

BONE AND ANTLER OBJECTS

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1.0 INTRODUCTION

A small group of bone and antler artefacts (34 individual objects) were recovered from excavations at Portmahomack. Most date to the early medieval period, and they provide an interesting insight into activities that took place on, or close to, the site. The objects may be broadly divided into three categories: personal items, those that relate to particular crafts or activities (textile manufacture, vellum production, and writing), and a number of ‘miscellaneous’ items, for which no single function can be confidently asserted. Below, each of these categories of object is catalogued and discussed in turn, before the implications of the collection as a whole are discussed.

2.0 PERSONAL ITEMS

2.1 COMBS

Of the six combs and fragments from Portmahomack, three that are sufficiently well preserved for discussion fit easily into an early medieval (Anglo-Saxon and Pictish) tradition. Though fragmentary, they comprise combs that are probably of Types 11/12, 2a/b, and 8a (dating broadly between the 7th and 12th centuries; Ashby 2006; Ashby 2007; Ashby in press). Find number **24/1805** is probably best explained as a later medieval one-piece comb (Type 14b) than as the toothplate from an early medieval composite form.

As far as is visible – and with the possible exception of Find no **24/1805** - the combs seem to be manufactured in antler (probably red deer, though this could not be confidently ascertained in most cases) rather than postcranial bone. The process by which composite combs are manufactured has been detailed elsewhere (see Ambrosiani 1981; Galloway and Newcomer 1981; Ulbricht 1978; *cf* Ashby in prep), and herein it suffices to say that the Portmahomack examples were fabricated through the assembly of several small toothplates and pairs of longer connecting plates, these being fixed together with a rivet at every other toothplate edge (what I have termed elsewhere the ‘alternating-edge’ method), as seems to have been the tradition in early medieval England and Scotland (see Ashby in press). The combs are unornamented or simply decorated with incised motifs such as cross-hatch and opposing obliques. Microscopic analysis of surviving teeth demonstrates the presence of low-level beading and striation, suggesting that these combs were used, but in the absence of experimental investigations into use wear, it is impossible to quantify the extent or intensity of use that these phenomena represent.

24/1548. **Composite comb.** Antler. Fragmentary. 3 fragments of connecting plate, 4 toothplates. Double-sided, composite, type 11 or 12 (c.7th-9th century AD). Connecting plates straight in profile and flat in section, and decorated with sawn cross-hatch ornament. Connecting plate edge features decoratively sawn toothcuts. 13 teeth remain partially complete, and show evidence of minor wear in the form of transverse striations. Teeth are undifferentiated, and arranged with 5 teeth per cm on each edge. Iron rivets. Connecting plate attached to one toothplate by a rivet at one edge. Two other toothplates indicate 'alternating edge' riveting, while one features staining on both edges; this may have been positioned centrally, next to the endplate, or simply represents a repair. Not measured: fragmentary.

24/1805 **Simple comb.** Probably postcranial bone. Very fine one-piece miniature comb (no evidence of rivets), Type 14b (c.15th century or later). Bone. Teeth undifferentiated; 14 teeth per cm. 10 complete teeth preserved, 8mm long. Central area between teeth is 16mm in height. W 23mm, h 24mm, Th 1.8mm.

14/271 **Comb connecting plate.** Antler. From a single-sided composite comb (Type 8a; c.10th-12th century AD). 5 iron rivets, evenly spaced (c.25mm between each). Section slightly triangular. Decorated with pair of central lines along apex, dividing plate into two horizontal panels, decorated with alternating fields of saw-cut obliques. Execution of ornament is simple, but aesthetically effective. Decorative toothcuts, indicative of 6 teeth per cm. L 113mm, W 13mm, Th 4.2mm.

24/48 **Comb.** Probably antler. Connecting plate with one iron rivet, one perforation close to end. Oblique lines from rasping on reverse. Not easily assignable to type; probably Type 2 (7th –9th century AD) or 7/8c (10th-12th century AD).

