

Ironwork from the River Tees at Piercebridge, County Durham

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Overview

This report details the iron finds from the Piercebridge river deposit. The iron assemblage comprises c.578 objects, of which more than half (c.380) are nails. This report only covers purely or primarily iron objects; as such some composite objects (e.g. non-ferrous knife or key handles with surviving iron blade fragments) have not been included in this analysis.

The ironwork is organised here according to the functional categories established by Crummy (1983). This provides some indication of the range of different people represented amongst the assemblage. Curiously for a military site, the proportion of weapons and armour is low, consisting only of a few arrow-, bolt- and spearheads. Despite being a possible votive site, no items of intrinsic religious significance were found. In contrast, there are a number of pieces of jewellery, which is usually very rare in iron. Some of these, as well as potentially an antique mirror handle, may indicate the presence of women at the site. Transport and writing equipment are both represented, as is expected for any site in the Roman period. A small number of tools may be evidence for wood-, metal- and leatherworkers, although only two (the axe NCL-9F7911 and hammer BH-CC2BB4) can be identified with confidence as Roman tools. The most common finds from the site, however, are structural and furniture fittings, in particular nails.

Most unstratified ironwork is undatable, having changed very little in form between the Roman period and the 20th century. As such, how much of the assemblage is Roman or more modern is largely unknowable. To some extent, we can differentiate between objects of different dates by their state of preservation, and this is noted in the text. However, it must be observed that some of the obviously modern objects from Piercebridge (e.g. boot heels BH-38C04A, BH-38DA7E, BH-39D01E, BH-39E732) are as poorly preserved as some Roman objects (e.g. the axe NCL-9F7911).

Nevertheless, a few iron objects can be dated with confidence to the Roman period, and some types in particular can contribute to establishing the chronology of deposition at the site (Table 1). These objects are largely consistent with the dating of the bulk of the material from this site to the 2nd and 3rd centuries. However, there are some notable outliers, in particular the mirror handle NCL-F1CEF4, which may have been several centuries older than the rest of the material from the site. The stylus BM-B1590B and axe BM-F68FF3 may also be slightly earlier in date than the bulk of the material.

Number	Type	Date
NCL-9F7911	Axe	50 - 100 AD
NCL-908827	Finger Ring	50 - 250 AD
BM-DCFE44	Finger Ring	50 - 250 AD
NCL-D9AD75	Finger Ring	50 - 250 AD
KNI99	Knife	700 - 900 AD
BH-5FB55B	Linch Pin	200-400 AD
BH-5FB814	Linch Pin	200-400 AD
BH-5FBDAA	Linch Pin	200-400 AD
BM-F68FF3	Linch Pin	200-400 AD
NCL-F1CEF4	Mirror	400 BC - 125 AD
BM-B1590B	Stylus	20 BC - 120 AD
BH-D59607	Stylus	100 - 300 AD
NCL-907852	Stylus	150 - 250 AD
BH-8DABBC	Stylus	75 - 275 AD
BH-4DAE46	Stylus	75 - 275 AD
NCL-3F3FC1	Stylus	275 - 425 AD

Table 1 Dateable iron objects from Piercebridge.

The knife BH-D0A2A2 was the only certainly medieval object, dating to the 8th-10th centuries. The assemblage contained several Post-Medieval objects, including four boot heels (BH-38C04A, BH-38DA7E, BH-39D01E, BH-39E732), several handles (BH-5F0F05, BH-5F121B, BM-A4672A, BM-D28487) and handle mounts (BH-ED6F4A, BH-ED7478, BH-ED7E0D, BH-ED8336), other bindings (BH-EDB712), a fork (BM-3EF278), fragments of cast iron (eight fragments – not databased), two pieces of machinery (not databased) and a large iron washer (BH-F1B9FD).

The question of why this material was deposited is a complicated one, with many possible ways of examining it. One way of establishing the motives for deposition is through analysing the content of an assemblage, which the author has used in the past to explore the significance of ironwork hoards (Humphreys, 2017). Performing such an analysis on the ironwork alone is somewhat limiting, as iron objects form only a small part of the Piercebridge assemblage. The

Piercebridge material also represents an incomplete assemblage. Whilst it is not possible to establish exactly how representative this sample is of the actual objects preserved on the Piercebridge river bed, it is notable that the ironwork contains a high proportion of nails, many in a fragmentary condition. This may indicate a comparatively low level of selection for large or well preserved iron objects.

The author has previously collected data together from a sample of six excavations of different site types (Humphreys 2017, Illus. 6), as well as from all known ironwork hoards in Britain (Humphreys 2017, Illus. 3). Comparing the Piercebridge ironwork to these sites (Figure 1) immediately reveals information about the character of the deposit.

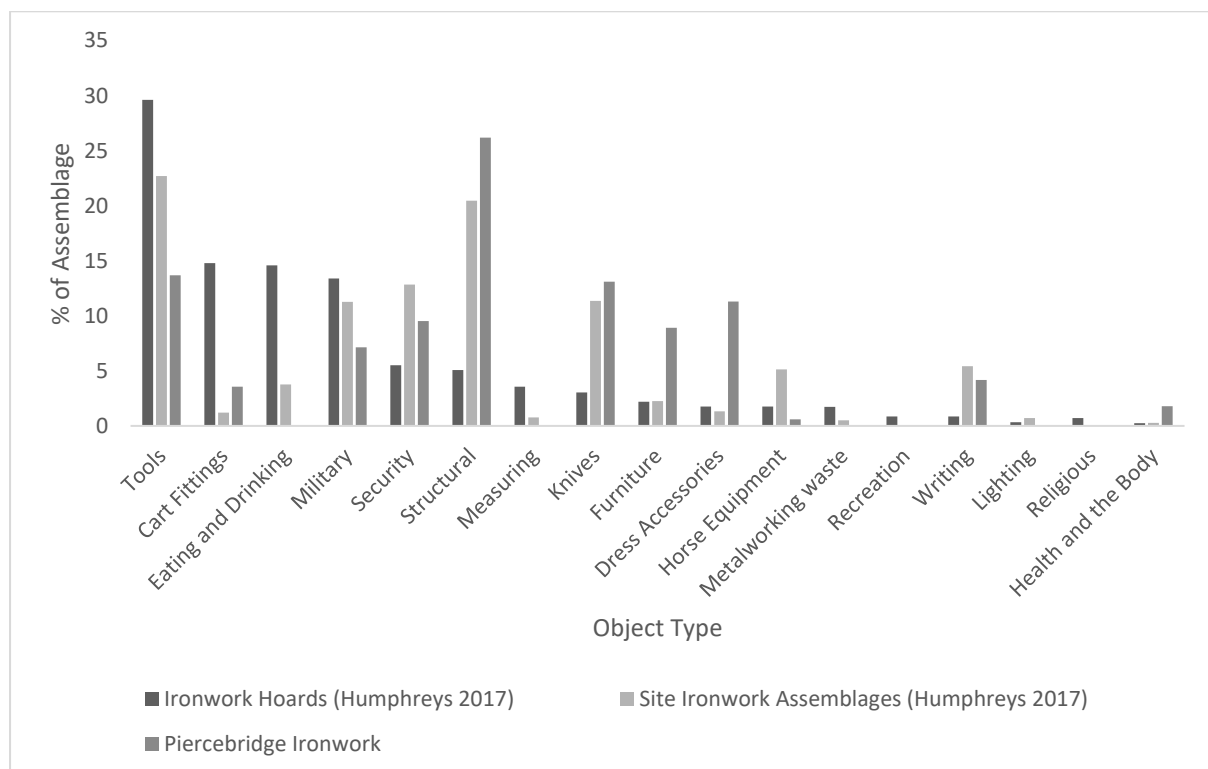


Figure 1: Comparison of the identifiable Roman ironwork from Piercebridge, and Roman ironwork hoards and site assemblages collected by Humphreys (2017).

The makeup of the ironwork assemblage from Piercebridge is strikingly similar to that of the 'average' site ironwork assemblage. Like site assemblages, the Piercebridge find is distinguished by high proportions of structural ironwork, knives and writing equipment. Both Piercebridge and the site assemblages have low proportions of cart fittings and eating and drinking equipment, which are characteristic of ironwork hoards. In fact, Piercebridge contained fewer tools and weapons (both finds categories which are characteristic of ironwork hoards) and more dress accessories (which are characteristic of site assemblages, although rarely found in iron (Humphreys 2017, Illus. 5)) than either ironwork hoards or site assemblages. This indicates that the Piercebridge ironwork is closer to what would be

expected from an excavated site assemblage, presumably formed largely through rubbish disposal or loss, than to the type of votive assemblage deposited in ironwork hoards.

