

Introduction

As presented in the small finds appendix (Barker *et al* 1997, 256), this category included many of the items that would normally be included in the more general fasteners and fittings, i.e. not all the items need have been associated with either building works or furniture. Bliss frequently recognised this. To maintain easy comparability with the small finds appendix, the material is presented in the same order, but the reader should be aware that functions attributed in the headings should be regarded with caution. Some additional items have also been placed here such as the copper alloy mounts of uncertain function as current practice would be to include them in the fasteners and fittings category.

Mounts and fittings

Copper alloy

Bell-shaped studs

Bliss noted that she wrote a full report on these prior to the article by Allason-Jones on the topic. It is stated that the typology developed is based on that presented in the South Shields report (Allason-Jones and Miket 1984). That work, however, does not include a formal typology. The organisation of the typology of these items at Wroxeter appears to be based on that of Allason-Jones' 1985 paper, dividing items first according to shape and then on the method of manufacture.

Group 1 – Bell-shaped head with a concave face and a central boss.

Within this group Sub-group A has a short iron shaft inserted into head and usually caulked with iron. Sub-group B has a shaft cast in one with the terminal head. The shaft is often square-sectioned and is perforated at its end.

Six examples of Sub-group A were recovered (**2404-2409**), including one where there was no clear evidence of either lead caulking or an iron shaft. None have an extant shaft and only **2405** has an iron stub left. The rest are judged to have had iron shafts by the staining on the back surface or around the square perforation or, as in the case of **2404**, by a square perforation to take a shaft, albeit clean of staining. The faces have a flanged edge and a central boss with a central pit. This may suggest that the objects were turned at some stage during their manufacture, perhaps most probably during the finishing process since the objects are generally considered to have been cast. The bosses of the Wroxeter examples are relatively low in comparison to those from other sites. The rim and the boss are marked by incised grooves on the bases. The terminals fall into two size groups, one from 22-25mm in diameter (**2404, 2405, 2408**), and the other from 30-35mm (**2406, 2407, 2409**). **2407** may have had its shaft cast with the head but it is not possible to see clearly the type of shaft attachment.

There were three examples of Sub-group B (**2400-2402**). One is complete with a rectangular-sectioned shaft perforated at its end. The other two members have circular-sectioned shafts. The faces of the two smaller examples are dished with rims rather than with a flanged rim, as is seen on the larger example. There are no incised grooves on the smaller examples, but the larger one is marked in a similar way to those of Sub-group A. Again all the bosses have a central pit. The shape of **2401** is different from the usual bell-shape in that it is waisted to give a more 'top'-like shape. Two examples are 15 and 16mm in diameter whereas **2402** is

34mm in diameter. This example is very similar to examples from Sub-group A in its form and size.

Group 2 – baluster-shaped terminals.

There was one example of Sub-group A with an iron shaft (**2403**). It lacks the shaft but the base iron-stained and has a square perforation to take a shaft. It has a heavy metal filling. At the top of the head there is a central pit which may suggest that the object was turned. The base is 16mm in diameter and the objects is 24mm high.

Flat-backed mounts and plates

These were originally discussed as class B of Bliss's Mount category. It contains five objects, two of which (**2665-6**) may be parts of the same object. It is a very miscellaneous grouping. **2676** is an unusually shaped, perforated plate. **2665-6** and **2667** are decorated. The first two by stamped ring and dot ornament and by a diagonally grooved medial ridge. **2667** consists of a roundel with a triangular-sectioned shaft which is curved at the tip. The roundel is recessed and contains the remains of an enamel filling.

The methods of attachment are shown in three cases and include the use of rivets and solder. **2676** shows the remains of a short rivet and its perforation may have held a stud. **2665** has the corroded remains of a shaft through perforation in the centre of its short end. The mode of attachment of **2667** may have been solder owing to the very rough back surface although there is no clear evidence for this. To what the objects were attached is unknown, whether leather or a wooden box. **2667** is similar on a second century piece from the fort at Ravenglass (Potter 1976, fig. 69 no. 17).

Miscellaneous mounts.