L 47mm, W 12mm, Th 2mm

24/1563 **Comb tooth.** Indeterminate bone/antler. Minor beading close to tip. Rectangular section, tapering profile. L 17mm, Diam 2mm

14/3105 **Comb tooth.** Indeterminate bone/antler. Short and broad. Minor striation close to tip. Rounded section, tapering profile. L 11mm, Diam 3mm

2.2 PINS

Thirteen pins and related points, representing a variety of forms, were recovered from Period 2, 3 and 4 contexts. Roman and early-medieval pins are classified by MacGregor (1985: 113-122), though not all of the Portmahomack examples fit easily into this classification. Well-

preserved examples include: find **24/7189**, a pig fibula pin of MacGregor's Group 1, characterised by the head being neither perforated nor narrowed (see MacGregor *et al.* 1999: 1950); 4 pins (finds **59**, **2645**, **24/746** and **24/747**) that might be best described as flat- or nail-headed; and one example (find **14/1284**) distinguished by the remains of what appears to have been an ornately carved thistle-or vase-shaped head, broadly paralleled at Whithorn (Nicholson 1997b: fig 12.138, 7.1 and 7.2). The pins also display a variety of forms of shank. Though none are of the 'hipped' type characteristic of many early medieval sites in England and Scotland (see MacGregor 1985: 116), there is nonetheless some diversity. Find **24/747** has a gently tapering shank, while **14/1284** is parallel-sided, **24/746** displays a clear swelling at the waist, and **3196** is distinguished by the characteristically curved profile of the antler tine from which it is cut. Other examples are incomplete or poorly preserved (**4639** is highly fragmented, while **1796** has been damaged by burning), and comment on their shank or tip form cannot be confidently made. Finds **24/746** and **24/747** are long pins, and display an extremely high level of polishing. In addition, pin **24/747** is unique within the context of the collection in that it features conspicuous decoration. Its head is decorated with an uneven arrangement of 5 circular impressions, while just below the head, a pair of incised circumferential lines forms a collar, and roughly-cut obliques decorate the area that lies between them.

The chronology of bone pins is not one of high resolution, given the potential for conservatism in design once a model has been found to be fit for purpose. Nicholson dates nail-headed pins to the 10th century (Nicholson 1997b: 496) on the basis of examples from Jarlshof (Hamilton 1956: 148) and Lincoln (Mann 1982: 10), but such pins are known from contexts as early as the Roman period (MacGregor 1985: 117-118), and the type does seem to have had an early medieval currency in Scotland in particular (see MacGregor 1975; MacGregor 1985: 118). An 8th- or 9th-century date for these pins certainly does not seem out of the question. Pin **14/1284**, with its complex vase- or thistle-shaped head is equally difficult to date, but broad parallels are known from Norse contexts in Orkney (Smith 2007: 479) and Shetland (Hamilton 1956: 125). It is notable that neither this, nor the nail-headed form is well represented at York (MacGregor *et al.* 1999; Rogers 1993; Ashby and Spall 2005). The function of pins cut in skeletal materials has been the subject of uncertainty over a considerable period; one might argue that we know little more about their diversity of function than could be said in MacGregor's (1985, 113) review.

Some were clearly employed as dress fasteners, others as hair pins; testament to both uses comes from their recorded position in a number of Anglo-Saxon burials (see MacGregor 1985, 113-116 for the classic review). This uncertainty is paralleled in the study of copper-

alloy pins (see review in Rogers 2009, 40-41), and a definitive answer does not seem imminent in either case. However, it might be argued that burial contexts are not illuminating in terms of the use of these objects in life, and we instead have to draw deductions from the objects themselves. Thus, morphological traits of these pins have been interpreted in functional terms; the 'hipped' shanks characteristic of early-medieval pins might indicate a use different to those with a more regular shank profile, while shank and head diameters might also relate to diverse means of use (see Rogers 2009, 41). However, one must take care not to interpret all morphological variation in functional terms. Indeed, the attempt to isolate a single use for these sorts of items may not actually be productive, and may not reflect the ways in which they were perceived by their makers and users (*cf* Pestell's [2009: 126] discussion of the legitimacy of drawing a distinction between 'styli' and 'styli-form pins'). If a clear classification relating to function is not obvious to us, then it is possible that this was also the case in their period of use. Nonetheless, it is possible to speculate a little on at least some of these items. For the large, highly conspicuous pins **24/746** and **24/747**, one might propose a function in dress, hair arrangement, or a similar highly visible context. Though the ornament on **24/747** is roughly executed, it nonetheless represents an active attempt to embellish the object, which - given its size and polish - would already have been quite noticeable.