This analysis has excluded nails, the largest category of iron find from Piercebridge, however. Nails are common site finds, but have also been found in large quantities in hoards from Inchtuthil (Manning 1985b) and the Walbrook (Rhodes 1991). Both of these hoards have been argued to represent material collected for recycling, although in both cases it has also been argued that their deposition represented a ritual act (Dungworth 1997; Merrifield 1995). Unlike these examples, however, the majority of the Piercebridge nails do not appear to have been extracted for recycling, and may have been deposited as part of complete timber objects or structures.

1 – Personal Adornment and Dress

Brooches

No iron brooches were found at Piercebridge, although three objects (BM-CD5DC1, FAPJW-A80F51, and FAPJW-A6D295) may be iron brooch pins.

Pins

BM-2D9327 may be a pin of some kind, although its shaft does not obviously taper, as would be expected of a hairpin.

Rings

Three iron finger rings were found at Piercebridge. All are signet rings belonging to Guiraud's (1989) Type 2. NCL-908827 appears to belong to Guiraud's (1989) Type 2d (Henig (2007) Type III or XII), whilst BM-DCFE44 (which survives only as a small fragment) appears to belong to Guiraud's (1989) Type 2e. NCL-D9AD75 is also highly fragmentary, but may also belong to Type 2. This is a very common type found from the 1st century to the first half of the 3rd century (Guiraud, 1989, p. 181). All have separate engraved intaglio settings, except BM-DCFE44, where the setting is missing. Iron rings are not as common as those in other metals, although this may largely be due to preservation, especially given the disproportionate number of heavy signet rings found in iron. Whilst it is possible to use rings as a measure of the demographics of a site, none of the iron rings from Piercebridge is complete enough to allow an accurate measurement of size to be taken.

Shoes

The primary evidence for shoes amongst the Piercebridge ironwork is a collection of eleven hobnails (BH-5F1A0B, BH-5F32F6, BH-5F42C6, BH-5F4666, BM-5974DB, BM-ACBA75, BM-472388, BM-ACE2F2, BH-FFCB0B, BH-FF457E, BH-fe5422) and a single cleat (BH-CBAACB). Both hobnails and cleats were used to reinforce the soles of leather shoes, and

were worn by both men and women in the Roman period (Powell, 2010a, p. 313). These are all plausibly Roman, although this is not certain as hobnails continue to be produced and used to the present day. Four horseshoe-shaped boot heel reinforcing plates (heel irons/heel rims) (BH-38C04A, BH-38DA7E, BH-39D01E, BH-39E732) were also found in the assemblage. These are likely to date from the 19th or 20th centuries, and remain on sale today.

Whilst Manning (1985a, fig. 32) does not distinguish between hobnails of different forms, a typology of this object type has recently been proposed by Volken (2011). Volken (2011, fig. 80) distinguishes between hobnails of different dates based primarily on the length and internal and external diameters of the head. This presents issues for the Piercebridge finds, most of which are not well preserved and have not been cleaned to allow the internal diameter to be measured. This typology was also devised based on conical hobnails (e.g. BH-5F1A0B), and as such is difficult to apply to the flatter hobnails in the group. As this typology was based on the hobnails from Pfyngut, Switzerland, the dates assigned to these types may not be applicable to finds from Northern England. For these reasons, Volken's scheme has not been applied to the Piercebridge hobnails.

The function of cleats is somewhat uncertain. Whilst larger examples may have been used to join pieces of wood, smaller examples have been found near the feet of inhumation graves, suggesting that they were used to reinforce the undersides of boots (Manning, 1985a, p. 131; Powell, 2010a). BH-CBAACB would have been used on an object no thicker than 12mm, which is suitable for the thickness of a leather shoe sole.

2 – Toilet, Surgical or Pharmaceutical Instruments

Mirror

The mirror handle NCL-F1CEF4 is a particularly curious find. This object conforms to Fox's (1949) Type IB; a simple bar type which was particularly common amongst iron mirror handles (Joy, 2010, pp. 144–5). This type was particularly common in East Yorkshire, with the majority of examples cited by Joy (2010, Table D2) being deposited between 400-150 BC, although an example from Brecon Beacons and a fragmentary Type 1A/B example from Carlingwark Loch (Piggott, 1952, fig. 8, C3) were deposited in the 1st or early 2nd centuries. This object is therefore likely to significantly pre-date the main phase of deposition at Piercebridge. This object is also a clear piece of 'Native' material culture, potentially produced locally or slightly further south in Britain, as well as a potential indicator of the presence of women at the site (Joy 2010, 74–5). Although grouped here amongst the cosmetic items, it is also possible that this mirror was used in a ritual or magical capacity (Joy 2010, 50).

Probe

BM-2D5D3D may be a small spatula/probe of the simplest type (Riha, 1986, Variant H). A similar object comes from Augst (Riha 1986, Taf. 54, 603), whilst a spear-tipped example comes from Colchester (Crummy 1983, fig. 68, 1950), although both of these are copper alloy rather than iron. Like similar objects with spoon tips, these are interpreted primarily as tools for extracting and applying cosmetics (Crummy 1983, 59–60; Riha 1986, 73). Alternatively, this may be a fragmentary wide-headed needle, a complete example of which is figured by Manning (1985a, N9) as a stylus.

Tweezers

BH-D01228 is a fragment of a pair of iron tweezers. Whilst cosmetic tweezers are usually made of copper alloy (Eckardt & Crummy 2008), the fact that the pair from Piercebridge are decorated indicates that they are unlikely to be craft tools, and a cosmetic use seems more likely.

3 – Textiles-Working

No iron textiles-working tools could be confidently identified amongst the Piercebridge assemblage, although it is possible that a 'stylus', NCL-3F3FC1, is in fact a crudely made needle of Crummy's (1983, 65) Type 2.

4 – Household Utensils and Furniture

Cutlery

The only iron object associated directly with food consumption, BM-3EF278, is a post-medieval fork.

Furniture or Vessel Handles

Nine furniture handles were found at Piercebridge, although only five of these are likely to be Roman in date. These handles can be divided initially between drop handles and riveted handles.

Six iron drop handles were found at Piercebridge. These are curved handles with hooked or knob-shaped terminals at either end, which would have been suspended on rings, looped mounts (see BH-5F1628 for an example from Piercebridge), or double-spiked loops (see Frere & Wilkes 1989, fig. 88, 182; Manning 2014, fig. 154, 244) attached to a wooden object or piece of furniture. A copper-alloy handle from Piercebridge (NCL-267C95) retains its double-spiked loops.

BM-D28487 is the largest of the Piercebridge handles, and may have been large enough to be used to carry or suspend a small cauldron or bucket (see Hanemann 2014, Abb. 69-70, 74-5; Keppie 1975, fig. 31, 15 for examples). Its slight omega shape is unusual for a Roman

handle, however, and it is possible that this object is a modern or post-medieval kettle or coal scuttle handle.

The remainder of the drop handles from Piercebridge are considerably smaller. These objects can be seen more securely as Roman finds, as BH-5F0314 can be closely paralleled at Dorchester (Manning 2014, fig. 154, 244) and Roughground Farm (Allen & Brunner-Ellis 1993, fig. 98, 151), whilst BH-5F0880 and BM-D25079 can be paralleled at Colchester (Crummy, 1983, fig. 85, 2115), Neatham (Redknap 1986, fig. 79, 240), Ivy Chimneys (Major 1999, fig. 69, 16), Wilcote (Hands 1998, fig. 26, 100), and Augsburg-Oberhausen (Hanemann 2014, Abb. 77). BH-5F0C36 and BM-9415B5 can only be tentatively identified as handle fragments, whilst BH-ED5A6B and BH-ED6181 may be the terminals of handles similar to BH-5F0314. Drop handles of this size were used as carrying handles or drawer handles on a wide variety of pieces of furniture in the Roman period, most commonly on wooden boxes and chests (Crummy 1983, 80; Manning 1985a, 124), but also on gridirons and wooden tubs (Hanemann, 2014, Abb. 55, 81). They were also used as carrying handles on some types of military helmet, although these are usually made of copper alloy rather than iron (Chapman 2005, 99, Qd01-15; Manning, 1985a, 124). BH-5F0880 and BM-D25079 are constructed in the same way and are comparable in size, and may therefore have been part of the same object, although BH-5F0880 is less well preserved and considerably lighter.