Seven objects do not easily fit into the previous category of mounts or those of the stud-backed military mounts discussed in the military section. Bliss categorised these as Class C miscellaneous mounts. The type is divided into two groups, those that are basically rectangular in form and those of other shapes. There are four examples of the rectangular form which includes flat-backed plates with rivets and boss-like objects (**2672-3, 2669, 2675**). **2673** is decorated with a groove across the short end. **2675** is hollow and has bevelled edges. A lump of corrosion may indicate the remains of a rivet. The other shape category consists of **2671, 2674** and **2676**. **2676** is also a boss form but is barrel-shaped with a series of transverse grooves at each end. The other two members are discs. **2671** has a notched edge and is perforated and both have a stud for attachment.

2675 is paralleled by objects from Fishbourne (Cunliffe 1971, fig. 43 no. 80) and from Colchester (Crummy 1983, fig. 151 no. 4209). The former was described as a belt(?) fitting and the latter as possibly from a military apron. **2671** is similar to an attachment of a stud from Verulamium (Frere 1984, fig. 17 no. 146).

Ring handles.

Two ring handles were recovered. Bliss associated these with furniture items such as doors, chests, vats, caskets etc. (Crummy 1983, 80; Partridge 1981, 315 fig. 120). The identifications were based on the moulded sections of a grooved D-shape, and circumferential ridges and grooves on the outer surfaces. One is complete and the other is a half ring. The section of **2956** is uniform for its entire circumference, that of **2957** is more irregular and slightly expands at one end where there is also a deposit of concretion. The expansion and the concretion may be evidence for the former presence of a looped split spike.

The hoops are of different sizes. The internal diameters measure 20mm and 25mm, and the sections 3.5 x 3 mm and 4mm. In comparison to ring handles from other sites, **2957** is more massive whereas 2956 is a small example of the form. The rings on a chest from Burial 4 at

Skeleton Green Puckridge, for example, vary from 19 to 23.5mm in internal diameter and from 3.5 x 4.5mm to 3 x 2.5mm in section (Partridge *op cit*).

The moulded sections and the regularity of the rings show that they were cast. The surfaces are smooth with no visible signs of further working after casting. The inner surface of **2596** may have circumferential striations. The hoop shows little signs of wear and the ridges are very prominent. Those of **2957** are less so, and the hoop has a more irregular shape, both of which probably result from wear. Neither of the hoops show signs of localised wear.

Drop handles.

Three drop handles were identified. One, **2313**, is much less robust than the other two (**2314-5**). Drop handles were used for a variety of purposes during the Roman period; most commonly for furniture and caskets, but also for the carrying handles of helmets.

The terminals of handle **2314** are set at 90° to the loop and are in an approximately horizontal plane, rather than turned fully back on themselves to lie in a vertical one. An escutcheon still survives attached to one terminal and consists of a flat plate beaten out from a rectangular strip of alloy which forms one shaft. Remains of solder are visible on its underside. The other terminal is worn where this was once attached. The terminals consist of flat-sided biconical knobs and the look is square-sectioned with concave sides. The handle is 73mm long and the hoop 6mm thick.

2315 is made from a D-sectioned rod with one extant terminal turned back and set against the loop. The terminal is flat-sectioned and consists of a pared pointed rod with a sub-square extension on the outer side. It is possible that this took a zoomorphic form of a 'bird's head' but there is no evidence of this owing to the loss of the original surface. The 'hole' between the loop and terminal may contain iron or corroded alloy. The loop is 6mm thick.

2313 probably represents a furniture handle owing to its small dimensions. The hollow rod of oval section is only 3mm wide.

In addition Bliss noted that **3602** catalogued as a miscellaneous fragment may represent a fine drop handle according to a parallels from the temple at Harlow (France and Gobel 1985, fig. 44 no.70). Other authors describe similar objects as fasteners which could have been attached to cloth or to leather (Rogerson 1977, fig 58 no. 45; Brodribb *et al* 1973, fig. 55 no. 212).

Hinges.

Two loose hinges were recorded (**2395-6**). Both are of a similar form, a slender rod encased in a sheet of metal except for the very ends. They are about 3mm in diameter and 18mm and 30mm in length. Bliss noted that the form of the complete object was unknown, but such spindle hinges were often associated with strap and buckle fittings used by the military (e.g. Zeinkiewicz 1986, fig. 56 no. 5).

Bone and Antler

Furniture hinge fittings.