14/1284. **Pin**. Complete. Ornate, complex-head form, straight, untapering shank. Postcranial bone. Slight curved profile. Head dimensions 11mm x 4mm. L 110mm. Max shank diameter 5.3mm.

24/746 **Pin**. Probably postcranial bone. Complete. Finely made, and highly polished from use. Shank of sub-circular section and waisted profile. Oval head, 7.4 x 6.5mm. Undecorated. Fine point. L 130mm. Max shank diameter 4.8mm.

24/747 **Pin**. Probably postcranial bone. Complete. Finely made, and highly polished from use. Shank of evenly tapering profile, subcircular section. Oval head, 6mm x 5.5mm. Head decorated with 5 dots, unevenly arranged. L 130mm. Under head there are a pair of parallel circumferential lines (2.5mm apart), and zig-zag ornament connects them. Fine point. L 57mm. Max shank diameter 5.1mm

14/4541 **Pin**. Faceted section. Probably postcranial bone. Truncated below head. L 52mm, Max W 2mm, Th 5mm

14/4539 **Pin/needle**. Probably postcranial bone. Round section, curved profile. Truncated

below head. L 41mm, D 2mm

14/307 **Pin or Point**. Postcranial bone. Circular section, pointed. Gently tapering profile. Perhaps made of split rib. Truncated below head. L 46mm, W 3mm, Th 2mm

24/4639 **Pin**. Indeterminate bone/antler. Highly fragmented pinhead and upper portion of shank. Not measured. L < 10mm; W unknown.

24/916 **Pin**. Probably postcranial bone. Broken into two halves, round section, straight tapering profile. L 73mm, Max D 3.5mm

24/7189 **Pig fibula pin** – MaGregor Group 1 (head unperforated or trimmed). L 98mm, Head W 15mm, Shank Midpoint D 5mm.

14/59 **Pin**. Probably postcranial bone. Nail-headed, sub-circular section, waisted profile. Head 6mm x 8mm /L 47mm inc, shaft max diam 5mm

14/1796 **Pin**. Indeterminate bone/antler. Circular section, burnt (calcined). 3 shaft frags. Large frag L 25mm, D 4mm

11/2645 **Pin**. Probably postcranial bone. Nail-headed, flattened section. Head 4mm x 5mm /L 37mm inc, shaft diam 3mm

14/3196 **Pin or Point**. Antler. Curved profile. Round, but slightly faceted section. L 91mm, Max 6mm, Max Th 5mm

3.0 CRAFT-WORKING ITEMS

3.1 TEXTILE TOOLS

3.1.1 Spindle Whorls

A single spindle whorl (Find no **24/2139**) was recovered unstratified. Bone and antler spindle whorls are common finds from early medieval settlement excavations, and the corpus is sufficiently well understood for us to confidently identify a little diversity in form. The Portmahomack example is of rudimentary manufacture, being cut from the head of a large bovid femur. Cattle femora do appear to have been the skeletal element of choice for this form of whorl, though miniature skeuomorphs manufactured on pig femora are also known (Walton Rogers 1997, 1741). In most cases, femurhead whorls seem to have been rudimentarily manufactured; examples at Coppergate were roughly cut prior to drilling, and,