In addition to these are three handles with riveted terminals, which would have been attached directly to the object. Two of these, BH-5F0F05 and BM-A4672A, are very similar in form, although BH-5F0F05 is slightly larger. Whilst a somewhat similar vessel mount comes from Dragonby (Manning & McDonald 1996, fig. 11.38, 73), both strongly resemble the handles of tin baths, even down to their bent crescent-shaped sections, and are therefore modern. A further riveted handle, BH-5F121B, also appears to have been attached to a round object or vessel of some kind. Its function and date are unclear, although it resembles the handle of a copper cooking pot.

Handle Mounts

Five of the iron mounts from Piercebridge are almost certainly bucket handle escutcheons. Their perforated ends would have held drop handles (see above), whilst the other would be riveted to the body or bands of a vessel. Only one of these objects may be Roman, however.

BH-5F1628, although fragmentary, is probably Roman. Similar objects are common in Roman excavations (see examples from Dragonby (Manning & McDonald 1996, fig. 11.38, 69) and Dorchester (Manning 2014, fig. 153, 233), although they were also used in the medieval period (Goodall 1980, fig. 120, 148-52). When complete it would have either been riveted to one or

more bands of the bucket, or hooked under its base (see Manning, 1974, fig. 79 for a complete example).

BH-ED6F4A, BH-ED7478, BH-ED7E0D, BH-ED8336 are all of the same form, with a triangular plate with three rivets, although BH-ED6F4A is somewhat larger than the others. Whilst their similarity indicates that they may come from the same vessel, it is likely that they were used in pairs, and they may therefore represent at least three similar vessels, one slightly larger than the others. Whilst decorative bronze bucket escutcheons with three rivets were used in the Iron Age and Roman periods (e.g. SF5462, WMID-C96A57), these plain iron objects are less corroded than others in the collection, and may therefore be post-Roman. Identical escutcheons can be seen on 20th century buckets and coal scuttles, although a somewhat similar fragmentary object also comes from Harlow Temple (Gobel 1985, fig. 48, 22).

Other Mounts and Bindings

Ten further iron mounts or bindings were found. BH-EDB712 and BH-EDBC60 are corner straps, used to reinforce right-angle joins. A number were used in the construction of wooden chests found at Colchester (Crummy, 1983, fig. 91) and Milton Keynes (Manning, Marney, & Zeepvat 1987, fig. 58), and in some coffins from Lankhills (Powell 2010b, fig. 4.23). However, neither of the examples of Piercebridge clearly indicates the presence of furniture. BH-EDB712 has a raised edge and unusual corrosion, and therefore appears to be post-Roman, probably modern. BH-EDBC60 is very small and highly corroded.

BH-EDCF4B and BH-60B4FF are simple strip bindings, which could have served a number of purposes. Similar bindings come from Brancaster (Hinchliffe, 1985, figs. 35–6, 86, 88), although their Roman date can only be presumed.

BH-EDE3E7 has a leaf-shaped terminal, which can be paralleled on the corner straps of the Milton Keynes chest (Manning *et al.*, 1987, fig. 58), and on fragmentary bindings from Great Chesterford (Manning 1985a, S128) and Sandy (Manning, 1985a, S129), but also in the middle ages (Goodall 1980, fig. 79, 438, 446). BH-EDF92A expands towards one end, and may also have been a leaf-shaped corner strip, although it is broken at both ends, and too corroded to tell.

BH-EE0DE9 may be a box binding of some kind. Similar objects come from Brancaster (Hinchliffe 1985, fig. 35, 81, 89), although closer parallels come from the middle ages (Goodall 1980, fig. 81, 538-49). BM-C8DD9A, BM-924B83 and BM-927BAA cannot be assigned a clear purpose.

7 – Writing

Iron writing equipment from Piercebridge consists of six possible styli and a possible wax spatula. Styli are used to write on wax writing tablets by making scratches in the surface of the wax. They often have a flat scraper at the distal end which acts as an eraser. Spatulas are dedicated erasing tools.

Manning (1985a, fig. 24) provides a simple typology for iron styli from Britain, but this has since been supplanted by more nuanced schemes. Obrecht (2012) has developed a complex multi-part scheme for stylus classification based on the finds from Augst, showing how different types can sometimes be closely dated. However, the complexity of Obrecht's subtypes and lack of clarity about their numbering system makes this scheme very difficult to apply to other collections. Ongoing studies in London have also found differences in the dating of certain types between Augst and London (Michael Marshall, pers comm). A refinement of this scheme has been devised by Marshall based on the finds from London, although this has yet to be published. This scheme uses more clearly defined terminology, which will be followed here. However, Marshall's scheme also relies partly on multiple measurements taken along the length of the stylus, not all of which were recorded for the Piercebridge finds.

BM-B1590B is poorly preserved, but appears to have a straight-sided shaft (Obrecht Family C), with a simple tapering tip (Obrecht Type 2) and long rectangular eraser. Any decoration at the grip has been obscured by corrosion. Obrecht (2012, Abb. 92) dates this shaft type from c. 20 BC to AD 120, and as such BM-B1590B may be earlier than the other styli in the collection.

The majority of the styli have shafts which taper towards the eraser (Obrecht Family H+). BH-D59607 has a narrowed tip, a grip decorated with mouldings, and a U-shaped eraser. Obrecht (2012) groups similar objects as Type P54, which she dates to the 2nd or 3rd centuries AD. NCL-907852 has a very slender needle-like narrowed tip, a grip decorated with incised mouldings, and a short, tapering, round-shouldered eraser. Obrecht (2012) groups similar objects as Type P52, which she dates to the mid-2nd to mid-3rd centuries AD. BH-8DABBC and BH-4DAE46 are fragmentary, but also appear to belong to Obrecht's (2012) Family H or P, giving a date range from the late 1st to late 3rd centuries.

The final object, NCL-3F3FC1, may be a stylus of Obrecht's (2012) Type W95; a very simple type dating from the late 3rd to early 4th centuries. However, this identification is made suspect by the fact that the 'eraser' is pierced by a crude hole. Another pierced iron 'stylus' identified by Manning (1985a, N9) was reinterpreted by Obrecht (2012, Abb. 85) as a needle (see Crummy, 1983, p. 65, Type 2), but NCL-3F3FC1's rectangular-sectioned shaft and crude appearance make this identification seem less likely.

BH-EFF1B5 may be a spatula of Feugère's (1995) Type B2. This type is associated with writing equipment in graves, and can be reasonably confidently associated with wax tablet writing. BH-EFF1B5 is a plain example, comparable to some finds from London (Humphreys forthcoming, WXS26-34). However, BH-EFF1B5's corrosion pattern may indicate that it is more recent, and is perhaps simply a bar with flattened ends.

8 – Transport

Perhaps surprisingly for a river site, all of the iron objects associated with transport found at Piercebridge relate to wheeled vehicles and horse transport rather than boats. This assemblage includes four linch pins (BH-5FB55B, BH-5FB814, BH-5FBDAA, BM-F68FF3), a bolt (BH-388D24), terret ring (BM-952D08), and a curb bit (BM-1B2EE9), all of which are highly likely to be Roman in date.

Bolts

BH-388D24 is a stout iron bolt, most likely used as a connecting pin in a wheeled vehicle (Hanemann 2014, 269–72; Manning 1985a, 126). It is at the shorter end of the spectrum, corresponding to Hanemann's (2014, Abb. 229) Type 2. As it lacks the perforation seen on some examples, it cannot have been mounted horizontally, and must therefore have been dropped vertically to secure two rotating elements together. Comparable finds come from Hod Hill (Manning 1985a, R6-7).

Bridle Bits

BM-1B2EE9 is a link from a bridle bit. Horse bits in the Roman period could consist of either a solid bar, or two pivoting links. These jointed bits would consist of two bars, each with a loop at either end; on one (as is the case with BM-1B2EE9) both loops would be on the same plane, whilst on the other one would be rotated (Manning 1985a, 66–9). Bits of this type could be incorporated into both simple snaffle bits and more complex and manoeuvrable curb bits (Manning 1985a, 66–7), and it is therefore not possible to say whether BM-1B2EE9 was used in a bridle bit for a cavalry mount or a draught animal.