A hinge blocker (**222**) was identified consisting of a turned disc which is similar in appearance to spindle whorls of Type 4 or the button of a button and loop fastener. Its identification as part of a hinge is based on its cross-section, a shallow cone with one or two grooves. It is 27mm in diameter. These are relatively uncommon finds and only 18 were recorded by Greep (1983, 208).

B2 – triangular and diamond-shaped mounts with ring and dot.

There are three examples (**427, 428, 432**), two of which are complete. All are triangular and all are probably bone.

B3 – squares with single ring and dot.

There are five examples, at least one of which is antler (**435**). The others are **426, 430, 434** and **436**. They range in size from 11mm square to 20 x 18mm.

B6 – Plain shapes.

There are three examples, one of which is probably antler (**429**). The other two are **431** and **433**. Bliss noted that there may have been a fourth although its type was not certain. This cannot be identified in the database print-out. The shapes include a square, two trapeziums and a rectangle.

C1 – non-figural plaques.

There are seven examples. Four form a group of spatulate pieces with tapering strips with disc-shaped terminals (**438-40, 443**). It is possible that they are from one workshop. A further plaque consists of a disc decorated with concentric rings (**437**). This was classified by Greep and its placement here rather than as a Type 3 counter was noted as curious by Bliss. A further two pieces are included here as ‘plaques’ rather than mounts (**440-41**). One consists of a plain triangle with a semi-circle cut out of its base and the other is a fragment in a crescent shape (**440**).

D - miscellaneous.

Three mounts are placed here (**444-6**). One consists of a tear drop shaped piece which resembles a plectrum. This may not have functioned as a mount given that it is quite well finished on both sides. However, it does not show any wear marks to help identify its use. Another piece consists of an ‘L’-shaped piece of bone, again undecorated (**444**). The third is also undecorated but its shape was not stated.

Stone

There is one fragment of a marble table top (**8453**).

Glass

Bliss discussed five tesserae and stated they were of opaque turquoise frit, dark blue glass and natural green glass and ranged in shape from cuboid to rectangular to triangular. The database print-out records four glass tesserae – **9133-5** in glass and **9136** in faience or frit. Whilst the glass ones could have been used in mosaics, another use appears to be as raw material for enamelling, bead making etc.

Locks and keys

Copper alloy

Lever-lock key

This is similar in appearance to a modern key with a circular bow at the top and a bit to one side of the stem. The bow of **2334** has an additional central knob and an irregular diamond-shaped section. The bit is rectangular with rectangular slits cut at the front and rear edges with

notches along the rest of the edges. The stem is tubular with flattened surfaces and expands at each end. It is decorated with three series of irregularly cut, transverse grooves with two plain units between, The latter are bevelled to give a central transverse ridge. The use of decoration appears to be rare. The key is 82mm long and the head 26mm in diameter. The stem varies from 7 to 6 to 7.5mm, and the bit is 10 x 12mm.

Key Handles.

There are two of the fleur-de-lys form and a third that is a variant. **2336** and **2337** have a central key-hole perforation with circular perforations either side closely flanked by two leaves which are barely cut out. In both cases the head is surmounted by a knob. The base is rectangular-sectioned and decreases in side towards its ends. It is decorated with two series of irregularly hand-cut collars with a plain unit between. On the underside is a circular socket in which are possible corrosion products. Both handles are of similar dimension and measure 41mm and 39.5mm in length, the heads are 27mm wide.

No **2335** consists of an openwork pelta flanked by two small leaves which are clearly formed. The head is surmounted by a flat-topped baluster. The base is similar to **2336** and **2337**. The end has a deep tubular 'well' to take the stem. The head is poorly cast. It is smaller measuring 42mm long and 20mm wide.

Locks.

2338 is a lock bolt from a tumbler lock of Manning (1985) Type 2. It is complete with four triangular cut-outs. It is small, measuring only 38mm in length and 8.5mm wide. The cut-out pattern is similar to that seen on a bolt from Verulamium (Frere 1972, fig. 39 no. 119).

2339 consists of a sub-square shaped ? ward with an L-shaped cut-out. It is small (14.5 x 10.5mm) and only 2.5mm thick. It may be from the lock of a small box.