going on the presence of gnawing marks and other phenomena, some do not seem to have been cleaned fully prior to disposal (Walton Rogers 1997, 1742-3). The Portmahomack example displays similar puncture marks, as well as the distinctive crackalure that is diagnostic of subaerial weathering. One might thus propose that it ended its life exposed on open ground, or perhaps on an open dump or midden. The practice of cutting whorls from the heads of cattle femora (as opposed to the more time consuming process of carving discoidal whorls from bone, antler, or pedicle) seems to have become common from the Late Saxon period (Walton Rogers 1997, 1743). However, as Nicholson (1997b, 496) points out, decisions regarding such expeditiously produced items must have been fundamentally driven by raw material availability. It is thus unwise to load them with too much chronological, cultural, or technological significance, and in truth there is little more that can be said of the single example from Portmahomack. Nonetheless, it stands as a key piece of evidence for the production of textiles on site.

24/2139 **Spindle whorl**. Cattle femur head. Cylindrical perforation (not hourglass-shaped) of 13mm diameter through centre. Articular surface shows crackalure and gnawing marks. Broken away on one aspect, revealing cancellous tissue. Basal edge is straight, but roughly removed. D 36.8mm, h 23mm.

3.1.2 Weaving implements

The only confidently identifiable object of this category is the pin beater (Find No **24/4578**) from C1877. This item would have been employed in the lifting of warp and beating of weft threads. On morphological grounds, Walton-Rogers (1997, 1755-175) has identified three types of pin beater, each with distinctive wear patterns: the cigar-shaped pin-beater (associated with the warp-weighted loom, thus dating between the Roman period and the Viking Age, but being particularly common at Middle Saxon sites), a flattened, chisel-ended 'picker-cum-beater' (dating between the late 9th and 14th centuries, and no doubt associated with the two-beam loom), and a longer, more curved form (broadly contemporaneous with the picker-cum-beater, and probably also associated with the two-beam loom (Walton Rogers 1997, 1756-7).

The Portmahomack example fits best into Walton-Rogers' 'picker-cum-beater' type. Many examples of this form feature cross-hatch or other simple ornament midway down the shaft of the object. It has been speculated that the requirement for a rough surface that the user was easily able to grip was as important a rationale for the incision of such decoration as any aesthetic concern (see MacGregor, Mainman and Rogers 1999, 1966). In the present case then, it is interesting that this example does not feature decoration of this kind, but that the

central area is marked by a natural groove that no doubt had its origin in the rugose outer surface of red deer antler. The preservation of morphology in this area of the object alone is thus telling. Together with the spindle whorl (Find No **24/2139**), this object is evocative, notwithstanding the fact that it is the only example from the site.

24/4578 Picker-cum-beater. Probably red deer antler. Preserved natural groove close to shaft midpoint. Curved profile, slightly faceted section. L 97mm, Max 7mm, Max Th 6mm.

3.2 OBJECTS ASSOCIATED WITH THE PRODUCTION OF VELLUM AND MANUSCRIPTS

3.2.1 Needles

Identification of bone needles is less straightforward than one might imagine (Walton Rogers 1997, 1783). A large collection of ‘needle-like objects’ is known from Anglo-Scandinavian York, but, on the grounds of a pervasive polish, and distinctive wear around the eye, Walton-Rogers identifies only three as clear examples of needles. Her caution is well founded; many of the heavy, wide-headed perforated points frequently referred to as needles would be unfit for purpose.

However, in the case of Portmahomack, it is possible to make a reasonably confident identification on three objects (Find Nos **24/ 4616**, **14/3560** and **14/3680**). Although they do not preserve the extensive polish identified by Walton- Rogers on her three York examples, in terms of morphology and overall dimensions, the Portmahomack artefacts are closer to her ‘needles’ than they are to her other ‘needle-like objects’, and their heads certainly seem sufficiently narrow to pass easily through cloth or hide. Their round section would also facilitate such a use (*cf* Walton Rogers 1997, 1785). It is of course possible that these objects played a role in the postulated working of hide and vellum at Portmahomack, but it is impossible to empirically confirm this.

24/4616 Needle. Indeterminate bone or antler. Complete. Curved profile, ovoid section, finely pointed tip, and lozengiform head with longitudinally extended perforation (4mm x 1mm). Traces of wear at base of perforation. Not highly polished. L 83mm, Max Th 3mm.

