, especially for applying decoration, but the absence of decorated pottery at Broxmouth suggests this is unlikely in this instance. Some role in textile or fibre preparation is another possibility. Such tools are attested elsewhere (eg Vallay, North Uist; NMS: GT 225; All Canning’s Cross, Wiltshire; Cunnington 1923: pl 16 no 2). Textile- or fibre-preparation is also suggested as a possible interpretation for the enigmatic tool SF310 (illus 10.22), which appears to have been held in the mouth, perhaps to leave the user’s hands free; the oval perforation may have been used in the preparation of fibres.

The weight and size of the perforation differentiate SF300 (illus 10.22) from normal perforated whalebone discs, which were probably used as pot-lids. Instead there are parallels for its use as a weight, perhaps a fly-weight on a bow-drill. The function of the other tools in this category is even less certain, although SF369 (not illustrated) may represent the junction between a shaft and a tool head from a composite
Illustration 10.23
Handles.
tool, which finds parallels elsewhere (Hunter 2006: 137, 144).

SF296 (illus 10.22) Crude comb. Sub-rectangular piece of long bone, slightly sinuous in profile, with crude teeth along one broken long edge. Four V-shaped knife-carved teeth survive, rounded and polished from use; one has broken and then worn further. Edges and surfaces are abraded to shape and worn smooth. Dimensions: 55 × 27 × 4.5mm. Phase 5. Context: CBQ (primary midden in Inner Ditch, over Structure F).

SF300 (illus 10.22) Perforated unfused narrow vertebral body of whale, one segment missing. Relatively little modification beyond rough pecking on one face. The perforation (Diameter: 29mm) is a truncated cone with a splayed top (Width: 36.5mm), and was probably drilled and expanded. It is very smooth, slightly polished, and chipped around the hole on the flatter side. Perforated discs (more often made from epiphyseal discs) are often interpreted as pot lids (eg Hallén 1994: 217–19), but this one is much thicker than these, and has a broader perforation. It could have acted as a weight; there are ethnographic parallels for such items acting as a fly-wheel for bow-drills (Miles 1963: figs 3.70 and 3.75), which is feasible in this case. Dimensions: 158 × 144 × 29mm. Phase 1. Context: OBR/OBS (House B, outer or middle slot – uncertain).

SF310 (illus 10.22) Unidentified tool, probably made of antler, needle-like in form with a swelling around a well-polished oval eye. The lentoid section thickens to a circular-sectioned blunt tip, while the head end is splayed, flattened and chewed, suggesting it was repeatedly held between the teeth in use, perhaps to leave the hands free. The whole object is well polished, and the wear on the oval eye (6 × 3mm) is most pronounced at its tips. Length: 105mm. Shank diameter: 6mm; max width: 11mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

No parallels have been found, but the form gives some clues. It suggests it was gripped in the teeth, with the blunt end resting against (or working on) a surface while something was threaded through the oval eye. The wear on the eye indicates some sustained use, and it is tempting to see this as a tool for a task such as preparing fibres for thread, perhaps pulling them through the eye to even them up before twisting. It is unlikely to have been used for making thongs, as this is a more forceful process (for bone tools used for this, see Semenov 1964: 189–91, fig 103; Hallén 1994: 217), but could perhaps have been used for vegetable or animal fibres, although this remains speculative.

SF313 (illus 10.22) Tool? Base portion of the left antler of a mature red deer (cast); beam and brow tine detached by chopping and breaking. Bez tine is crudely whittled and chipped to a point, which has been charred (Length: 58mm). A few stray chop and knife marks are probably mis-strikes from the main cutting episodes. Slight polish around the coronet’s edge suggests handling, perhaps indicating where it was held during use. Length: 170mm. Circumference above brow tine: 115mm. Phase 1. Context: OAN (sediment sealing Houses A and B).

SF369 Composite tool head? Portion from antler beam-tine junction with all three edges sawn. Lip of cut through tine bears nine regular incised scores and cancellous tissue has been hollowed, leaving socket c 30mm deep. Beam edge is broken but has also apparently been socketed, suggesting this was a junction piece, perhaps between a tool haft and blade. Similar items have been noted from Cnip (Hunter 2006: 137, 144, where further parallels are discussed). Dimensions: 90 × 55 × 34mm. Phase 5/6. Context: BEQ01 (cobbles resurfacing of roadway, South-west Entrance area).

SF464 Tool fragment? Split antler beam segment, triangular section, tapering to one end; one end broken, other rounded and smoothed, probably from use. Dimensions: 131 × 19 × 10.5mm. Phase 3c. Context: BDP01 (posthole associated with Slot A, western terminal of the Middle Ditch, South-west Entrance).

HANDLES (ILLUS 10.23)

The 26 handles (table 10.16) are dominated by antler, with only two bone examples (SF196, cattle tibia; SF459, long bone); antler’s shock-resistant properties make it ideal for this purpose (see roughouts for nine further examples). All of the artefacts listed below are likely to have been tool handles, but it is rarely possible to suggest what they were hafted to. The slot in SF189 provides a rare exception, its form suggesting a tool such as a saw; there is a wooden parallel from Glastonbury and an antler example from Newstead with the saw blade still in place (Bulleid and Gray 1917: 371, pl LX; Curle 1911: pl LXVIII, no 6; for the type see Hunter 2008a: 243). The groove on one end of SF195 to hold a blade suggests it was for a knife, while SF191 has remains of a circular-sectioned tang, indicating something other than a knife. Otherwise, we cannot say what the handles once held, although in two cases stress fractures suggest they saw heavy-duty use.

The two main variants are: those with longitudinal sockets, where the tang passed entirely through the handle, and those with sockets (conical or straight) into which the tang would fit. Several of the latter are little-modified tines. The former are most common,
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</tbody>
</table>
and are typically relatively short and cylindrical (table 10.16). As noted, SF189 represents a different type, with a slot cut into one end to take a blade. Its transverse perforation for an antler peg to retain the blade is paralleled on two other variants: SF188 and SF190, both larger than average. Otherwise, it is assumed the tool was wedged into the handle or stuck, for instance with resin, although no trace remains. In modern antler-working, the tang is inserted into the handle by heating it and burning a channel through the cancellous bone of the antler. This leaves a regular channel, so that the tang fits closely and has no tendency to move inside it. The Broxmouth material shows no evidence of charring from such a process, and it seems in many cases that at least the first stages of the perforation were manual; the tang may then have been hammered in. The degree of finish varies, some with the rubicose surface still present or smoothed through handling, others with it partly removed or well finished. SF188 is notably well made, being rectangular in section with a longitudinal perforation, and a transverse perforation for a peg to hold the blade.

An unusual feature of two handles is the presence of regular cut marks, perhaps tallies or owner’s marks rather than decoration; SF190 has a knife-cut ‘III’, while ‘III’ is sawn into SF191.

SF188 (illus 10.23) Well-made, tapered antler handle, rectangular in cross-section, ends squared and smoothed; smooth surface. Longitudinal perforation; damage makes it unclear whether this was only at the narrow end, where a well-finished, sub-rectangular channel (Length: 60mm) survives, with a transverse perforation just over half way along this to hold the blade; a circular ?antler peg (Diameter: 5mm) in situ on one side. The handle has split longitudinally. Length: 120mm. Width: 35mm. Thickness: 26mm. Phase 5/6. Context: BFC (metalled roadway surface in South-west Entrance area).