Iron

In the small finds appendix (Barker *et al* 1997, 256) various codes are provided for some of the iron locks and keys. These do not correspond to the codes in the Type and Sub-type fields in the database print-out. Unfortunately no key appears to survive in the archive as to what these coding might have been. There are some discrepancies between the numbers quoted for the various categories. From the various sources of information including the illustrations, the following appear to have been found.

Lift keys for tumbler locks (see Manning 1985, 90) – **4720-48**. Most are L-shaped but **4721**, **4728**, **4734**, **4745** and **4748** are T-shaped.

Slide keys for tumbler locks (Manning 1985, 92) – **4749-55**.

Lever lock keys (Manning 1985, 94) – **4756-7**.

4758, **4760-64** are listed as padlocks. From the illustrations **4758** is a padlock case of Manning Type 2 (1985, 96), and **4761** and **4764** are the barbed spring bolts from padlock. It is possible that **4760** and **4763** are also padlock bolts as they have the same coding in the database print-out. **4759**, **4781** and **4788** are identified as padlock keys in the print-out and **4789**, **4792-4** are identified as possible padlock keys.

4765-74, **4778**, **4787** are identified as key handles. **4775-6**, **4780**, **4782-6**, **4790-91** as keys without further identification.

4777 and **479** may be latch lifters.

Structural remains

Lead alloy

The small finds appendix listed two types in this category. It may be noted that Roman window glass did not make use of lead fixings.

Flashing – **7623, 7636, 7672, 7687, 7712, 7757, 7847, 7884, 7951, 7982, 7999, 8001, 8004, 8050, 8070, 8104, 8148.**

Window – **7916, 7990, 8243.**

Other materials

The stone door post socket is **8443** and 99 iron pipe collars were identified (**5472-570**).

Fittings from timber buildings

All of these were made of iron and the following were identified in the database print-out which does not correspond exactly to the small find appendix (Barker *et al* 1997, 256).

Clamps – **4398-445, 4936.** Not all of these are explicitly stated to be T-clamps and some wall-hooks appear to have been given this name.

Joiners' dog – **4540-57, 6754.**

Cleats – **4511-4539.**

Wall-hooks – these are noted as a sub-type of hook in the database print out (**4629-55, 4693-5, 4698**). As noted some of the clamps are also identified as wall hooks.

Hinges – in the database print-out 48 items are characterised as hinges or hinge staples (**4574-4620, 6755**) and there is additional Type and Sub-type information. The archive does not explicitly say what this means but it is likely that the Manning typology was followed. (Manning 1985, 126). If so the drop hinge (Type 1) was the most common (33 records). There were six examples of the Type 2 loop hinge and two of the strap hinge type where the ends interdigitate and are pivoted.

The small find appendix also records 87 spike loops. These are presumably what is more normally termed loop-headed spikes and double-spiked loops (Manning 1985, 130). In the database print-out they are termed split-pins **5980-6066**. Twenty nine have single spikes and 58 are double-spiked.

Nails, studs and tacks

Copper alloy

Just under 300 copper alloy items that could variously be described as studs, nails, tacks, rivets, washers and bosses were recovered from the excavations. These were all discussed as part of a single report originally and this is summarised here, though in the small find index they were split into different categories. Bliss noted that fasteners were a category of material that was regularly published but generally without additional commentary, and with a degree of inconsistency in nomenclature. She attempted to overcome this problem by a survey of the various meanings of the word as provided by standard dictionaries, but noted that not all of the forms fitted the definitions well.

The classes were divided principally according to the head forms and then the presence/absence of decoration and the proportions of the dimensions of the heads and the shafts. Studs were defined as having relatively short shanks compared to the head. Nails were defined as having relatively long shafts compared to the head size. Rivets were defined as a stud-like form but having an expanded foot to the shaft. Bosses were defined as convex objects with no evidence of a shaft. Tacks were defined as having flat and relatively large heads used for fastening light or thin objects to something more solid. There was also the implication that studs tended to be more decorative than nails. In the classification that was developed, some of the major groupings followed those developed by Crummy (1983) in her work on the slightly smaller corpus from the Colchester excavations, but the sub-groups were Wroxeter specific. The divisions were as presented on the next page.