14/3560 Needle. Indeterminate bone or antler. Head broken at midpoint across perforation; otherwise complete. Not highly polished. L 83mm, Max Th 3mm.

14/3680 Needle. Largely complete. Short and straight in profile; slight faceting on head, which features a round, 2mmx 2mm perforation. Gently tapering profile, blunt tip. L 52mm,

Max Th 4mm.

3.2.2 Pegs

These pegs (**14/4499** and **14/4500**) have been cut from the distal ends of cattle metapodials, and show signs of wear around the condyles. Though they are not diagnostic in isolation, they are arguably consistent with a use in the stretching out of hide that constituted a key component of the process of vellum manufacture. The smooth areas between the condyles of the distal articulation and the broken point at mid-shaft may relate to wear from a thong or cord of some sort; this is consistent with the proposition that the pegs were turned in order to increase the tension under which a hide was being held, in a manner somewhat akin to the tuning pegs of a stringed musical instrument. They were found in a right-angled alignment of metapodials worked to differing degrees 14-24/F393 C1957.

14/4500 Metapodial peg. Cut from the distal end of a cattle metapodial (metacarpal). Nutrient foramen visible. Condyles worn down, revealing cancellous material. L 64mm. Width across condyles (Bd) 46mm, but incomplete. Th 21.7mm.

14/4499 Metapodial peg. Cut from the distal end of a cattle metapodial. Nutrient foramen visible. Much of shaft and condyles worn down, revealing cancellous material. Mid-shaft is thinned, and features irregular cut marks. L 72mm, Max W 45.9mm (incomplete), Th 22mm.

4.0 WRITING EQUIPMENT

4.1 STYLI

Styli - implements used to inscribe writing on wax writing tablets - are now relatively well-known from Roman and early medieval sites (the tablets themselves are considerably less well represented). Styli are known in iron, non-ferrous, and precious metal, as well as bone, and have been comprehensively reviewed in a recent survey by Tim Pestell (2009). It is not my aim to recapitulate that review herein, and it suffices to say that several received wisdoms regarding styli – notably their assumed monastic associations and ‘Middle-Saxon’ date are now much less secure. This revision comes as a result of both the accumulation of single finds, and the recovery of an unprecedented haul of 22 examples from Flixborough. Bone styli are less well-known than their metal counterparts, but concerns that the material is unfit for purpose are unfounded (see MacGregor 1985, 124 for discussion).

Two objects (Find Nos **13/53** and **24/7190**) from Portmahomack are herein identified as styli (a third, less likely candidate [Find no **24/7189**] is catalogued above as a pin). Both Find Nos **13/53** and **24/7190** have the broad, straightsided shanks and well-defined, sharply tapering

tips that one would expect of a stylus, but while **53** has clearly defined shoulders and a sub-rectangular eraser-head, the head of **24/7190** takes a more sub-triangular form. The significance (chronological or otherwise) of such morphological variation is as yet unascertained. Indeed, the general lack of stratified examples means that no detailed chronology exists for the morphological development of this class of object (Pestell 2009, 125). At the time of writing, Pestell is developing a classification based on the form of the expanded head that was used as an eraser. It would be interesting to see where the Portmahomack examples fit within this scheme, but we await publication in order to compare them against the diagnostic criteria of each class, and to ultimately draw information related to their chronological range, geographical distribution and cultural implications. In the present context, though it has been shown that the occurrence of styli is not limited to monastic sites, it is interesting that a close parallel for the Portmahomack example comes from Whitby (Peers and Radford 1943; MacGregor 1985, 124). In Scotland, objects of similar form are known from the multi-period settlement site of Skail, Deerness in Orkney, though here they are identified as ‘spatulate-headed pins’ (Porter 1997, fig 8.3).

13/53 Stylus. Bone. Quite polished. Oblique striations on spatulate head. Indentation in centre of head on one face. L 95mm, Head width 9mm, Max shaft diameter 3mm.