SF189 (illus 10.23) Cylindrical antler handle with longitudinal, slightly lentoid perforation; one end broken, other with a slot sawn into it (Surviving length: 35mm; Width: 4mm) and transverse drilled perforation to retain a blade; part of a bone/antler peg (Diameter: 5mm) survives. This end is partly sawn square, but with areas on either side left projecting which are damaged and rounded from wear. Surface smoothed, with a facet cut into the rounded surface to take the peg. Length: 118mm. Width: 30mm. Thickness: 32mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

SF190 (illus 10.23) Handle. Antler beam, broad end chopped and roughly cupped; narrow end sawn, adjacent faces whittled smooth, with a drilled transverse perforation (now broken; Diameter: 5.5mm) set slightly back from the end. It was originally misplaced, with an incipient perforation beside it. Cancellous tissue hallowed from this end; this perforation narrows as it continues to the far end. Surface smoothed a little from wear; three parallel knife cuts (tallies?) on one face. Length: 137mm. Width: 41mm. Thickness: 39mm. Phase 5/6. Context: BAJ (terminal rubble infill into South-west Entrance area).

SF191 (illus 10.23) Antler tine handle, surface very smooth, darkened from use-wear. Narrow end sawn and socketed, the perforation (10 × 8mm tapering to the far (broken) end. Broken longitudinally and at one end. Four distinctive parallel transverse saw cuts on a face just below the end may be decoration or a tally; there are three others, less regular, elsewhere on the surface. Found with the remains of a very corroded circular-sectioned tapered iron tang (Diameter: 7mm). Length: 53mm. Width: 20mm. Thickness: 17mm. Phase 2b. Context: OBE/OBI (interface between secondary gravel rampart and soil formation over rampart in Inner Ditch West area).

SF192 (illus 10.23) Antler tine handle, polished to smooth cylinder, one end tapered and squared, other broken, although the complete length survives. Cylindrical socket preserved at broken end (Length: 35mm; Diameter: 7mm). Surface smoothed and highly polished. Length: 85mm. Width: 20mm. Thickness: 12mm. Phase 3c. Context: BBC01 (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).

SF195 (illus 10.23) Handle. Slightly curved antler cylinder, sawn at both ends. Cancellous bone hollowed to create a longitudinal socket (Diameter: 20–28mm); at the wider end this has a grooved profile to retain a blade, preventing the handle from moving in use. Rubicose surface smoothed and worn. Length: 95mm. Diameter: 41 × 36mm. Phase 4. Context: CGD (gully bisecting Structure F).

SF196 (illus 10.23) Handle. Cattle tibia, ends cut square or slightly angled; rounded from use, one broken. Surface slightly polished. Length: 115mm. Width: 33.5mm. Thickness: 20mm. Phase 2b. Context: OAZ (metalled surface in West Entrance Gateway).

SF197 (illus 10.23) Handle. Antler tine, longitudinally perforated (probably drilled; Diameter: 12mm), the narrow end countersunk. Broader end broken along one side; slight polish suggests it continued in use after this. Rubicose surface smoothed and slightly polished. Length: 95mm. Width: 27mm. Thickness: 22mm. Phase 6. Context: KCH (House 1, pit).

SF198 (illus 10.23) Handle. Antler tine sawn at one end; other less clear, but definitely whittled. Abraded ?from
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use. A slightly irregular longitudinal socket has been channelled in the cancellous bone; one end has a long, smoothly tapered conical socket, the other a short cup which joins the socket. Length: 69mm. Width: 29mm. Thickness: 23.5mm. Unphased. Context: Unstratified.

SF199 (illus 10.23) Handle. Antler cylinder sawn at both ends. Drilled perforation (Diameter: 9.5mm), expanded at ends; most of the cancellous tissue removed. Some saw marks within 10mm of one end. Length: 55mm. Width: 28mm. Thickness: 25mm. Phase 6. Context: JDO/JDP (House 4, between stage 4 and stage 5 walls).


SF203 (illus 10.23) Cylindrical antler tine handle, split longitudinally. Both ends sown, with slight wear; cancellous tissue hollowed. Surface whittled and roughly faceted; it is slightly polished but has seen little use. Length: 64mm. Width: 25mm. Phase 3c. Context: OAZ (metalled surface in West Entrance Gateway).

SF204 (illus 10.23) Cylindrical antler handle fragment, split longitudinally. Surface is smoothed, worn and slightly polished, with remains of abrasion scratches. The longitudinal perforation is expanded at the intact end, where its edges are smooth and rounded. U-shaped notch (Width: 6mm) 20mm from end, its purpose unknown. Length: 82mm. Width: 24.5mm. Phase 2b. Context: OAZ (metalled surface in West Entrance Gateway).

SF205 (illus 10.23) Cylindrical tine handle fragment, split longitudinally. Both ends smoothed from wear, as is the rubicose surface. Cancellous tissue hollowed; broken edges worn after breakage. Length: 66mm. Width: 19mm. Phase 3c. Context: BBC02 (midden infill into eastern terminal of the Inner Ditch, South-west Entrance).

SF208a (illus 10.23) Cylindrical antler handle, ends sown (with preliminary saw cut at one end), one rounded from use; gently biconical longitudinal perforation. Rubicose surface smoothed, probably from handling. Does not appear to join SF208b. Dimensions: 60 × 21.5 × 8.5mm. Unphased. Context: Unstratified.

SF208b (illus 10.23) Sub-cylindrical antler handle fragment. Ends sown, one slightly rounded from use; preliminary saw cut near one end. Cancellous tissue hollowed; rubicose surface whittled in places to smooth it. Does not appear to join SF208a. Dimensions: 56.5 × 23 × 10mm. Unphased. Context: Unstratified.

SF209 (illus 10.23) Cylindrical handle fragment. Small piece of antler tine, the intact end sown. Cancellous tissue hollowed for use. Rubicose surface polished, with some knife cuts. Length: 50mm. Width: 14mm. Thickness: 7.5mm. Phase 6. Context: HDS02 (House 7, stage 1 pit).

SF417 Broken tine handle, detached by chopping and snapping. End trimmed square and socketed with a tapering triangular-sectioned socket £ 40mm deep. One side whittled flat at socket. The fracture pattern suggests the blade was originally riveted but broke away, detaching parts of opposite sides. Tip very polished, perhaps naturally, but some abrasion suggests it could have been deliberately smoothed for use as a piercer or point. Dimensions: 135 × 26 × 24mm. Unphased. Context: Unstratified.

SF422 Broken curved tine handle, the surviving (narrow) end sown, the other broken. Straight longitudinal tapered D-sectioned perforation (max: 9 × 7mm; min: 6.5 × 4.5mm). The rubicose surface is extensively abraded. Length: 76 × 30 × 20mm. Phase 6. Context: DIO (midden over House 8).

SF424 Handle fragment, made from curved and twisted red deer tine. Split irregularly longitudinally (probably accidentally). One end broken, the other detached by chopping and snapping, then squared, smoothed and socketed. The surviving portion is 78mm deep and 16mm wide. Some fine abrasion from smoothing parts of the surface. Probably broken in use, suggesting it was for a heavy tool. Dimensions: 170 × 26 × 20mm. Phase 5. Context: CBD01 (primary midden in Inner Ditch, over Structure C).

SF433 Sub-cylindrical fragment of antler handle, probably made from beam. Both ends broken; surface shows use-polish. Broad sub-circular cylindrical socket (Diameter: £ 14mm). Length: 64mm. Width: 30mm. Height: at least 20mm. Unphased. Context: Unstratified.

SF435 Broken handle made from slightly curved tine. Tapering oval socket (Dimensions: max 14 × 10.5mm); stress cracks suggest it broke in use. Tip lost and blackened, with chew-marks. Dimensions: 73 × 28 × 20.5mm. Unphased. Context: Unstratified.