<i>Simple name</i>	<i>Group</i>	<i>Sub-group</i>	<i>Description</i>
Stud	Enamelled	A	Cup-headed
Stud	Enamelled	B	Disc-headed
Stud	Decorated		
Stud	Lead and iron filled		
Stud	Hollow-domed	A	Large convex head and long square-sectioned shaft
Stud	Hollow-domed	B	'skull-cap' heads and shaft just protruding
Stud	Hollow-domed	C	Intermediated sized
Stud	Hollow-domed	D	Tiny examples
Stud	Disc-headed	A	Large heads with thick, circular-sectioned shafts
Stud	Disc-headed	B	Large heads with square-sectioned shafts
Stud	Disc-headed	C	Decorated heads
Stud	Disc-headed	D	The rest
Stud	Riveted, expanded foot		
Boss		A	Decorated
Boss		B	Plain
Nail	Convex-headed	A	Long shaft and small head
Nail		B	Short shaft and large head
Nail	Knob-headed		
Nail	Conical-headed		
Nail	Flat-headed	A	Rectangular head
Nail		B	Circular head
Nail	Headless		
Nail	Miscellaneous		
Tack		A	Small disc head and square-sectioned shaft
Tack		B	Rolled sheet conical shaft and flat hammered head
Tack		C	Miscellaneous, with rolled shafts, headless, larger than B

The bell-shaped studs were originally discussed as part of a separate report on terminals, and have already been considered above (p. 92).

Enamelled studs.

Seven studs have enamelled or glass decoration. The enamelling is achieved by the *champlevé* technique and is either simple (one colour to each cell), or complex (two or more colours without a metal divide). The studs are divided into two sub-groups according to form. Sub-group A has a cupped head with a pin shaft and B a flat circular plate with a single shaft at the centre of the back. The former has both simple and complex enamelling, whereas the latter only show complex enamelling.

Sub-group A consists of five examples (**3212-6**) and the heads take different shapes. **3216** has a concave base, **3213** has a disc-shaped base with straight sides whereas those of **3212** slope slightly towards the base. The disc cup of **3214** is flanged at its base and **3215** is similar but the disc cup is shallower. **3215** is more elaborate than the others in that its reverse side appears to be silvered and the filling may be divided by a horizontal, square-sectioned pin placed across the face and through a groove in the cap wall. The cups range in diameter from 12mm (**3216**) to 18mm (**3212**), and in depth from 7mm (**3216**) to 3mm (**3215**). All of the cups contain some remains of their fillings, but in only two cases is it possible to identify the

original colours. **3214** had a single colour – a yellowish green enamel, and **3212** once contained yellow and green enamels in alternating wedges without metal divides. **3213** may have contained a chequered glass filling with a ‘black’ over-surface. The design may have consisted of two patterns, divided by the pin. There are only three extant shafts. That of **3215** is square-sectioned and short, that of **3212** is thick, circular-sectioned and tapering and is slightly curved at the end. **3213** has the remains of an iron shaft still adhering to it.

Sub-group B contains large, flat, disc-headed studs decorated with complex enamelling with the use of spots (**3217-8**). The discs have rilled edges and the shafts are short, tapering and square-sectioned. Both studs are decorated with a similar design of three concentric zones. There are eight rectangular/wedge-shaped cells of alternating colours in the outer field. The inner field has four circular dot insets and the central field is plain, although it has a central pit in the case of **3217**. The colour scheme of **3217** has red and blue cells in the outer field, a greenish yellow inner field with yellow insets, and (?) turquoise inner field. The colours used on **3218** are not clear. The discs are of a similar size, 19mm in diameter and 1.75mm in thickness. Their shafts are 8 and 10mm long.

Decorated studs.

There are seven decorated studs (**3219-25**). The heads are disc-shaped but vary in their section. **3221** and **3223** are flat-sectioned; **3220** and **3224-5** have a convex section and **3219** has a convex section with a central boss. **3222** has a complex stepped section. Each shows an individual design apart from two studs which are similarly decorated. All of the patterns have a radial design, except for the two similar studs **3221** and **3223**, which have small vertical notches around their circumference. **3222** also differs in having a thin sheet stamped with concentric grooves and with a triangular-shaped central boss stamped with a possibly schematic human or lion face. The patterns of the other studs are achieved by engraving or by moulding the stud surface. It is likely that studs **3220** and **3224-5** represent rosette studs of military wear. **3221** may be further decorated by silvering. **3219** is lead-filled. The central perforation seen on the head of **3223** is all that remains of the shaft, the other perforations on the surface are probably the result of corrosion. The heads vary in diameter from 11.5mm (**3225**) to 24mm (**3221**). Only three examples have extant shafts, these are circular-sectioned and are relatively thick (3mm and 4mm) in comparison with some other forms of studs recovered from Wroxeter.