Linch Pins

Linch pins are a type of vehicle fitting used to prevent a wheel from slipping off. They are passed through a hole in a vehicle's axle in front of the wheel (Hanemann, 2014, Abb. 220), and most Roman examples have loops, allowing them to be tied in place (Manning, 1985a, p. 74). Manning (1985a, fig. 20) provides a typology of iron linch pins, which is also followed by Hanemann (2014, Abb. 222). These objects can be divided by the shape of the head into crescent-shaped examples (Type 1) and spatulate examples (Type 2), and further subdivided into those with no loop (Type A), a folded loop (Type B), a peg loop (Type C), or a peg loop and leaf-shaped head (Type D). All four examples from Piercebridge (BH-5FB55B, BH-

5FB814, BH-5FBDA, BM-F68FF3) are of Type 2B, the most common type (Manning, 1985a, p. 74), although beyond this they are not closely comparable in form or size. They were therefore almost certainly made separately, and probably derive from separate vehicles. This type was manufactured on the Continent from the Augustan period (Hanemann 2014, 266), and examples from Blackburn Mill (Piggott, 1952, fig. 11, B4) and Newstead (Curle 1911, Pl. LXX, 1, 3, 6, 8) attest an early introduction to Britain (Manning 1985a, 74), although the type is most common in the 3rd and 4th centuries (Hanemann, 2014, 266).

Terrets

Whilst the small size of BM-952D08 is similar to that of a lorica cuirass loop (Chapman, 2005, pp. 77–8, Lf01-71), the small wings around its base indicate that it is a small terret. Terrets are rings mounted on a piece of harness, such as a bridle or yolk (Hanemann 2014, Abb. 268), which act as guide rings for reins, preventing them becoming entangled. They are especially important on vehicles powered by teams of animals (Hanemann 2014, 307). Whilst these are usually made of copper alloy, a few iron examples are known (Hanemann 2014, 310), including a very similar example from Blackburn Mill (Piggott, 1952, fig. 11, B5). The wings around the base would have stabilised the ring against the wood of the yolk, and are characteristic of Roman terrets (Piggott, 1952, p. 41).

10 - Tools

Adzes

No definite woodworking adzes were found, although it is possible that BM-4F8D78 is a fragment of an adze blade.

Axes

A single axe from the site, NCL-9F7911, is particularly notable for its unusual form. Its basic outline is that of a Hanemann (2015, Abb. 294) Type 3A (Manning 1985a, fig. 3, Type 2), albeit with a slightly curved front face, but this tool is distinguished by having a long rectangular-sectioned extension at the butt. The narrow rectangular lugs around the eye may suggest a 1st century date (Pietsch, 1983, Abb. 26), but the only close parallel known to the author is an undated example from Saint-Martin-en-Campagne, on the north coast of France (Champion 1916, Pl. II, 18173; Hoffman 1985, Pl. XX, 34). It is possible that this axe was imported to Britain from the Continent, although it is no less likely that the Saint-Martin-en-Campagne example moved from Britain to the French coast.

The purpose of the extended poll is unclear. An extended 'hammer' poll is not unusual on Roman axes, although only a few have deliberately-formed hammer heads at the butt (Goodman 1964, fig. 14b; Holmes 2003, Illus. 107; Pietsch 1983, Taf. 2, 31). These were presumably used for driving in nails, or as striking surfaces for driving the axe like a wedge,

but are usually much shorter and stouter than on the present object, and are rarely heavily burred. Rare 'marking axes' (Baratta 2007, fig. 5; Hanemann 2014, Abb. 294, Type 10) have raised letters at the butt, allowing them to act as dies, although no letters were observed on the butt of NCL-9F7911. Some forms of *dolabra*/pickaxe very strongly resemble woodworking axes, but with extended pick blades on the poll (Curle, 1911, Pl. LVII; Hanemann, 2014, Abb. 357, Type 1B; Pietsch, 1983, Taf. 3, 42). These are associated with the military, and may have been used for clearing land, digging, or for rolling logs (Hanemann 2014, 419; Manning 1970, 19, 1976, 28; Rees 1979, 312), and it is notable that the Saint-Martin-en-Campagne example follows a similar curve to *dolabra* picks. It may therefore be a military or woodsman's tool, although this does not explain the burring at the tip. Hoffman (1985, p. 24) has suggested that this type of axe may have been a butcher's pole axe; a combination tool with a narrow pin at the poll for stunning the animal, and an axe blade for removing the hoofs (Salaman, 1975, p. 50). However, given the apparent burring at the butt of NCL-9F7911, it seems likely that the extension acted as a hammer head for striking hard materials. Narrow pin polls are also present on some modern shipwright's adzes, where they are used to drive nails below the surface of the wood (Salaman 1975, 28–9), and it is possible that NCL-9F7911 was used in the same way as a maintenance tool.

[Awls/Bradawls](#)

Five possible awls were found at Piercebridge. Whilst Manning (1985a, fig. 9) provides a typology of Roman awls, this has recently been expanded based on the finds from London (Humphreys 2018).

BM-4FC27F is a solid-handled type of Humphreys Type 1.2. Whilst objects of this type are usually interpreted as leatherworking awls, the tips rarely survive, and the majority of objects of this type from London appeared instead to be woodworking bradawls.

BH-37E56B conforms to Humphreys Type 2.2; a solid iron awl of pencil-like proportions, with a narrow handle at one end, tapering to a point at the other. These may have functioned as metalworking scribes or woodworking marking awls rather than leatherworking awls.

BH-37F0E9, BH-380EAB and BH-3823D1 are small double-ended objects. Double-ended awls were used in leatherwork from the Roman period to the modern day, and can be distinguished based on their section shape, with Roman double-ended awls (Humphreys Type 9) being square or round in section, and later awls often having diamond-shaped sections. Unfortunately, BH-37F0E9 and BH-380EAB are obscured by corrosion and concretions, and it is difficult to identify their section shape. BH-3823D1 is noticeably smaller than the Roman awls from London, and as such may not be a Roman craft tool.

Chisels

Three chisels were found at Piercebridge (BM-542503, BM-538B72 and BM-4F653A). These are all mortise chisels (Humphreys 2018, Type Dii); a type of robust chisel most commonly used in structural carpentry, but also in metalwork and masonry. All can be paralleled in Roman finds, although none of them is diagnostically Roman, and they may therefore be later.

Drill bit

BM-37916A appears to be the detached pyramidal tang of a Humphreys (forthcoming) Type C drill bit. Broad, tapering square-sectioned tangs such as this allowed drill bits to be swapped out for others in a wooden drill stock, and could have been attached to many kinds of drill bit (Hanemann 2014, Abb. 329, 7; Manning 1985a, B52-3, B57-64). However, similar objects are also sometimes interpreted as arrowheads (Birley 1996, fig. 8).

Hammers

Two possible hammers were found (BH-CC2BB4, BH-5EFC4B), although BH-5EFC4B can only be tentatively identified as a hammer. Both may be of Hanemann's (2014) Type 2, the most common Roman hammer type. Cross-pene hammers of this type are usually associated with metalwork, although the ubiquity of this tool type, and its distribution within London, including several being found in demolition layers (Humphreys 2018, 177), suggests that they were also used as general-purpose household tools. It is not clear whether BH-CC2BB4 had a specialised craft purpose. At 64mm long, it is one of the smallest such hammers found; comparable in size to an example from Avenches (Duvauchelle 1990, No. 9), but larger than one from London (Humphreys forthcoming, HAM07). It may therefore have been a fine metalworking tool, although this is contradicted by its method of manufacture. BH-CC2BB4 appears to have been made by welding two strips together, producing a square shaft hole in a very thin casing. Other examples of this type appear to have been made by punching a round hole through a forged central block, creating a more robust casing.

Knives and Cleavers

23 knives and fragments of knife blades were found at Piercebridge. Most of these knives can be categorised according to the typology of Roman knives developed by Manning (1985a, figs. 28–9). BH-5FA931 may derive from one of the smaller knife types (Types 1-6), although it is also possible that it comes from a pair of shears. BM-5036CB is a near-complete Type 8 knife. This type is rare, with Manning only citing examples from Hod Hill, although it is similar in form to the larger Type 6 cleaver.

BH-38426B, NCL-35A771 and NCL-358CE3 have the straight back of Manning's Type 11A. A number of similar knives comes from Hod Hill (Manning 1985a, Q34-9), but NCL-35A771 is unusual in having a solid iron handle rather than a tang, and may therefore not be Roman.

BM-4FD52D similarly appears to be a solid-handled version of the long-lived Type 12. BM-1AE87B may be a fragment of a Type 11 or 12 knife, but has an unusual solid handle with a disc pommel.