SF468 Handle fragment or roughout. Broken antler, ends lost; hollowed. Dimensions: 92 × 21.5 × 9mm. Phase 5.
Illustration 10.24
Weapons: spearheads and ferrules.
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Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

SF475 Antler handle fragment, broken longitudinally, surviving end cut at slight angle and socketed (Diameter: 9mm; Length: at least 45mm). Some abrasion on surface from shaping; use-polish at socket end and more limited elsewhere. Dimensions: 74 × 22 × 9.5mm. Phase 5/6.

Context: BBY01 (robber trench for enclosure revetting wall, South-west Entrance area).

WEAPONS: SPEARHEADS AND FERRULES

Eleven socketed points are likely to be spearheads (illus 10.24; characteristics summarised in table 10.17). They are a very consistent group, suggesting a consistent function. All bar one which can be identified are made from sheep tibiae and all except SF216 have had the distal end removed and socketed; the majority have a transverse perforation for a peg to retain the shaft. Such items have been variously identified as weftbeaters, spearheads, skinning knives, gouges or weaving shuttles (reviewed by Hallén 1994: 205–7); in the Broxmouth assemblage, evidence for secure fastening to a shaft and the use-wear on many (not the polishing expected from use in textiles, but fractures and, in one case, a cut mark), suggest their use as weapons. Three have been lightly charred after manufacture to harden their tips; similar treatment is seen on four points from Boscombe Down, Wiltshire (Richardson 1951: fig 17). As Hallén (1994: 205–7) reviews, wider parallels support this interpretation: bone spearheads are known in Iron Age weapon deposits in Denmark and from burials in Yorkshire, where they are interpreted as part of the burial ritual, cast into the corpse as it was buried. Olsen’s (2003) microwear studies of the examples from Fiskerton, Lincolnshire, supported interpretation as spearheads. Scottish parallels are listed by Hallén (1994: 205–7); there is an additional East Lothian example from Gheghan Rock (NMS: HD 85). The Broxmouth examples show a wide range of sizes, and probably include both throwing and thrusting spears.

Four socketed conical items are best interpreted as ferrules (illus 10.24). Three are made from antler tines (SF211, SF218, SF219), while one is interpreted as a re-used spearhead (SF217). Once again, the range of socket diameters suggests larger (SF211, SF219) and smaller (SF217, SF218) shafts, perhaps thrusting and throwing weapons respectively.

SF210 (illus 10.24) Spearhead. Robust bone point made from tibia of large animal. Broken and socketed base

<table>
<thead>
<tr>
<th>No</th>
<th>Bone type</th>
<th>Perforation?</th>
<th>L (mm)</th>
<th>Socket D (mm)</th>
<th>Wear/other</th>
</tr>
</thead>
<tbody>
<tr>
<td>210</td>
<td>Sheep tibia</td>
<td>Two: 7 and 5</td>
<td>196</td>
<td>18 x 13</td>
<td>Fire-blackened tip; use-wear</td>
</tr>
<tr>
<td>212</td>
<td>?Sheep tibia</td>
<td>4</td>
<td>68</td>
<td>11 x 8</td>
<td>Fire-blackened tip; use-wear</td>
</tr>
<tr>
<td>213</td>
<td>Sheep tibia</td>
<td>3</td>
<td>63</td>
<td>13.5 x 9</td>
<td></td>
</tr>
<tr>
<td>214</td>
<td>Sheep tibia</td>
<td>? notch</td>
<td>75</td>
<td>10 x 7</td>
<td>Unfinished; fire-blackened tip</td>
</tr>
<tr>
<td>215</td>
<td>Sheep metacarpal</td>
<td>no</td>
<td>70</td>
<td>8.5 x 5</td>
<td></td>
</tr>
<tr>
<td>216</td>
<td>Sheep tibia</td>
<td>no</td>
<td>80</td>
<td>7</td>
<td>Distal end not removed, but socketed. Continued in use after a cut caused damage</td>
</tr>
<tr>
<td>217</td>
<td>Sheep tibia</td>
<td>5</td>
<td>67+</td>
<td>12 x 7</td>
<td>Broken (use-damage?) and re-used ?as ferrule</td>
</tr>
<tr>
<td>222</td>
<td>Sheep tibia</td>
<td>6</td>
<td>110+</td>
<td>?</td>
<td>Fire-blackened tip; fracture damage to tip and socket</td>
</tr>
<tr>
<td>233</td>
<td>?</td>
<td>?</td>
<td>56+</td>
<td>?</td>
<td>Tip only</td>
</tr>
<tr>
<td>236</td>
<td>Sheep tibia</td>
<td>no</td>
<td>114</td>
<td>13 x 9</td>
<td>Edge-flaking from use</td>
</tr>
<tr>
<td>237</td>
<td>Sheep tibia</td>
<td>7</td>
<td>97</td>
<td>?</td>
<td>Use-damage</td>
</tr>
</tbody>
</table>
has two transverse oval perforations, conical in section (Diameter: 7mm and 5mm), set on longitudinal axis. Shaft cut transversely, abraded and polished to sturdy point. Length: 196mm. Width: 22mm. Thickness: 18mm. Socket internally: min 18 × 13mm. Phase 3/4. Context: BMP01 (midden associated with Inner Ditch occupation features, South-west Entrance).

SF211 (illus 10.24) Ferrule? Large antler tine, slightly sinuous, pear-shaped in cross-section, transverse conical perforation 10mm from base (Diameter: min 4–5mm; max 6–7mm). Base sawn and whittled; socketed (54mm deep), with smooth interior suggesting presence of wooden shaft. Well-polished surface bears longitudinal striations. Tine slightly sinuous with naturally blunt tip, making use as a spear unlikely; more plausibly a ferrule. Length: 170mm. Width: 31.5mm. Thickness: 22.5mm. Socket internally: 23.5 × 17mm. Phase 5. Context: CBJ (secondary midden in Inner Ditch, over Structure C).

SF212 (illus 10.24) Spearhead made from sheep or deer tibia. Articulation removed to facilitate hafting. Butt end has drilled transverse perforation (Diameter: 4mm). Point blackened by fire, with uncertain hints of use-damage; surface worn and chewed. Length: 68mm. Width: 16mm. Thickness: 15mm (socket internally: 11 × 8mm). Phase 6. Context: KEO03 (pit south-west of House 1).

SF213 (illus 10.24) Spearhead made from sheep tibia. Distal articulation removed (?by sawing) to facilitate hafting. Distal end has a transverse, slightly conical perforation (Diameter: 3mm), one side now broken. Shaft cut at angle and abraded to sharp point at proximal end. Size suggests throwing spear. Length: 63mm. Width: 16mm. Thickness: 15mm (socket internally: 11 × 8mm). Phase 5. Context: BEH01 (cobbled resurfacing of roadway in South-west Entrance area).

SF214 (illus 10.24) ?Unfinished spearhead. Sheep tibia. Distal articulation removed and end abraded smooth to facilitate hafting. Notch at base may be the remains of initial transverse perforation. Shaft fractured transversely, the fractures unsmoothed by working or use. Tapers to a point at proximal end, abraded to shape. The bone has been burnt to a blue-white colour. Unworn fracture, change in perforation and tip form suggest this is unfinished. ?Chew-marks on distal end. Length: 75mm. Width: 15mm. Thickness: 11mm (socket internally: 10 × 7mm). Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

SF215 (illus 10.24) Spearhead made from sheep metacarpal. Distal articulation removed to facilitate hafting. Whittled to a point at proximal end. Point polished. No perforation. Length: 70mm. Base: 15 × 10.5mm. Socket internally: 8.5 × 5mm. Phase 6. Context: OAC (pit south of House 1).