Item **3350** is included in bosses since there is no evidence of a shaft, but it is possible that the object was used as a decorated stud. It has a convex-section with a flanged edge and central dish and is lead-filled.

Lead-filled studs.

A total of 43 examples (**3226-68**) consist of a sheet copper alloy disc of convex section filled with lead alloy and with evidence of a shaft, or having had a shaft. Two studs, apparently filled with iron are also included here (**3244** and **3265**). Other examples of lead-filled studs are included as part of conical-headed nail and decorated stud categories. Many of the boss cap category are also lead filled.

The shaft is either attached to the cap, as in the cases of **3243** and **3254**, or caulked by the lead fitting as in the cases of **3226**, **3237**, **3256** and **3267**. The group shows much variation in the head shape, size and in the length of the shaft. The head shape most commonly represented is a dome, however, shallow dishes. Flat-topped domes, domes with a flanged edge and with a moulded concentric groove or with an additional dished centre are also present. Only one stud, **3252**, appears to be silvered or tinned. Two studs have particularly unusual shapes. **3239** consists of a flanged dome with a line of small bosses along the flanged edge and **3258** has the common domed head but its shaft is a loop of thin wire. The diameters of the studs vary from 6mm to 34mm, and when they were plotted on a scattergram no clear clusters can be seen. The modal diameter is 10mm (five examples), and the majority of the studs are

located between 10mm and 20mm (30 examples). Only ten studs have extant shafts. These are circular (**3229**, **3231**), square (**3236**) or rectangular-sectioned (**3232**). Their lengths vary considerably, from 28mm (**3226**) to 17mm (**3232**). The shaft of **3231** is particularly long at 42mm. A group of studs have iron shanks. This is either present as in the case of **3265**, or more commonly is identified from a circle of iron corrosion in the lead fitting, e.g. **3235**, **3244**, **3252-3**, **3262**, **3264** and **3268**.

Three studs show evidence of their use. **3226** has evidence of wood and iron associated with it. **3252** is attached to a lozenge-shaped plate and **3253** still has some iron attached.

Hollow-domed studs.

There are 28 examples of this group (**3269-96**). It is characterised by a stud with a convex-sectioned, undecorated, sheet copper alloy head, shaped to form either a dome or a convex dish. The shafts taper and are usually square-sectioned. In the case of **3290** the shaft is of iron. There is much variation in the group including the convexity of the head, in its dimensions, and in the proportions of the shaft and head. The examples are sub-grouped accordingly and three fairly consistent sub-groups are formed.

Bliss states that Sub-group A consists of five examples but only **3271-2** are so identified on the database. They have a large convex head with an average diameter of 26.25mm and a relatively long shaft (30mm) which is square-sectioned.

Sub-group B consists of four studs (five identified as such in the database – **3273-7**). They have high domed heads (height 7mm) reminiscent of a skull cap. These are about 14.75mm in diameter although **3277** is 20mm. The shaft only just protrudes below the base of the head.

Sub-group C consists of nine studs (**3278-86**), three of which are represented only by a cap with a central perforation. They are grouped together because although the heads are of a similar diameter to those of Sub-group B, the depth of the head is intermediate between Sub-groups A and B. The diameters of the heads vary from 10mm (**3278**) to 14mm (**3279**), and the depths from 3mm (three examples) to 4.5mm (two examples), with **3278** being exceptionally deep. There is a greater degree of variation in this sub-group particularly in the lengths of the shanks and in proportion to the heads and shanks. Six examples have extant shafts which are square-sectioned. **3278** has a relatively long shaft and is also a stouter and larger stud. The shafts of **3281**, **3279**, **3286** and **3282** are shorter and finer. **3283** is curved at the point.