24/7190 Stylus. Expanded head, with flat upper edge. Traces of vivianite. L 61mm, Head W 7mm, Max Shank Th 2.7mm.

5.0 MISCELLANEOUS ITEMS

In addition to those objects for which, on the grounds of either morphology or context, an identification can be made with some confidence, there exists a small but diverse collection of objects of insecure identity and/or function. Some of these items are idiosyncratic objects that cannot be securely identified, while others fit into recognised typologies, but which sadly lack an understood function. It is of course possible that some of these objects had functions related to those discussed above, but this cannot be unambiguously ascertained, and one might note that these items tend to lack the distinctive polish characteristic of the tools we know to have been used in textile manufacture (see above). Thus, herein the objects are briefly discussed, and only tentative suggestions as to function are made. A number of undiagnostic pointed objects were recorded. These are described below, though little can be confidently suggested regarding their function (for further discussion of similar objects, see MacGregor 1985, 174-6; MacGregor *et al.* 1999, 1989-1991). Of a little interest is Find No **24/4749**, which is the roughly worked proximal end of a small bovid metapodial. The

diaphysis has been chopped through obliquely close to what would have been the midpoint of the bone, and the resultant fractured end worked with a knife to form a point. Similar objects are well represented in early medieval contexts across Europe, and display a surprising degree of morphological regularity, which may perhaps be suggestive of some identity of function. A similar group of tools has been identified by MacGregor (and referred to by him as ‘socketed points’). These objects, usually manufactured on the proximal ends of large mammal metapodials, are distinguished by the removal of epiphyseal material and cancellous core, such that a hole drilled in the proximal articulation connects with the medullary cavity to form a continuous channel. On the basis of their presence in association with a leather workshop in York (MacGregor 1982), MacGregor (1985, 175) suggests a role for these objects in craft or industrial activity. Roes (1963, 47) goes one step further, arguing that similar objects may have acted as tallow horns, used in the lubrication of thread in order to ease the effort of needlework, while Mann (1982, 31) suggests that examples from Flaxengate, Lincoln could have been used as gouges. MacGregor (1985) is cautious not to easily accept such a specific function for what is a morphologically undiagnostic and technologically rudimentary object, and we would be well served by doing likewise. Moreover, only a single example is known from Portmahomack, and this is cut on the metapodial of a small mammal (sheep/goat), and lacks the socket of MacGregor’s tools. Nonetheless, the working of coarse materials such as leather and hide would necessitate the use of sturdy tools, and Find No **24/4749** may have found utility in just such a role. Indeed, in the context of evidence for needlework and parchment production at Portmahomack, one might tentatively suggest that its presence here is best interpreted in this light. Also of note is a *Bos* scapula (Find no **24/6900**) which although showing little sign of active working, may be best interpreted as a shovel of some sort (being recovered, as it was, from the ashy silts used to raise and level the ground surface), and a worked tine from the antler of a red deer (Find no **24/7862**). The latter has a very even, square-sided, 3mm-wide groove incised into it (presumably developed through wear), and a function as some sort of peg, on which a rope or thong was tied off seems most likely. Interestingly, its surface has been removed towards its distal end, in a way analogous to that seen on the socketed metapodial points discussed above. No precise function is assignable, but the object would not be inconsistent with a use in pegging out vellum, in a way akin to that which has been proposed for Find Nos **14/4499** and **14/4500** above. Indeed, Radley (1971, 5) proposed that similar worked tines recovered from Anglo-Scandinavian deposits at Ousegate, York were used in a tannery to peg out hides, and it is not too much of a stretch to imagine this item being used to hold recently tawed vellum under tension at Portmahomack.

Two further objects (Find no **14/4540** and **24/7863**) merit close consideration here. These are

split longbones (an equid metapodial and a *Bos* tibia respectively), and their treatment is similar: they have been split axially. This initial splitting was presumably undertaken with an axe, but the pieces were subsequently worked with knife and rasp to form regular objects of angular C-shaped section. The edges are smooth and square, such that the objects form long, narrow, open-ended 'trays'. The type does not seem to be well-represented in early medieval English and Scottish contexts, though it is known in early medieval Ireland (J Boyle pers comm.). One might speculate on a role as a vessel or channel for a fluid of some sort.