SF216 (illus 10.24) Spearhead made from sheep tibia. Slightly irregular circular socket cut into distal epiphyseal surface (Diameter: 7mm; Depth: 15mm), with slight wear polish on edge. Fractured at angle across shaft and abraded to narrow point at proximal end, rounded (?from use). An angled cut damages the edge near the tip (from combat use?); overlying polish implies continuing use. Length: 80mm. Width: 17mm. Thickness: 16mm. Phase 6. Context: House 3 (uncertain context).

SF217 (illus 10.24) Re-used spearhead made from sheep tibia. Distal end removed to facilitate hafting, with slightly conical transverse perforation (Diameter: 5mm), broken (from use?) on one side. Proximal end broken, but polish on end implies continued use, although presumably not as a spear since the tip was now blunt. Was it re-used as a ferrule? Length: 67mm. Width: 16.5mm. Thickness: 11mm (rectangular socket internally: 12 × 7mm). Phase 6. Context: HIK (cobbles adjacent to House 8).

SF218 (illus 10.24) Ferrule? Tine tip sawn off and socketed; apparent point probably an illusion caused by loss of surrounding material; slight rounding of tip is probably natural wear. Cancellous tissue hollowed out; conical socket (Diameter: 9 × 11.5mm; Depth: 40mm) worn. Very worn. Length: 63mm. Width: 16.5mm. Thickness: 15.5mm. Phase 6. Context: HDT01 (House 7, stage 1 pit).

SF219 (illus 10.24) Ferrule? Socketed antler tine, the cancellous tissue totally hollowed to create a large socket (Dimensions: 21 × 17mm; Depth: 40mm). Crudely whittled at point; end squared; worn and broken from use. Surface is highly polished. Length: 81mm. Width: 27mm. Thickness: 20mm. Unphased. Context: Unstratified.

SF220 (illus 10.24) Socketed spearhead made from sheep tibia. Distal end broken. Remains of irregular transverse perforation (Width: 6mm). Shaft split at angle and tapered to a point towards proximal end, which has a step fracture. Bone appears slightly burned and is lightly mottled blue, black and grey. Length: 110mm. Width: 15mm. Thickness: 11mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).


SF226 (illus 10.24) Spearhead? Sheep tibia with distal articulation removed and edges smoothed to create socket (internally: 13 × 9mm). Shaft split and tapered (by abrasion) to point at proximal end; subsequent edge-flaking from use, tip rounded. Dimensions:
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SF237 (illus 10.24) Spearhead made from sheep tibia. Distal articulation removed, with transverse perforation (Diameter: 7mm). Tapers to point at proximal end, polished from use. Shaft split from ?use-damage. Dimensions: 97 × 15 × 12mm. Phase 6. Context: JAB02 (House 4, terminal infill deposits). This object was directly dated to 400–210 cal BC (SUERC-33368) and was thus residual within the context where it was found.

FITTINGS

The wide variety of fixtures and fittings recovered from Broxmouth would have served a range of tasks (illus 10.25). Eight similar pegs, mostly of antler (Length: 22–34mm; Diameter: 4–7.5mm) would have fastened items such as mounts, spearheads and handles; the unfinished items SF243 and SF1207 may be further, slightly larger examples. Mounts themselves are surprisingly few: only three are present (SF276, SF281–2), with further possible examples among the roughouts. One (SF282) has a typical sub-rectangular form, but the others are more unusual: a small, curved mount (SF281) which had been repaired, and a larger, broken, decorated one (SF276). Three items are probably fixtures, perhaps in domestic or agricultural contexts (illus 10.26): two perforated antler pieces
plugged with bone pegs (eg Borness, York and Wallsend; Corrie et al 1874: pl XXI, no 32; Bulleid and Gray 1917: 462; Croom 2003: 224, fig 147, no 76). Published details do not always discuss this; the longitudinal perforation seems to be lacking on some antler examples, but one from Borness Cave is socketed at both ends, with surviving traces of iron pegs or tangs (NMS: HN 38). This strongly suggests that the toggle was fixed into something; this was presumably the intended role of the longitudinal perforation on the unfinished Broxmouth example.

Contexts provide few clues to use because most come from settlement sites. Copper alloy examples are found in hoards of horse gear, as at Polden Hills and Stanwick (MacGregor 1976: 38, 60), while another was recovered from the Folly Lane burial, which itself was rich in equestrian gear (Foster 1999: 137–8). These artefacts are consistently decorated on one face only, suggesting that only this side was visible in use. The bone and antler examples are, in contrast, normally decorated around their circumference, although some likewise have unifacial decoration (eg Settle; Dearne and Lord 1998: 103, no 3). Although widely distributed but poorly understood type has seen an extended debate over its function, with interpretations ranging from harness-fittings (such as cheek-pieces or toggles to fasten rein rings) to clothes fasteners and handles (Greep 1995: 1127–1130; Dearne and Lord 1998: 103–5). The type is common in the mid-first century AD; while some examples from later contexts may be residual, the example from Bar Hill, a single-period Antonine fort, indicates they were in use until at least this time (Robertson et al 1975: 55, fig 17, no 3). Although widely distributed in southern and central Britain, this distinctive artefact has not so far been found on Atlantic sites. Its similarity to copper alloy ‘cheek-pieces’ or ‘sliders’, often enamelled or otherwise decorated, is striking (as noted, inter alia, by Bulleid and Gray 1917: 461; Dearne and Lord 1998: 104), although the interpretation of these is equally contentious.

The type is characterised by the central oblong transverse perforation, its form and rounded corners indicating that it was intended to take a strap. Both plain and decorated examples are known; the decoration representing variants of linear geometric ornaments and/or ring-and-dot motifs. Bone examples have a natural longitudinal perforation, which is sometimes plugged with bone pegs (eg Borness, York and
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various contexts; the decoration on many examples suggests that they were used in a context of display, which would support their use in relation to horses or people.

Pegs (see also Roughouts, SF1207)

SF179 (illus 10.25) Fine point or, more plausibly, peg. Narrowed, flat top and swollen shaft tapering to point. Squared section, both ends slightly polished. ?Bone. Dimensions: 34×4×3.3mm. Pre-Phase 3b. Context: BBE02 (buried soil/old ground surface in South-west Entrance area).

SF180 (illus 10.25) Fine point or, more plausibly, peg of bone. Narrowed head swells into shoulders and tapers to a damaged point. Square-sectioned shank with abrasion scars from manufacture and slight polish. Dimensions: 35×6×4.5mm. Phase 3c. Context: BBC07 (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).


SF257 (illus 10.25) Crudely made peg, end chopped at oblique angle; head tapers to point. Square section; shank slightly polished, with facet cut from one edge; tip polished from use. Material uncertain. Dimensions: 33×7×5.5mm. Phase 6. Context: JCW01 (House 6, pit).

SF259 (illus 10.25) Peg made from little-modified bone; head cut square, shaft abraded to point. Dimensions: 27×6.5×4mm. Phase 5/6. Context: BFD01 (rough paving resurfacing onto roadway in South-west Entrance area).

SF290 (illus 10.25) Unfinished antler peg; head sawn, tapering to broken tip; shank knife-faceted. Dimensions: 34×7.5×8mm. Phase 6. Context: JEL/JEM (House 4, between stage 3 and stage 4 paving).


SF292 (illus 10.25) Broken antler peg, crudely knife-faceted. One end is broken, the other battered and partially cut through. Displays general polish. Dimensions: 34×7×7mm. Phase 5/6. Context: CBN/CBP (stony, tertiary midden in Inner Ditch, over Structure D).