Sub-group D is more miscellaneous, and consists of tiny, slightly dome-headed studs with slight tapering shafts. They are comparatively insubstantial studs. The diameters of the heads vary from 6mm to 9mm and the depths from 1.5mm to 3.5mm. Two examples consist only of the cap with a central perforation. Bliss noted there were ten examples but the database print-out only notes eight (**3278-94**).

A further seven studs are too fragmentary or distorted to be able to place them in a particular sub-group, although it is possible to identify them as hollow-domed studs.

Disc-headed studs.

There are 44 examples of this group (**3297-3340**), including one silver example, 23 complete studs and five caps. It is characterised by studs with a flat, circular head with a relatively short shaft. However, there is variation in both the form and the dimensions of the heads and shafts, and also in their proportions which allows them to be sub-divided. This group contains forms which in other reports are commonly referred to as upholsterer's tacks (Sub-group B and some members of Sub-group D). It also contains a large example, **3325**, which may be a nail.

Sub-group A (**3297-3300**) consists of four relatively stout studs with plain disc heads of about 19 – 22.5mm diameter, and short, thick straight-sided shafts with circular sections. These are on average 14.5mm long and 5.5mm in diameter.

Sub-group B consists of seven studs (**3301-7**) with a large disc head varying in diameter from 22 to 28mm although those of **3301** and **3304** are only 17mm, **3301** also being made of silver. The heads are of relatively thin metal, the thickness varying from 0.5 to 1mm, but that of **3307** is thicker at 1.5mm. The shafts are relatively short, taper and are square-sectioned. That of **3301** is burred at its end. They range in length from 5mm (**3301**) to 22mm (**3302**) with an average length of 13mm.

Sub-group C consists of ‘decorated’ disc heads, either by moulded concentric circles or by a flanged edge. Again the heads are commonly made of sheet metal. The sub-group contains large examples with diameter varying from 21mm (12 examples) to 12mm (**3311**). These form Sub-group C1 (**3308-19**). Smaller examples with diameters varying from 7 to 9mm are placed in Sub-group Cii – **3320-24**. Studs **3322-4** have two concentric rings stamped on the head. Six examples consist only of the cap with a central perforation. Stud **3242** has a rather different form with a highly domed centre and a wide flanged rim which is grooved. In the database this piece was placed in the lead-filled category.

Sub-group D is miscellaneous and consists of the remaining small, plain, disc-headed studs (16 examples – **3325-40**). Some have very thin sheet heads and may form a sub-group of their own and they could be described as ‘tacks’ rather than ‘studs’ (**3326-9**, **3331-3**). Also most have square-sectioned shafts. This sub-group also contains a fragment of a (?) disc head and also two ‘studs’ with a large thick head, one of which is heavily corroded, and a relatively long, circular-sectioned shaft. One has a square iron washer. Both are included here as studs, although **3335** has been described as a clamp nail.

Studs with an expanded foot – rivets.

Nine studs are grouped here on the basis of all having expansions at the end of their shafts (**3341-9**). This expansion is smaller than the head, except in one case which is spool-shaped (**3345**). They appear to be cast in one piece, except in one case where the head may be separate (**3344**). The shafts only taper slightly. The shape of the head is very varied and includes: rectangular (**3349**), shallow cone (**3347**), flat disc (**3342**), a hollow, domed trapezoidal-shaped sheet, a dome with a wide flanged edge and a similar example with a moulded ring groove between the dome and the flange (**3341**, **3346**). The heads are plain except for **3348** and **3345** which have a moulded and an incised concentric groove respectively. The shafts are short and circular-sectioned. The diameters of the studs vary from 7mm (**3341**), to 21mm (**3348**), and the height from 7mm (**3346**) to 11mm (**3348**).

Bosses or stud caps.

Eighteen objects are categorised as bosses (caps in the database – **3350-3366**). They are all hollow domed hemispheres except for **3357** which has a flat plate head. **3366** is a particularly high domed boss. There is generally no evidence that a shaft was once attached, although the lead fill of **3362** may bear an impression made by a shaft. Eight of the bosses are, or show evidence of having been, filled with lead. The bosses are sub-divided on the presence / absence of decoration, and both sub-groups contain examples of hollow and lead-filled bosses.