BM-046FDA and BM-1A9730 have the falling back edge and straight blade of Manning's Type 13, another common form of Roman knife. However, owing to its small size, it is not impossible that BM-046FDA is actually a blade from a pair of shears (Manning 1985a, 115).

BH-5FA5AE, BM-1ABCC1 and BH-D01F78 have tangs in the centre of the blade, although corrosion obscures the blade shape of all but BH-D01F78. These may belong to Manning's Type 15, one of the most common types, or the rarer Types 20 or 21. However, it is also possible that these knives are post-Roman, as some Medieval knives also have central tangs (Goodall 1980, fig. 10).

The date of BH-D0A2A2 is uncertain. Its shape conforms to that of Manning's Type 19, but this is a rare type for which Manning cites only two examples. This angle-back form is more commonly seen in Anglo-Saxon knives from the 8th-10th centuries (Ottaway 1995, Pt.2, 1). This is the same period in which pattern welding begins to be used in knife making (Ottaway 1995, Pt.1, 3, Pt.2, 4). Whilst this knife is marginally longer than is typical for this type, it is well under the 250mm barrier typically used to distinguish between everyday knives and larger single-edged weapons (*scramasax/seax*).

BM-4F56B1 may be a fragment of a Late Roman Type 18 knife. BH-D037BC conforms to Manning's Type 23; a common Late Iron Age to Flavian type. NCL-35EAA1, BM-1ABCC1, BM-BFBFBC and BH-D07ACB exist only as fragments, and could be of any date.

Four objects represent larger cleavers rather than small household knives. BH-AFA747 is the most complete, conforming to Manning's Type 2a; a common type used in both cooking and sacrifice. BH-5FACB8 is the tip of a triangular knife blade. It is possibly the tip of a Type 4 cleaver rather than a knife, although this is not certain. BM-1D51FE survives as only a fragment of blade and part of a solid iron handle. It may be the handle of a cleaver rather than a knife, as Manning (1985a, Q94) figures a solid-handled cleaver from Hod Hill. BM-CEEA3D is socketed, and may therefore be a cleaver rather than a knife, although the blade is entirely lost to corrosion, and its true size is therefore unknown.

Ploughshares

A single ploughshare, BM-504C5A, comes from Piercebridge. Belonging to Hanneman's (2014) Type 2F, this large object, which appears to have symmetrical wear, would likely have replaced the entire wooden portion of the plough share. Hanemann (2014, 163) provides a number of comparable examples from Continental Europe. The deposition of such large

elements of ploughs is unusual in the Roman period, and has been seen as characteristic of ironwork hoards (Humphreys, 2017).

Punches

Three possible metalworking punches were found at Piercebridge (BH-EF79C5, BH-EF803B, BH-EF8884), although none can be identified with absolute certainty. BH-EF79C5 and BH-EF8884 are hot punches, used to create holes in red hot metal. BH-EF8884 can be relatively confidently identified as a round punch. BH-EF79C5 may be a square punch of Humphreys Type 2, although these are not certainly metalworking tools as none have obvious burring at the butt. BH-EF803B is rather different, potentially being a fragment of a fine metalworking punch, used for making chased decoration on the surface of a metal object. This identification is highly speculative, however, as BH-EF803B survives only as a detached head and shaft fragment.

Rake Tines

Two possible rake or harrow tines come from Piercebridge (BH-EF9CB1, BH-3827D7). Both are of the double-ended type (Humphreys forthcoming), consisting of a square-sectioned tang and a faceted, round-ended tine. Similar objects are known from London (Humphreys forthcoming, RAK45-49) and Wilcote (Hands 1998, fig. 24, 53). Pohanka (1986, Taf. 22, 91) illustrates a group of tines of this type embedded into a wooden beam, although it is not clear whether they formed part of a rake head or harrow frame (for a wooden harrow, see Deforce & Annaert, 2007).

Saws

BM-AF446A appears to be a copper-alloy saw blade. Copper-alloy saw blades are unusual in the Roman period. A possible example from London (Humphreys 2018, SAW15; Museum of London 11822) may be a decorative strip rather than a tool. However, the Piercebridge object has a convincing saw blade form. Gaitzsch (1980, 197–8) suggests that copper alloy was used for surgical saws, although it is not clear where this suggestion comes from. The heavily curved edge may have been suitable for use as a cooper's croze, although the Piercebridge find does not resemble other Roman tools of this type (Hedges and Wait 1987). It is not impossible that this is a Bronze Age artefact, although no dated examples have the curved blade or raked teeth of this example (Leclercq 2013).

Wedges

BH-F1C449 may be a chisel tip fragment, but the potential burring to the butt indicates that it was a small wedge. A wedge of this size may have been used for splitting timbers.

Miscellaneous Tools

BH-ED6800 cannot be identified with confidence. An identical object from the Roman fort at Maryport (Jarrett 1976, fig. 20, 5) was thought to be a post-medieval chisel fragment, but the fact that it so closely resembles BH-ED6800, which is not obviously broken, suggests that both objects are complete. They may have been small wedge-shaped anvils, perhaps comparable to very small mosaicist's hardies, although this cannot be established with certainty. BH-0DD381 is possibly a fragmentary socketed woodworking gouge, although the blade is somewhat wide for this. BH-4DCD81 may be the ferrule/collar from a tool handle, although no strong Roman parallels are known.

11 – Fasteners and Fittings

Architectural Ironwork

BM-4F4573 is of uncertain function, but may be a fragment of decorative ironwork (e.g. from railings or gates). Whilst similar iron curls can be seen on Roman field anvils, the closest Roman parallel is a candle stick from Bainbridge (Eckardt 2002, no. 1471), which has identical construction. The length of the shaft of the Piercebridge object suggests that it could not have functioned as a candlestick, however. The same construction is also used in modern decorative architectural ironwork, and it is likely that the Piercebridge object was used in a similar way. Its date is therefore unclear, and it may be post-Roman.

Double-Spiked Loops

Seven double-spiked loops (BH-CBC415, BH-CBCEA6, BH-CBD5AF, BH-CBF0B8, BH-CBF6DE, BH-CC0E13, BM-93F695) were found at Piercebridge. Double-spiked loops are simple fittings consisting of a bar of iron bent into a loop, with two parallel tapering arms which would be driven into a piece of wood (Manning 1985a, 130). The arms are sometimes clenched, allowing the thickness of the wood they were driven into to be calculated. This is only possible on BM-93F695 which was driven through 37mm thick pieces of wood respectively. These objects have a range of potential functions, having been used to secure ring or drop handles (Grew & Frere 1989, fig. 88, 182; Manning 1985a, R2, 2014, fig. 154, 244), and linked together in pairs to form simple hinges (Manning 1985a, 130). A copper-alloy handle from Piercebridge (NCL-267C95) retains its double-spiked loops.

Keys and Locks

14 iron keys and two lock components were found at Piercebridge. Keys can be categorised in a number of ways; technologically (by the type of lock they operated), formally (based on their shape and materials), and functionally (based on what sort of object they were used on). Iron keys and latch lifters are usually catalogued according to the technological typology described by Manning (1985a, fig. 25). This scheme has recently been expanded and refined

by Rimmel's (2015) study of the keys from London, who also considers non-technical aspects of these objects, and whose typology will be used here.

BM-E0D742, BM-DE2295 and BM-1C8161 belong to Rimmel's (2015) Type BS|TLL/b. BM-E0D742 and BM-DE2295 conform to the common T-shaped variant of this form, with two teeth (Manning 1985a, 90). BM-1C8161 is a rarer four-toothed example (Manning 1985a, 90; Rimmel, 2015, 52). Its Roman date is not certain, as a complete example from Fishbourne (Cunliffe 1971, fig. 58, 26) was unstratified. These keys could have been used either as bolt-sliders or tumbler lock lifters; a simple type of key used from the late Iron Age on the Continent, and possibly in Britain (Manning 1985a, 90). The large size of BM-E0D742 suggests that it was used to secure an external door (Rimmel 2015, 68–70), whilst BM-DE2295 is smaller, and may therefore have been used to secure furniture. As BM-1C8161 is incomplete, its function is unclear.