24/6900 **Cattle scapula**. Spinus and proximal articulation complete. A small (18mm x 12mm) sub-circular perforation in blade area, and damage to the edge probably represent recent breaks. Vivianite on ventral aspect. L300mm; W164mm. Articulation: 46mm x 57mm.

14/4401 **Unidentified object**. Bone. Cut from the distal end of a small bovid femur. The condyles have been roughly cut to form a smooth, curved surface. Function unclear.

L 21mm, W 19mm, Th 22mm

24/4749 **Bone point**, cut from diaphysis and proximal articulation of sheep/goat metatarsus. Hollowed diaphysis, but unsocketed at proximal articulation. Pointed edge is marked with a series of parallel notches formed during manufacture. L 85mm, Head width 18mm, Head Th 16mm

24/7862 **Worked antler tine**. Probably red deer; grooved and halved above, revealing spongiose core. Parallel and straight-sided circumferential wear groove (3mm wide).

L 123mm, MaxW 21mm, Th 14mm

14/4540 **Split equid metapodial**. Shallow, angular, C-shaped section. Distal end of bone has been sharpened to a point, and features a number of rough, parallel cutmarks. Function unknown. L 115mm, W 33mm, Th 16mm

24/7863 **Split *Bos* tibia**. Angular, C-shaped section. Distal end of bone has been sharpened to a well-defined point. Function unknown.

L 195mm, W 33mm Th 7mm

6.0 DISCUSSION

Assessing the extent to which the Portmahomack material might be described as having a 'monastic' character is less easy than might be expected. Chris Loveluck (2007) has demonstrated the difficulties of attempts to identify assemblage characteristics particular to high-status monastic or secular sites, and his arguments need not be rehearsed here. It

suffices to say that broadbrush generalising models are unhelpful, that temporal change must be taken into consideration, and that any particular site must be assessed within its own regional context. However, direct comparison with northern Britain's other early medieval monastic sites is unenlightening. Other than a putative manuscript stamp, there is nothing particularly 'monastic' about the collections of worked skeletal material from Monkwearmouth and Jarrow (Riddler 2006). The same might be said of Whithorn (Nicholson 1997a; Nicholson 1997b), while the corpus from Inchmarnock is diminutive (Franklin 2008). More generally, few monastic assemblages contain significant quantities of ivory, or relate to the kinds of activities traditionally ascribed to monasteries by historians (one thinks in particular of the production and illumination of manuscripts). In this sense at least, the collection from Portmahomack might be said to be more distinctively monastic than many such assemblages, given its evidence for writing (in the form of styli) and parchment production (metapodial pegs and needles). Of course, in isolation such phenomena are far from diagnostic, and it is rather the accumulation of evidence at Portmahomack - including other finds (such as the lunellarium and pumice rubbers), and structures (such as the metapodial rows) – that makes a convincing case for this activity. In the absence of such evidence, comparable artefactual evidence may have been interpreted differently. Nonetheless, the presence of three identifiable bone sewing needles is in itself of note, as genuine needles are rarely identified (see above).

In more general terms, the collection from Portmahomack fits well within the repertoire of early medieval northern British boneworking. The combs, pins, textile and (possible) leather-working equipment are closely paralleled in: York (*e.g.* MacGregor *et al.* 1999; Rogers 1993; Spall and Toop 2005) and Yorkshire (*e.g.* Stamper and Croft 2000); Lincoln (*e.g.* Mann 1982) and Lincolnshire (*e.g.* MacGregor 1987; Evans and Loveluck 2009); Orkney (*e.g.* Curle 1982) and Shetland (*e.g.* Hamilton 1956); and beyond the British Isles (*e.g.* Roes 1963). However, it is within the much more immediate context of the Portmahomack excavations that these objects will ultimately be most illuminating.

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