Mounts (see also Roughouts, SF408, SF409, SF432)

SF276 (illus 10.25) Fragmentary antler decorated mount; traces at one end imply it had a plano-convex section. Surviving original end crudely cut, with broken perforation (Diameter: 5mm) for mounting; the end must have had a gabled form to accommodate this. Surface well polished, with fine knife-cut incised decoration: transverse lines define two surviving panels; one (at the end) with a saltire, one blank. Dimensions: 45×18.5×6.5mm. Phase 6. Context: JAB02 (House 4 terminal infill deposits).

SF281 (illus 10.25) Small curved bone mount with rounded edges and sub-rectangular section. The damaged end has two drilled perforations (Diameter: 2.5mm), the second probably a replacement since the fracture surfaces are worn; the other end has a single perforation. It is slightly polished and has a very dark surface. Dimensions: 29×7.5×4.5mm. Phase 6c. Context: BBC06 (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).


SF499 Antler mount? Beam fragment, surviving end ?cut and snapped square; split longitudinally, giving a plano-convex section, the outer surface trimmed in places and bearing use-polish. Charred, with gnaw marks. Dimensions: 31×16.5×6mm. Phase 6. Context: JAB02 (House 4, uncertain context).

Toggle or fasteners

Toggle SF285 has been discussed above. Two other probable fasteners (SF308–9; illus 10.25) comprise centrally perforated sheep metacarpals. Such items have been much debate, as morphologically similar objects have been interpreted as bobbins, toggles, toys or musical instruments (MacGregor 1985: 102–3; Hallén 1994: 216). These two examples show differences (notably in perforation, with one being knife-cut and one drilled), whilst SF308 is also more heavily worn; on both, however, wear is concentrated around the perforation. The wear does not appear to have arisen from spinning (thus ruling out use as toys.
or musical instruments), and in the case of SF308, at least, is clearly asymmetrical, consistent with use as a toggle or other fastening (perhaps for a bag or cover), rather than a bobbin.

SF285 (illus 10.25) Unfinished antler rectangular-perforated toggle fastener. Cylinder with well-finished central transverse sub-rectangular perforation (Dimensions: 26 × 12mm). Both ends have longitudinal sockets in the cancellous bone, intersecting the transverse perforation; one is markedly smaller and tapering, suggesting it is unfinished. This is supported by the unworked surface (with much of the rubicose surface still present). The surface is eroded, with slight polish (from post-depositional wear?). Length: 83mm.

SF308 (illus 10.25) Fused sheep metacarpal with transverse knife-cut biconical perforation (Width: max 8mm) in middle of shaft, with worn cut marks. On each face, the same side of the perforation is markedly more worn, giving it a notched appearance when seen from the side, and suggesting transverse wear with a cord or something similar pulling down on it. A shallow indentation above the hole and very slight knife-cut notch by the perforation on one face suggests an earlier attempt at perforation. Hole edges heavily polished all round. Length: 90mm. Epiphysis: 21 × 12mm. Shank: 11 × 8mm. Unphased. Context: Unstratified.

Diameter: 27.5 × 23.5mm. Phase 6. Context: JCG01 (House 6, pit).
Miscellaneous artefacts. The antler drum (SF278) is shown together with the tool profiles (read from left to right) of the central dots in each motif.
PERFORATED OBJECTS

Two perforated discs (SF298–9, illus 10.27), made from the blades of scapulae were recovered from related contexts (SF299: from Phase 4 Structure C, in the Inner Ditch West; SF298: from the Phase 5 middens which sealed it). Both have a somewhat irregular series of small perforations; their fragility indicates they were not put to any heavy use. There are rare parallels from Iron Age assemblages: Ballacagen Lough, Isle of Man, provides a very close, if fragmentary, parallel (Bersu 1977: 74, fig 29, no A57), with further examples from Ardakillin Crannog, Co Roscommon (Wood-Martin 1886: 105) and Lagore, Co Meath (Hencken 1950: fig 106). The Ballacagen example has been examined first-hand, and like SF299, the biconical edges are still quite sharp, with no sign of use-wear. Two Scottish parallels are rather different, as both are rectangular in form. From Vallay, North Uist (NMS: GT 265), comes a rectangular strip with a regular series of perforations in two rows, while a rib tool from North Berwick Law (NMS: HD 1671) has more irregular rows with signs of fracture or wear on the perforation edges. From their form, these latter items could have been used as tallies, with a peg marker in the holes; others might have been used to separate threads in weaving, perhaps for tablet weaving or braid manufacture (Henshall 1950: 148–53). However, the lack of any wear argues against this for the Broxmouth artefacts, and the similar freshness of the Ballacagen example makes it less likely that both are unfinished. Is it possible that they acted as strainers of some sort?


SF299 (illus 10.27) Very thin D-shaped perforated disc with a slightly undulating surface, made from a piece of scapula (probably sheep), its edges abraded, with eight perforations around the edge and one near-central one. All are hourglass perforations (Diameter: 2–3mm); two are figures of eight, and a misplaced perforation attempt is also visible. The perforations show no signs of wear. Manufacture striations are evident – possibly unfinished? The surface is stained dark, perhaps from colouring but more likely from the use of old bone, as manufacturing traces cut through this surface. Dimensions: 33 × 25 × 1–2.5mm. Phase 4. Context: CCW01 (Structure C, stage 2 pit fill).
SF301 (illus 10.27) Perforated fused cattle femur head, cut square at an angle to the shaft. The longitudinal perforation comprises two tapering square-sectioned pyramids, the one from the cut surface much broader (18 × 15mm cf 10mm) and deeper; it is also more rhomboidal, and one corner has been extended. The lips of the perforation are worn. Knife and chop marks probably derive from butchery. Diameter: 49 × 44mm. Height: 46mm. Phase 3c. Context: BBC01 (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).

SF304 Central tarsal of cow with longitudinal perforation (Diameter: c 8mm) cut from both sides, leaving an angled hole with slight use-polish. Knife marks from butchery. Its use is unclear, but there is a similar object from Borness (NMS: HN 157) and a perforated astragalus from Crosskirk (Fairhurst 1984: 123). Dimensions: 55 × 51mm. Height: 34.5mm. Phase 6. Context: JAC02 (House 5, terminal infill deposits).

Smashed bones with perforations

A series of smashed cattle bones with holes cut into their ends was also recovered. Their use is obscure to the authors, but they may derive from marrow extraction.

SF303 (illus 10.27) Distal end of cattle tibia (epiphysis fused), crudely chopped approximately transverse to the shaft, with a longitudinal perforation; a hole (Diameter: 8.5mm) drilled from the outside has been expanded internally. The edges of both the perforation and the cut edges of the shaft show use-wear, probably from marrow extraction. Dimensions: 48.5 × 41.5mm. Height: 43mm. Phase 5/6. Context: CAM (mixed, tertiary midden in Inner Ditch).

SF305 Proximal end of cattle radius with longitudinal ?drilled perforation (Diameter: c 6mm; Length: 22mm) into the marrow cavity, which has been exposed by fracturing the diaphysis; edges extensively flaked, with slight wear and abrasion scars. Surface darkened in places. Probably from marrow extraction. Dimensions: 70 × 39mm. Height: 81.5mm. Phase 1. Context: OFM04 (midden sealing House A).