NCL-8F0CC0 and NCL-8EF7F4 are both tumbler slide keys of Manning's Type 2, Rimmel Type TLS2a. These are one of the most common Roman key types (Manning 1985a, 93), and are likely to have been used for securing items of furniture rather than doors, as the nature of the mechanism may have prevented the key from being withdrawn whilst the lock was open (Rimmel, 2015, 62–4). BM-E11C30, NCL-39C9B4 are also L-shaped tumbler slide keys, but are too corroded for the form of the no teeth to be visible, and as such it is not clear whether they belong to Rimmel's Type TLS1/b or TLS2/a. BM-E40AF3 survives only as a handle fragment, but may be from a tumbler slide key of indeterminate form. These fragmentary keys are also small, suggesting a use in internal furniture. None are decorated, although NCL-8F0CC0 may have small 'ears' near the looped butt (Rimmel 2015, 97–8).

Two keys (BM-DF8FAC and BM-DFB966) are for use with warded rotary locks (Rimmel, 2015, Type WLR). These keys are difficult to date, as they were the most common type of key used in the middle ages (Goodall, 1980, figs. 101–8) and later, although a small number of possibly Roman examples are also known (Manning 1985a, O57-64; Rimmel 2015, 443–55). Keys of this type are suitable for furniture or padlocks (Rimmel, 2015, p. 66).

In addition to these are two locks. BH-AFAB8E is the casing of a common barb-spring padlock (Manning 1985, 95-7), complete with attached chain, which may be Roman or later in date. BM-E44758 is an unusual double-hasped object. Hasps such as this are used as attachment points for padlocks, bolts and other structural or furniture locks. However, the exact function of this double-hasped object is unclear. Presumably it would have fitted around the corner of a right-angled object, but as there are no mounting holes this is not certain. Owing to its unusual form and construction, it is unclear whether this is a Roman or later object.

Loop-Headed Spikes

Loop-headed spikes consist of a solid iron spike, with a loop at one end. They probably fulfilled many of the same functions as double-spiked loops (above), allowing a ring to be driven into wood or masonry, although they are less common (Manning, 1985a, 129–30). Four loop-headed spikes (BH-3AAF94, BM-8F4D33, BM-91E80A, BM-8F99B1) come from Piercebridge.

Nails

c.380 nails were found, making them by far the largest single category of iron object from the Piercebridge river site. These nails are all of types which were used in the Roman period, and as such are categorised based on Manning's (1985) 10 part nail typology. However, it is far from certain that all of these nails are Roman, as identical nails have continued to be used ever since. Specific examples are less corroded than others, and are therefore probably modern.

The following analysis includes only nails from which complete length measurements could be obtained, although this rule has been waived for incomplete Type 2, 4 and 8 nails, owing to the rarity of these forms in the assemblage.

Typology

Type 1 nails have a square-sectioned shaft, topped with a round, rectangular or sub-square head. These are by far the most common type of Roman nail, but are indistinguishable from those of later periods. Manning (1985, 134) breaks these nails into two subtypes based on size. Type 1A is over 15 cm in length, with a robust pyramidal or cone-shaped head. Type 1B is smaller, with a simple flat head. Three Type 1A nails come from Piercebridge, all with simple flat heads similar to a Type 1B, although they are more robust in proportion with their overall size. Two further nail head fragments probably belonged to Type 1A nails owing to their size. 147 complete type 1B nails were found, making them by far the largest category of nail. 107 were straight, the remainder clenched or bent. In addition to these were 61 incomplete examples. It is also likely that the majority of the incomplete nail shafts derived from nails of this type.

Type 2 nails have a square- or rectangular-sectioned shaft and a triangular or diamond-shaped head. This is the second most common type of Roman nail, although it is much rarer than Type 1. Only four were found, all but one of which was incomplete. These objects were nevertheless catalogued individually, as they are likely to be Roman.

Type 3 nails are T-shaped. 18 examples were catalogued, three of which were deformed. In addition, four fragmentary examples were found. However, the majority of these objects have narrow flat heads, rather than arms the same width as the shaft. These may therefore be seen

as narrow-headed or damaged examples of Type 1 nails, with NAI146 being the only certain example of a Type 3.

Type 4 nails are similar to Type 3, but have only one arm, making them L-shaped. Only one example of a Type 4 nail, NAI154, was found, and is incomplete.

Type 5 nails are square-sectioned nails manufactured without a head. However, whilst a large number of 'headless' nails were found at Piercebridge, none is sufficiently well preserved to say with certainty that it was a Type 5 nail rather than simply a damaged or fragmentary nail shaft.

Type 6 nails have a round, chisel-tipped shaft and a flat head. These may have been used in masonry rather than timber, but none were found at Piercebridge.

Type 7 nails are short square-sectioned tacs with wide, flat heads. This type was probably used primarily in furniture construction and upholstery, and a copper alloy example was used in the decoration of a wooden box from Butt Road, Colchester (Crummy 1983, fig. 90, 2183). Eight certain examples of this type, NAI155-NAI160, BM-8F2598 and BM-940FF2, were recorded. A further five nails, NAI161-NAI165, may be of this type, or simply well-preserved large-headed Type 1 nails.

Type 8 nails have short stems and hollow, domed heads. This type was also probably used primarily in upholstery. Two possible Type 8 nails were found, although one (NAI165) is possibly a damaged flat-headed nail rather than a domed Type 8, whilst the other (NAI166) is just a detached head, and may be larger than other Roman examples of this type.

Type 9 nails have globular heads and stems of varying length. Four examples come from Piercebridge; three quite short (NAI168-9, BH-FF015C) and one considerably longer (Sf No. 4310). This type was also probably used primarily in upholstery and furniture construction, with two copper alloy examples of this type being used to attach a corner binding to a wooden box from Butt Road, Colchester (Crummy 1983, fig. 90, 2193).

Type 10 nails are hobnails. The hobnails from Piercebridge have been catalogued elsewhere, according to the typology devised by Volken (2011).

In addition to these, over c.150 square-sectioned headless nails and nail stem fragments were found. Some examples have flared ends, indicating where a head had become detached or lost to corrosion. These were most probably Type 1B nails originally, although they have not been included in the Type 1B catalogue as this cannot be known for certain.

Size

Figure 2 shows the lengths of the 186 complete nails from Piercebridge. Whilst there is no clear understanding of how nails of different sizes were used in the Roman period, the nails from Piercebridge can be compared to those from other excavations where their function is better understood.

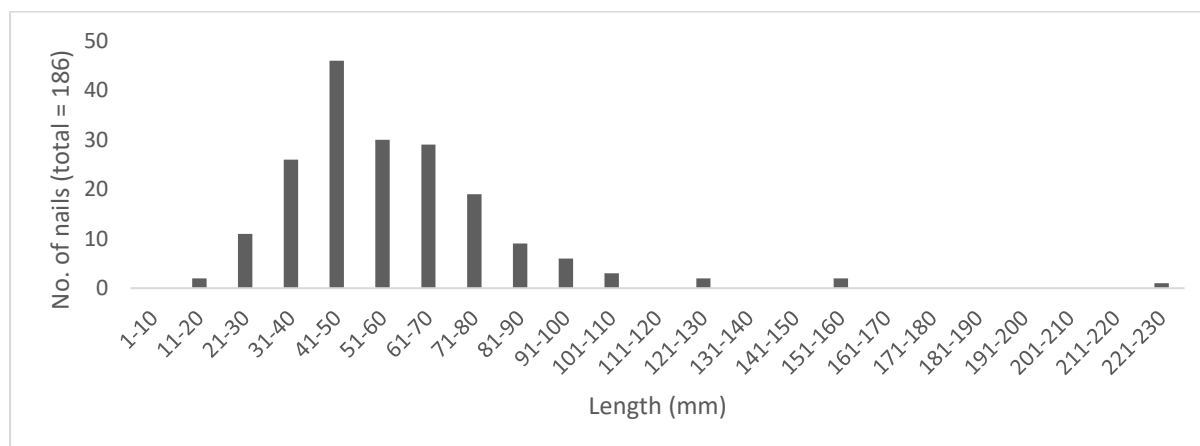


Figure 2: Lengths of the complete nails from Piercebridge.

Probably the largest collection of Roman nails is that from the fortress of Inchtuthil, where over 1,000,000 nails were deposited in a pit (although only a sample was recorded). These nails are thought to have been retrieved during the destruction of timber buildings on the site, presumably at the time of the fort's abandonment (Manning 1985b). The nails ranged in size from 38-371 mm, but the most common by far were small 38-70mm long nails. Manning (1985b, 291) interpreted these as nails primarily for attaching the cladding to timber buildings. Powell (2010b) has recently studied the nails from the Lankhills cemetery, Winchester, where the majority derived from coffins. Here, the average length of coffin nails was 79mm, but the range varied greatly, from 18-275 mm. A wooden chest from Butts Road, Colchester, produced only two complete iron nails, 51.5 and 58mm long (Crummy 1983, 87), whilst at Corbridge, the nails used in the chest's construction ranged in length from 21-170 mm (Allason-Jones & Bishop 1988, 61-9). Looking at these collections, it is immediately clear that there is considerable overlap in the lengths of structural nails and those used to construct portable artefacts. The nails from Piercebridge all fit within the range of nail sizes used for all of these purposes, and it is therefore not possible to assign a clear function to the bulk of them.

Type	Average Length (mm)
All Nails	56
Type 1A	178

Type 1B	57
Type 2	76
Type 3	62
Type 4	32
Type 5	-
Type 6	-
Type 7	30
Type 8	37
Type 9	62

Table 2: Average nail length from Piercebridge by type.

Types 7-9 are thought to have been decorative upholstery or furniture nails, and this is borne out in their average lengths, which are generally shorter than for other nail types (Table 2). However, we can observe that the average length of all nails from Piercebridge (with the exception of Type 1A, which is defined by its long length) is low in comparison to all of the other sites cited above. The Piercebridge nails are also on average slightly smaller than those from London or the Brading Villa (Rhodes 1991, fig. 94), although the exact function of these nails is unknown. This possibly indicates that a number of the less distinctive Piercebridge nails (Types 1B, 3 and 4) were derived from portable wooden artefacts, such as boxes or chests, rather than timber structures.

Clenched nails allow us to examine the thicknesses of the timbers used at Piercebridge (Figure 3). These nails indicate the use of thin boards, representing a continuous spectrum from only 10mm thick to 52mm thick. Two were outliers at 70mm. Of course, this is complicated by the fact that nails are fasteners; they may have been used to join two or more timbers together, and therefore reflect the combined thicknesses of these individual boards. These narrow thicknesses may indicate the presence of portable furniture rather than timber structures.

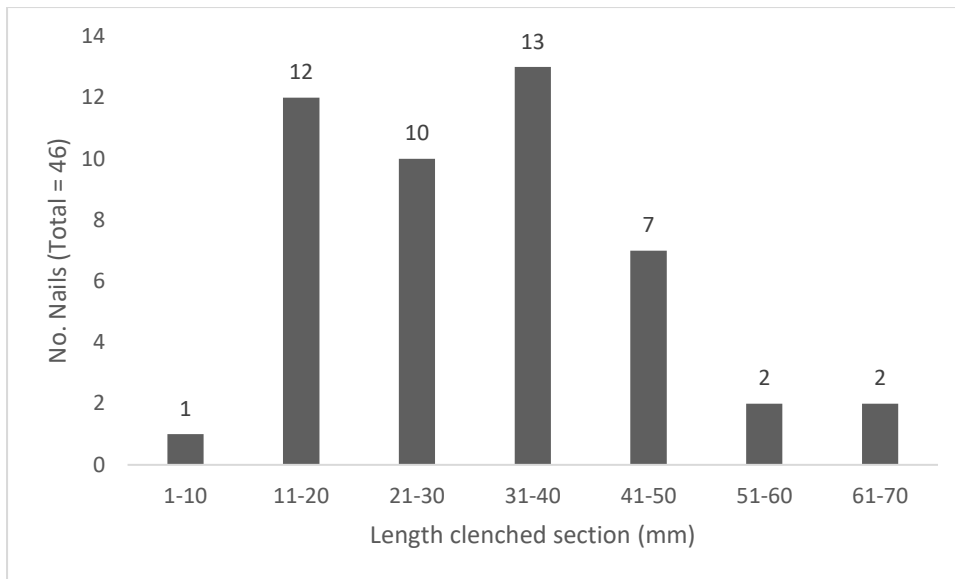


Figure 3: Lengths of the clenched nails from Piercebridge.

Condition

The Piercebridge nails are not well preserved, and most are not clean, limiting our ability to assess their condition. Nevertheless, it is notable that the majority are straight, with no obvious deformation to the shaft or head (although the heads are rarely well preserved, and damage can be seen on some nails, e.g. BM-540E7E). This indicates that most nails were either deposited unused, or were possibly deposited within the timbers they had been driven into. This is not the case for all nails, however, and several are clearly deformed. Most were probably deliberately clenched, indicating that they were used before disposal. Others, however, have slightly curved shafts, indicating that they were deformed during extraction (see Rhodes, 1991 for the criteria for identifying deformed nails).

Conclusions

The Piercebridge nail assemblage comprises c.380 nails, of indeterminate date, but all of which conform to Roman types. Whilst a number of special nail types (Types 7-9) are clear evidence of the presence of furniture (presumably boxes or chests), the majority of the assemblage is made up of the more common Type 1 nails. These nails have a range of potential functions, but the small average size of those from Piercebridge, and the timber dimensions implied by clenched examples, also support the idea that many derive from furniture rather than timber structures. Only a few very large 'structural' nails were found. The Piercebridge nails may have derived from a range of sources. Whilst a small number may have been extracted from timbers before deposition, the majority were either unused, or deposited as part of complete timber objects.

Pintles / Hinge Pivots / Hinge Staples

Pintles are iron objects around which large drop hinges, such as those used on doors or window shutters, would pivot (Goodall 1980, 109; Manning 1985a, 127). All of the objects from Piercebridge are of the most common type; an L-shaped object with a tapering rectangular-sectioned tang set at right angles to a round-sectioned pivot. The tang would be inserted into the wood or masonry of the door frame (Manning 1985, 127). This object type was used in the Roman period, but continued to be used into the Medieval period and beyond (Goodall 1980, p. 109), and as such cannot be dated with certainty. The Piercebridge assemblage contained seven pintles (BH-EEC4F4, BH-EF2FE3, BH-EF34E3, BH-EF4009, BH-EF4764, BH-EF56A5, BH-EF5C8B), but two of these (BH-EF56A5, BH-EF5C8B) are noticeably less corroded than the others, and as such may be more recent in date.

In addition to these are two drop hinge loops (NCL-27BA46 and NCL-277406), and a possible hinge strap (NCL-28A3B5) which would have attached to the wooden door itself.

Rings

The Piercebridge assemblage contains 17 iron rings (BH-EFA70C, BH-EFAE8B, BH-EFB431, BH-EFC034, BH-EFD115, BH-EFE834, BM-FB36A7, BM-A7CD28, BM-A7D50B, BM-9349E9, BM-A881E1, BM-A87C8A, BM-A888CC, BM-A7C678, BM-A8932B, BM-8F6F50, BM-91C1CA). These objects are ubiquitous finds in Roman excavations (Manning, 1985a, p. 140), but are indistinguishable from more recent finds (Goodall, 1980, fig. 126, 277-84). It is also not possible to assign a definite function to them, as they may have been used in a number of situations, from harness fittings or chain links, to furniture handles (Manning, 1985a, p. 140). BH-EFA70C is nevertheless notable, being significantly larger than the others and being triangular rather than round in section. If Roman, this is so large that it must have been a handle of some kind. It is larger than known cauldron ring handles (Joy 2014, Appendix E), but comparable in size to the 'door handles' from a Roman Iron Age temple in Sweden (Larsson 2007, 17). Its triangular section is unusual, however, and BH-EFA70C may be more recent.

Staples / Joiner's Dogs

Large iron staples were used to join timbers together. Blunt-ended examples could also be used as cramps to hold masonry together (Manning 1985a, 131). 11 possible staples were found at Piercebridge, representing both of the major types identified by Manning (1985a, 131). The majority (BH-F04108, BH-F02224, BH-F02F8E, BH-F03871, BH-F04108, BM-DF3C54, BM-9358DB, BH-D06BFC) are of the more robust type. BH-F000A5, BH-F00CC8, BM-937138 is of the more slender U-shaped variety. Both types were also used in the middle ages (Goodall 1980, figs. 66–9).

OJH04 is a large joiner's dog/cleat. Whilst smaller versions of this type of fitting may have been used to reinforce the soles of shoes (see above), examples such as this are so large that they must have had a role in structural carpentry

T-Clamps

T-clamps are structural fittings consisting of a tapering spike with a wide T-shaped head. They appear to have been primarily used to secure various types of cladding to the walls of buildings (Manning 1985a, 131–2). Three standard T-clamps (BH-F04EE8, BH-FDD3EB and BH-FDDCE1) come from Piercebridge. BH-FDE656 and BH-FDD8EA are rather different, having one curved side and one flat. These would have been used to join two objects, one of which was flat, the other heavily curved, but their function beyond this is uncertain. Manning (1985, 133–4) suggests that these types of fastenings were used in the construction of vehicles, but identical rivets can be seen on the scythes from Newstead, whilst Goodall (1980, fig.76) shows similar fittings on a medieval well cover.