SF306 Proximal end of cattle metatarsal, fractured at an angle, with crude longitudinal perforation cut through epiphysis into medullary cavity. The irregular perforation is sub-triangular in plan (Width: c max 11mm), the corners rounded and the edges with slight use-wear. Knife marks across the perforation probably derive from butchery. Probably from marrow extraction. Dimensions: 39 × 37mm. Height: 63mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

Other

SF200 (illus 10.27) Shaft of sheep femur, slight natural curve; ends bevelled and smoothed from use; small rectangular perforation centrally placed on underside of curve, its edges worn. Surface of the bone polished and rather worn, suggesting extensive use; but what? Did something pass through the hole? Could it be a tool such as a fine hammer or burinisher? Length: 68mm. Width: 16.5mm. Thickness: 14.5mm. Phase 6. Context: DAL (House 2, pit).

SF275 (illus 10.27) Broken decorated antler strip, probably from a handle. Rectangular strip, the cancellous tissue smoothed and end sawn square; surviving end expands into a rectangle decorated with three transverse saw-cut grooves (Width: 2mm) and two marginal ones which are mostly lost. The narrower remainder of the strip has a rather irregular edge; one side is slightly sinuous, suggestive of finger-grips, the other damaged. Two further transverse saw grooves decorate this part, dividing the strip into unequal thirds as it survives. It thins towards the broken end, suggesting it was not much longer. Perhaps a handle? Dimensions: 65 × 19 × 5.5mm. Phase 6. Context: JAB02 (House 4, terminal infill deposits).

SF278 (illus 10.27) Cylindrical decorated terminal sawn from a larger antler object, tapering slightly at the top towards the sawn terminal where an irregular knife-cut groove defines a collar at the tip. Encircled by eight double ring-and-dot motifs (Diameter: consistently 5mm and 10mm), slightly irregularly spaced, though none overlap. Rings cut to varying depths (sometimes on the one ring), while one dot is a double one, indicating it was recut (or an abortive initial cut). Traces of a dark pigment survive in some of the grooves, and more intermittently on parts of the surface. Central cylindrical perforation (Diameter: 12.5mm), flaring to 15mm at the end, probably from wear; this end is worn and the collar damaged in places. In contrast, the sawn end shows little or no rubbing and the protruding stub has only slight polish, suggesting the decorated terminal saw little or no secondary use after its removal. The original object, and the reason for detaching the terminal, is unclear. It could be a handle, although not for a blade tool, given both the wear and the circular perforation. Diameter: 8.5 × 30.5mm. Height: 24.5mm. Phase 4. Context: CET (Structure C, stage 2 paving).

SF294 (illus 10.27) Unidentified bone splinter, one end flattened and worn, slightly worn point at other end. Probably broken from larger artefact. Dimensions: 92 × 12 × 6.5mm. Phase 4. Context: CEG/CEX (Structure D, ash-rich deposit).
THE FINDS

SF295  Unidentified flat bone splinter. Slight traces of working and wear on curved edge; other edges broken. Probably broken from larger artefact. Dimensions: 54 × 17.5 × 5mm. Pre-Phase 3b. Context: BBE/BBC (buried soil/old ground surface in South-west Entrance area).

SF314 (illus 10.27)  Unidentified artefact. Left coronet of butchered red deer (cut from skull). Brow tine snapped at angle. Beam detached above brow tine, with large worn rectangular notch cut into it; roughly whittled, but no obvious signs of wear. Burr battered and skull surface worn and flaked from use. Pedicle has localised knife marks from skinning. Dimensions: 164 × 148 × 63mm. Phase 3c. Context: BBA01 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF397 Unidentified artefact, probably re-used antler terminal offcut. Damaged, palmated crown of mature antler. Tines broken, but both those on uppermost branch have had tips removed and sockets hollowed; purpose uncertain. Beam junction damaged. Diamond-shaped punch marks at the junction of beam and lower palmated tine suggest use as working surface. A few scattered knife marks. Length: 210mm. Phase 3c. Context: BBR (midden infill into western terminal of the Outer Ditch, South-west Entrance).

SF437 Fragmentary unidentified object made of notably curved tine. Recent breaks at both ends. Highly

Bone-working debris

Bone roughouts
AN INHERITED PLACE

polished, with fine abrasion scars in places and one deeper channel near tip. Dimensions: 67 × 21 × 19mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).


SF471 Unidentified object. Fragments of hollowed antler beam, broken longitudinally, edges and ends worn. Possible worn angled knife facet at one end. Dimensions: 126 × 38 × 20mm (including SF472, which joins and is amalgamated). Phase 6. Context: HAE (House 7, stage 1 entrance posthole).

SF474 Unidentified hollowed antler object or roughout, ends broken, cancellous tissue hollowed, split longitudinally. Dimensions: 76 × 27.5 × 9.5mm. Phase 5/6. Context: BC/BGG (interface between metalled roadway surface and layer of paving above, in South-west Entrance area).

SF504 (illus 10.27) Broken tool? Roe deer antler, upper part recently broken. Burr removed, end trimmed square and abraded; lower part of beam whittled. Branch tine cut off, the junction carefully smoothed. Dimensions: 157 × 18.5 × 17mm. Phase 3c. Context: BBA01 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

SF511 Roe deer antler beam and tines, snapped across beam, with a narrow hole (Diameter: 2mm) 18mm deep in the core of the beam. Length: 146mm. Phase 5. Context: CBD01 (primary midden in Inner Ditch, over Structure C).


SF1204 Cetacean bone fragment with one natural flat face, the adjacent face trimmed flat in a series of broad facets. Other faces broken. Dimensions: 88 × 24.5 × 16mm. Phase 3c. Context: BBA03 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

BONE-WORKING

The majority of unfinished items in both bone and antler have been discussed in the relevant functional categories above, where this can be identified. For bone, early-stage roughouts whose intended use cannot be identified are catalogued below.

Bone-working debris


SF204 Unfinished item or working debris. Cattle tibia fragment, edges broken; abrasion on edges of narrow broken end. Dimensions: 85 × 30 × 8.5mm. Phase 5. Context: CBD01 (primary midden in Inner Ditch, over Structure C).

SF321 (illus 10.28) Working debris. Broken left mandible of cattle with working on interclavicle border. Knife cuts define a groove for detachment of a broken cylindrical fragment (Diameter: 9mm) with longitudinal abrasion striations; possibly a partially manufactured bead. Dimensions: 99 × 35 × 19mm. Phase 3c. Context: BBC01 (midden infill into eastern terminal of the Middle Ditch, South-west Entrance).

SF322 (illus 10.28) Offcut. Piece of animal cranium, trimmed to form a slab, the edges whittled square, one face naturally flat, the other chopped flat; detached by sawing from a larger block. Dimensions: 62 × 27 × 18.5mm. Phase 6. Context: JEL/JEM (House 4, between stage 3 and stage 4 paving).

Bone roughouts


SF320 (illus 10.28) Distal end of fused cattle metatarsal, sawn across shaft; at this end a bone ring has been partially removed by sawing. Saw cut is c.4mm wide. Dimensions: 91 × 27 × 24mm. Phase 3. Context: Trial Trench ditch infills.