Wall Hooks

Wall hooks are structural fittings that allow things to be hung up on a wall. One definite example, BH-F1AF64, comes from Piercebridge. It has a simple form, corresponding to Manning's (1985a, 129) Type A, and was possibly made by bending a nail. The broken fitting fragment BH-ED5A6B may also be a fragment of a knob-tipped wall hook, although other identifications, such as the tip of a drop handle, are possible.

13 – Military Equipment

Projectile Heads

Six potential projectile heads were found at Piercebridge, indicating the presence of both archers and heavy artillery on the site.

BM-CAB596 is an arrowhead of Manning's (1985a) Type 2, referred to by Coulston (1985, p. 264) as a 'trilobate tanged' type. This type was widely used by the Roman army across the Empire, and large numbers come from military sites in Britain, mostly from pre-Antonine contexts (Coulston 1985, 264–5).

BH-8D3E7F, BM-DFC612, BH-386ACB and NCL-DCA265 are all ballista bolt heads of Manning's (1985a) Type 1; a socketed weapon tip with a robust square-sectioned head. This is the most common type of artillery bolt head, with Manning (1985a, 170–5) providing numerous examples from military sites in Britain and Continental Europe. These objects vary widely in execution, and this variability can be seen in the Piercebridge objects. BH-8D3E7F and BM-DFC612 are both very well made, with neatly made sockets. BM-DFC612 may have a faceted rather than square-sectioned head, comparable to objects from Vindolanda (Birley

1996, fig. 11). BH-386ACB is the least well made, with a rectangular-sectioned head and split socket, but nevertheless conforms to the usual size range of this type, and can be paralleled elsewhere (Manning 1985a, V210).

BH-384F07 is of uncertain function, although it was associated with military projectiles in some way. Some authors (Allason-Jones & Bishop 1988, fig. 20, 60-63; Manning 1976, 21) interpret these objects as ferrules; caps fitted to the butts of wooden shafts, such as bolts or spears. However, others (Birley 1996, 23; Howard-Davis & Whitworth 2000, 267) suggest that they may have been ballista or arrow tips, with the short cone heads perhaps functioning similarly to Medieval armour-piercing bodkin arrows. Birley (Birley 1996, 23) divides them into four categories by weight and size, although the concretions to BH-384F07 mean that all we can say is that it did not belong to the largest category, which Birley associates with ballista bolts, and it may instead be an arrowhead, if it is not a ferrule. Whatever their function, these objects are strongly associated with military sites (Howard-Davis & Whitworth 2000, 267; Manning, 1976, 21), and at Vindolanda were found in all periods before the 3rd century (Birley 1996, 23)

Spearheads

(Owen Humphreys and Philippa Walton)

Six spearheads come from Piercebridge, although most of them appear not to have been functional weapons. Three of these spearheads have simple leaf-shaped forms. Whilst these can be broken down further using Manning's (1985a, 160–70) division of the spearheads from Hod Hill, which is based on the length and width of the blade, this scheme is difficult to apply in most cases. BH-0DBA19 belongs to Manning's Group II, although it is somewhat wide for this group. NCL-A21DF7 is incomplete, and therefore cannot be categorised in this scheme.

NCL-D10B58 is complete, but does not fit easily into any of Manning's groups, being too large for Groups I-II and too squat and wide for Groups III-IV. With the widest point at the centre, it had a very short 'length of entry' (Chapman 2005, 28), and would therefore have been useful as a thrusting weapon rather than a projectile, although a non-functional interpretation should also be considered. It may have functioned as a standard tip, and appears to have been deliberately mutilated with a cut-out on one edge. A slightly larger spearhead of similar proportions comes from Caerleon (Chapman 2005, Da15).

BM-A182A9, NCL-E09415, and NCL-E0B693 belong to Manning's (1976) Type 3; spearheads with a bulbous expansion near the base. There is a great deal of debate regarding the function of this type. It seems certain that they are not spearheads as close inspection of well-preserved examples has shown not just that the sides are blunt but that they never had a cutting edge (e.g. Birley 1996, fig. 21.137, 25.147). Marchant (1990) has suggested that these 'standard tips' had a decorative function connected with the use of the spearhead as a symbol

of military might and an emblem of authority. A silver standard tip from Caerleon resembles this spear type (Chapman 2005, 146, Va01; Manning 1976, 19). However, an alternative is that these objects were used as blanks or dummies for practice at the stake or for displays.

Other

Chains

Several fragments of iron chain were found. The majority are short lengths and individual links of figure-of-eight chain (BH-CB996B, BH-CB9DE4, BH-3A83C1, BM-AB594B, BM-8ECF7B, BM-8FE981, BM-8FDA05, BH-622B27), but BH-0DED9E has oval loops, whilst BH-CBA249 and BM-F3721B may be fragments of oval chain links. Most are quite small. Small chains of this size have a wide range of possible uses. Iron chains were unlikely to be used in jewellery, but could be used to suspend lamps or scale pans, as copper alloy examples were (Crummy 1983, 161). BH-0DED9E is larger, and the addition of a swivel loop indicates a role in lifting or moving heavy loads. BM-AADD88 is also considerably larger than the other chain links. It is possible that this was part of a substantial object, such as a cauldron chain (Hanemann 2014, 68–72; Manning 1985a, 100–1), but is not identifiable in its current fragmentary state.

Ferrules

Ferrules are conical socketed objects which would have been fitted to the ends of wooden poles to protect them from wear. Their exact function beyond this is unclear. They may have been used to protect the butts of spears, but their prevalence on civilian as well as military sites makes this uncertain (Manning 1985a, 141), and they may have been used on other objects, such as barge poles. The four ferrules from Piercebridge (BH-CC11D3, BH-CC1943, BH-CC27B7, BH-60E1C6) are all constructed differently, and need not have had the same function.

Hooks

A number of bent pieces of iron were found. BH-5F5BF3 may have been used as a fishing hook. BH-5F61EA and BH-5F67FD may have functioned as wall hooks of some kind, and are similar to a larger object from Brancaster (Hinchliffe 1985, fig. 36, 99), although their true function is unknown. The other pieces (BH-5F6DF2, BH-5F76D4, BH-5F7F87, BH-5F90B5, BH-5F96E6, BH-5F99C8, BH-5FA14B, BM-925C76) may be fragmentary hooks, pieces of chain link, or simply bent nails.

Loops

Six iron loops of uncertain function were found (BH-ED3DF5, BH-ED42C6, BH-ED4697, BH-ED4B0C, BH-ED4E2E, BH-ED5492). They vary in size, but all consist of a strip of iron, bent into a sub-circular loop, with the ends overlapping each other. These objects are similar to the 'collar ferrules' identified by Manning (1985a, 141) at Hod Hill. Another similar object comes

from the Beddington Villa (BSF87[77804B] <3546>), where it was mistaken for an ox goad. However, the Piercebridge objects seem far too chunky and crudely made to have functioned as ferrules for tool handles or poles. It is possible that they were used as net weights, although iron seems an odd choice for something designed to be submerged.

Miscellaneous Fittings

Several fragmentary fittings cannot be tied to a specific purpose. BH-ED5A6B and BH-ED6181 are short lengths of bar with knob-shaped terminals. They may have derived from drop handles or wall hooks, although other artefact types also have these terminals (see Manning 1985a, H23, P10, R23-5). BM-8F5F1D may be fragmentary roves or washers. BM-DD4F12 is a fragments of a handle. Both are plausibly Roman, but as they could have been attached to a number of different objects their function is unclear.

Other Unidentified Objects

In addition to these were a number of objects which could not be identified with any degree of certainty (BH-F05AAA, BH-F05F87, BH-F069CA, BH-F06D4C, BH-F1A4B2, BM-0F7EA1, BM-0F6CD6, BM-0F5742, BM-E3C837, BM-367CEC, BM-500DB5, BM-4FF246, BM-5018C8, BM-4F78ED, BM-4FABE8, BM98377E, BM-53C464, BM-543FF6, BM-91D72B, BM-930207, BM-92DAFB, BM-929D0B, BM-CEBD5E, NCL-2898F4, BH-D08F67) and 1094g of unidentifiable fragments, the larger pieces of which were photographed.

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