ANTLER-WORKING SUMMARY

The wide range of debris and part-worked items give a good picture of antler-working technology at Broxmouth. A broadly similar process occurs throughout the various phases, and has been discussed above. The occurrence of recognisable fragments (illus 10.11) indicates beams and larger tines were targeted for selection; other parts could be used, but these prime elements could either be cut into cylinders or split into strips, with the cancellous tissue trimmed off or reduced.
Analysis of Viking and Medieval sites has produced detailed pictures of the working process (e.g. Ambrosiani 1981: 40–54, 119–27; MacGregor 1985: 70–1; MacGregor et al 1999: 1904–12), but these are rather different cases, typically focusing on the substantial production of particular products, notably combs. Antler-working debris is abundant from Scottish Iron Age sites, but there has been little synthesis of the material. Useful site reports include Sollas (Campbell 1991: fiche 3: B7–8), Foshigarry and Bac Mhic Connain (Hallén 1994: 196), Cnip (Hunter 2006: 138–41) and Pool (Smith 2007: 487–94); other sites have produced smaller assemblages or received rather over-summarised treatment. A notable feature of the Broxmouth material is its rather brutal dismemberment in many cases, by chopping and splitting. The assemblages from each phase are not large enough to confirm that small differences in the representation of particular types of working debris are significant. However, there are clear traces of changes in tool use over time. If we consider only the traces connected with dismemberment (the detaching of tines and the cutting-up of beams), the picture is even clearer (illus 10.13). The saw is barely used in Phase 1, but is increasingly common over time. Use of a saw would allow much more careful dismemberment; its near-total absence in Phase 1 suggests such tools were not readily available.

Only illustrated items and roughouts are catalogued here; working debris is summarised in table 10.6 and catalogued in an archive report, as are antler fragments lacking surviving working traces.

Antler-working: roughouts (see also Pogs, SF243 (?tine) and SF290)

**Bases**

SF341 Cast left coronet of red deer. Brow tine carefully sawn and chopped off, the stump worn smooth. Beam sawn off, part of rubicose tissue heavily knife-trimmed. Edge of coronet worn smooth, probably from handling during manufacture. Two shallow parallel saw-grooves in base. Incipient socket in beam end suggests it was intended as a tool head or fitting. Length: 89.5mm. Coronet: 71 × 63mm. Phase 6. Context: JAB02 (House 4, terminal infill deposits).

SF351 (illus 10.29) Left coronet of red deer, probably cast. Brow tine removed by sawing, beam by chopping, its stump worn probably from handling. Burr carefully cut off and coronet knife-trimmed to form flat surface. Worn and highly polished. Incipient socket in tine stump and two in beam stump, the irregularity indicating they are unfinished. Probably intended as tool head or terminal for a walking stick or item of furniture. Dimensions: 72.5 × 45 × 42mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

SF365 (illus 10.29) Roughout? Left antler of mature red deer. Coronet, brow and bez tines, and beam removed by careful sawing, with the stumps of coronet and bez smoothed; the care suggests it was intended as a roughout. Single short saw cuts into beam and brow stumps. Dimensions: 153 × 76 × 48mm. Phase 3c. Context: BBA05 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

**Beam**

SF194 (illus 10.29) Unfinished handle? Slightly tapering beam segment; ends sawn, with conical hollows which just join but are not finished. Rubicose surface little modified. Length: 103mm. Width: 45mm. Thickness: 28mm (25 × 31mm at end). Unphased. Context: Unstratified.

SF372 Roughout, probably for handle. Beam segment, chopped across tine to create one expanded end. Other end split and edges worn; irregular split is probably reason for discard. Cancellous bone removed to create subcircular socket (Diameter: c 20mm). Dimensions: 110 × 66 × 36mm. Phase 3–6. Context: OBW (general recovery from quarry scoop feature, Inner Ditch West area).

SF376 (illus 10.29) Irregular junction probably from beam and terminal tines. It seems odd to use such an irregular bit, but the care taken in neatly sawing beam and tines, and roughly knife-bevelling the edges on two stumps, indicates it was not just an offcut. Dimensions: 135 × 51 × 33mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

SF389 Roughout (fitting?), re-used as working surface. Y-shaped beam-tine junction, carefully chopped and split longitudinally. One end detached by chopping, and rounded from wear; other has chop marks around edges, but a big split removed it and much of tine – probably uncontrolled, leading to discard, as tine had been socketed (for use as fitting?) but was badly damaged by this. Punch marks on both sides of beam-tine junction. One edge slightly charred. Dimensions: 162 × 72 × 34mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

Roughouts: bases

Prepared beam segments and strips

Early stages

Roughouts: beams

Illustration 10.29
Antler-working.
THE FINDS

SF439 (illus 10.29) Triangular-sectioned segment split from beam. Broad end flattened, probably sawn. Around half of the surviving length has been reduced to form a knife-trimmed tapering faceted shank, the end broken. Intended for an object with an expanded head/terminal; perhaps a scoop (see SF286–90), but more likely a pin. Length: 82mm. Width: max 15.5 × 11.5mm. Shank width: 4–6mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

SF440 (illus 10.29) Elongated segment split from beam, near-triangular in section with cancellous tissue hollowed. Broad end knife-trimmed square, other end stepped into a broken faceted shank for a pin (or possibly a scoop). Length: 38mm. Width: max 15 × 10mm. Shank width: 5.5–6mm. Unphased. Context: Unstratified.

SF442 (illus 10.29) Sub-rectangular-sectioned beam segment, split and knife-trimmed, the broad end knife-trimmed square, the other stepped into a broken shank, knife-trimmed to a sub-rectangular section. The relatively short expanded head demonstrates this was intended as a pin rather than a scoop. Length: 26mm. Width: max 14 × 7.5mm. Shank width: 6.5mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

Tine

SF207 (illus 10.30) Unfinished tine handle, from tapered end of tine. Tip removed by cutting and slightly rounded. Abrasion on rubicose surface. Socket end has been sawn, and cancellous tissue hollowed for 22mm. Split down one side. Length: 66mm. Width: 17mm. Thickness: 10.5mm. Phase 5. Context: CBQ/CRB (primary middens in Inner Ditch, over Structure F).

SF297 (illus 10.30) Unfinished object, possibly a handle. Red deer tine, broken at both ends. Surface whittled to form long, regular facets. Both ends contain the remains of sockets (Diameter: r8mm; Depth: 15+mm). Dimensions: 100 × 22 × 18mm. Phase 3d. Context: BBDD03 (middlen infill into western terminal of the Outer Ditch, South-west Entrance).

SF335 Tine broken at one end, split longitudinally; some abrasion to smooth outer surface. Dimensions: 63.5 × 18 × 9mm. Phase 3c. Context: BLY (cobbled surface in western terminal of the Inner Ditch, South-west Entrance).

SF407 Tine split longitudinally, tip broken, adjacent surface whittled smooth. Perhaps discarded because it split irregularly; the broader end tapers irregularly. Dimensions: 116.5 × 22 × 11.5mm. Phase 1. Context: OAA (sediments sealing House B).

SF408 Slightly tapered roughout. Tine, thick end cut or sawn and snapped, tip cut and snapped; split horizontally, with cancellous tissue hollowed out. Perhaps intended as a mount. Scattered knife and ?chisel marks over surface. Dimensions: 92.5 × 30 × 13.5mm. Unphased. Context: Unstratified.

SF409 Roughout, perhaps for a mount. Tine or upper beam, ends snapped (and cut?), narrow end whittled; split longitudinally, slightly irregularly; some hollowing of cancellous tissue. Dimensions: 93.5 × 23 × 12mm. Phase 3–6. Context: OBW (general recovery from quarry scoop feature, Inner Ditch West area).

SF414 Large tine detached by chopping and snapping. Tip removed (?sawn), with an incipient socket from hollowing the cancellous tissue, suggesting it was intended as a handle. Probably abandoned when this socket broke (some of the damage is ancient). Length: 210mm. Dimensions: 39 × 29mm at base, 19 × 19mm at tip. Phase 1. Context: OFM (middlen sealing House A).

SF419 Tine, neatly detached by careful knife-cutting and snapping, probably followed by abrasion. Tip whittled on one side and abraded overall, though naturally smooth already. Incipient perforation (Diameter: 2mm) on one side near base; deep V-notch around mid-point on concave side. Dimensions: 101 × 23 × 15mm. Phase 1. Context: OFM (middlen sealing House A).

SF420 (illus 10.30) Tine handle roughout. Sawn and snapped; tapering sub-rectangular socket in broad end (Dimensions: r10 × 5mm; Depth: 25mm). Upstanding snapped cancellous tissue indicates it was unfinished. Naturally smooth surface unmodified bar a few stray cut marks. Dimensions: 101 × 22 × 20mm. Phase 6. Context: JAB03 (House 4, terminal infill deposits).

SF423 Handle roughout. Short slightly curved length of tine, sawn at both ends with incipient sockets. Some fine knife cuts and abrasion on the naturally smooth surface. The larger, tapering socket is rectangular in section (Dimensions: 8 × 6mm; Depth: 15mm). Dimensions: 49 × 20 × 18mm. Phase 5. Context: CBQ (primary midden in Inner Ditch, over Structure F).

SF427 Roughout, perhaps for handle. Tine, detached by chopping and snapping, the other end broken. Incipient socket in crudely chopped end – a narrow lentoid (Dimensions: 9 × 3mm; Depth: 14mm). Dimensions: 165 × 33 × 32mm. Phase 6. Context: HLC (hollow south-east of House 8).

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SF443 (illus 10.30) Cylinder formed from a tine; both ends sawn and snapped, with incipient irregular conical perforation at one end (Diameter: 5mm). Rubicose surface removed by knife-trimming. Perhaps intended as a bead or a handle component. Length: 19mm. Diameter: 16.5 × 16mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

Part uncertain

SF455 ?Handle roughout. Hollowed cylinder, one end sawn (snapped part still protruding), other broken; accidentally split longitudinally. Dimensions: 45 × 22 × 9mm. Unphased. Context: Unstratified.

SF1208 Roughout? Fragment, cancellous tissue partly hollowed at one end. No original ends survive. Dimensions: 104 × 22.5 × 11.5mm. Unphased. Context: Unstratified.


Unfinished antler cylinders and rings

SF444 Semi-cylindrical object made of beam, split longitudinally, with the cancellous tissue hollowed out. One end sawn square, the other sawn part-way through, leaving a projecting portion which has broken. Its function is uncertain, but presumably this projection was critical to it, as it was apparently abandoned when this broke; it could simply have been sawn off. The other option is that it was a finished item broken in use, though its nature is unclear. Dimensions: 78.5 × 40.5 × 18.5mm. Phase 5/6. Context: BAX02 (terminal rubble infill into north part of South-west Entrance area).

SF445 (illus 10.30) Thin broken ring roughout, tapering in height; around half survives. Both ends sawn, at a slight angle to one another; one was subsequently heavily worn. Cancellous bone largely removed and polished smooth, surface abraded. The non-parallel sides (and tapering profile) might suggest it was an offcut from the end of a perforated beam section rather than a roughout, but it is impossible to be sure. Diameter: 44.5mm. Height: 6.5–15mm. Thickness: 8mm. Phase 3. Context: LAE01 (midden infill into southern part of the Inner Ditch, East Entrance).

SF446 (illus 10.30) Roughout. Broken cylinder, sawn at both ends, cancellous bone hollowed. Split longitudinally, probably accidentally (as the edges are irregular), leading to discard. Diameter: 27mm. Length: 25mm. Phase 5. Context: CBM01 (secondary midden in Inner Ditch, over Structure D).

SF447 (illus 10.30) Roughout. Broken cylinder, sawn at both ends. Split longitudinally during hollowing, leading to discard. Diameter: 23.5mm. Length: 31mm.
Offcuts; coronets and bases

Discarded antler bases

Tine-beam junction offcuts

Terminal offcuts

Illustration 10.31
Antler-working debris.
AN INHERITED PLACE

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Thickness: 15mm. Phase 2a. Context: HCY (primary clay rampart, Inner Ditch West).

SF448 Unfinished cylinder fragment, the ends sawn at a marked angle. Unclear if hollowing had started prior to breakage. Worn and gnawed. Dimensions: 32×29×12mm. Original diameter: c 35mm. Phase 5/6. Context: BEQ01 (cobbled resurfacing of roadway in South-west Entrance area).

SF449 Roughout. Three fragments. One end sawn (with some incipient marks above the final cut line), the other broken. Cancellous tissue partly hollowed, outer surface partly knife-trimmed. Diameter: 35mm. Height: 33mm. Phase 3c. Context: BBA02 (midden infill into western terminal of the Middle Ditch, South-west Entrance).

Antler-working debris

Early stages

SF340 (illus 10.29) Part-worked cast left coronet of mature red deer. Brow and bez tines and beam neatly sawn off and snapped. Some length of beam survives, with attempts to use it – an incipient drill hole (Diameter: 4mm; Depth: 2mm) near the end, and initial hollowing of cancellous tissue. Two groups of cuts suggest marking out of cuts above bez and brow tines. Length: 185mm. Coronet: 86×79mm. Phase 6. Context: KEO03 (pit south-west of House 1).

Prepared beams and strips

Segments are defined as preserving the complete beam section, while with strips the beam has been split, normally longitudinally. While most are clearly or probably from beams, some tines and terminals have also been used.

SF206 (illus 10.29) Near-flat strip of antler, sawn at one end and chopped at other. Split longitudinally; cancellous tissue smoothed, edges knife-trimmed, rubicose surface unmodified. Dimensions: 73×16×5.5mm. Phase 5. Context: CBQ/CBR (primary middens in Inner Ditch, over Structure F).

SF395 (illus 10.29) Prepared segment? Palmate terminal of large mature antler. Four tine stumps remain: lowest sawn and snapped, others chopped and snapped. Beam been broken off, with any chop marks lost in damage. The unusual effort put into tine removal suggests it was intended to use the large, flat surfaces of this piece for manufacture. Length: 210mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).


Offcuts: coronets/bases (see also SF350 under Picks/Hammers)


SF353 Antler coronet and part of skull of red deer; beam plus part of coronet and butt broken off. Base of coronet ringed by heavy chopping marks intended to detach antler from skull. It was finally removed by disjointing the cranial fissures. Chop marks on remains of beam are probably from removal of tine. Length: 135mm. Phase 3-6. Context: OBW (general recovery from quarry scoop feature, Inner Ditch West area).

Beam-tine junction offcuts

SF366 (illus 10.31) Y-shaped junction from branch of beam and upper tine of large antler. Tine chopped and broken off, adjacent end of beam sawn, other end chopped. Dimensions: 140×128×27mm. Phase 5/6. Context: CBN (stony, tertiary midden in Inner Ditch).

SF377 (illus 10.31) Offcut re-used as working surface. Junction of beam and bez tine from right antler of red deer. Beam sawn at both ends, lower slightly worn. Tine naturally polished, worn and striated. Concentrations of punch marks at the beam-tine junction on both sides, and a scatter on the beam opposite side from the tine, suggest use as a working surface – perhaps with the tine acting as a spike to support it. The pyramidal punch marks are deeper on one side (up to 4mm). Length: 170mm. Phase 5/6. Context: CAM01 (mixed, tertiary midden in Inner Ditch).

Terminal offcuts (see also Miscellaneous, SF397)

SF378 (illus 10.31) Offcut. Junction of beam and terminal tines of mature red deer. Beam detached at one end by sawing; two tines removed by chopping. The tip of the remaining tine is naturally striated and polished. Dimensions: 175×42×38mm. Phase 5. Context: CCC (Structure F, ash deposit over southern hearth).

Roe antler

SF505 Part-worked antler. Cast mature roe deer antler (cast), apparently discarded during working. One upper