Bliss stated there were ten examples of the decorated bosses which form Sub-group A but only nine (**3350-58**) were noted in the database print-out. Four of them were lead-filled. The decoration consists of a flanged edge (one example), or a flanged edge and a moulded concentric groove (five examples). **3354** is decorated in the more conventional sense of the word, with a cross of incised double lines with the fields infilled by radial, imperfectly incised, lines.

Sub-group B (**3359-66**) consists of eight undecorated examples, four of which appear to have been lead filled.

As a whole the diameters of the bosses vary from 34mm (**3351**) to 9mm (**3359**) and their depths from 2.5mm (**3359**) to 7mm (**3365**) and to 12mm (**3366**).

A further two examples, a hollow rectangle with bevelled sides and a barrel shape with transverse grooves may also have represented bosses since they appear once to have been filled with lead. These are grouped under miscellaneous mounts.

Convex-headed nails.

There are 16 examples in this group (**2749-64**). It is characterised by a convex-sectioned or dome-headed nail with either a long or a short tapering shaft of circular- or square-section. The group is sub-divided on the basis of the relative proportions of the head size and shaft length.

Sub-group A (**2749-54**) consists of six complete nails with a comparatively long shaft and small head. The shaft lengths have an average of 21mm, and the heads a diameter of 5.5mm. **2751** is a little unusual and has a comparatively longer shaft (28mm) and smaller head (4mm) which is not as domed as most examples in the sub-group. All shaft section shapes are represented: square (three examples), polygonal (one example) and circular (one example).

Sub-group B (**2755-64**) consists of ten examples with a shorter tapering shaft and a larger domed head in comparison with those of Sub-group A. There are seven complete examples, the shaft length ranges from 16.5mm (**2758**) to 3mm (**2760**) and the head diameter from 9mm (**2756, 2762, 2764**) to 7mm (**2758**). One example has a more disc-shaped head (**2763**). Nails **2759-60** have particularly neatly-shaped dome heads. The shafts are either round- or square-sectioned. **2762** has a curved point. The shorter length of the shafts and the larger heads means that that these 'nails' more closely resemble 'tacks' or 'studs'.

Knob-headed nails.

There are 41 examples of this group of which 35 are complete (**2711-48, 2782-3** are the only ones-so described on the database). The nails are characterised by a plain knob or sub-spherical head which is of larger diameter than the shaft which is tapering. There is a lot of variation in the group including head shape, in shaft shape, in the dimensions and in the relative proportions of the head and the shaft. Five head shapes were identified: knob or bun, pointed-topped knob, faceted knob, spherical and flat mushroom-shaped. The majority of the nail heads belong to the first two, the other shapes are represented by only two, one and two examples respectively. The amount of variation seen in the shape of the heads resembles that seen in Type B1.1 bone pins and indeed, many authors prefer to describe these objects as 'pins'. They differ to the bone examples with respect to their shaft forms and length. The shafts have square, wedge-shaped, circular and polygonal shaped sections. In some cases the shaft is grooved or waisted at the head/shaft junction; for example **2723, 2742, 2735** and **2739**. The group also contains some very short shafted examples, a characteristic more associated with 'tack' or 'studs' than with 'nails'. These include **2714, 2718, 2733** and **2745**. **2718** is curved at the end of the shaft. The large range of size within this group can be shown by comparing the dimensions of **2740** and **2736**. The diameter of the heads are 10 and 3.5mm, and their lengths are 38 and 15.5mm respectively.

Conical-headed nails.

There are three examples of this group (**2776, 2778-9**). They may represent a further variant of the knob-headed nail but since the form is paralleled at other sites they are grouped separately. **2776** is much larger than the other two examples. The head measures 10mm in diameter and is 8mm deep, the shaft is 5mm thick and tapers to a square-sectioned tip. Its

overall length is 36mm. The head is manufactured to a different method to that of **2778-9**, the former by placing a sheet bronze cap over a lead core and the latter two by casting solid copper alloy heads.

Flat-headed nails.

There are three examples of this group (**2772-4**). The nails contrast to all the others by their relatively long shaft lengths and large head sizes. The group is sub-divided by the shape of the head. Sub-group A (**2772**) consists of one example with a sub-rectangular head on a tapering square-sectioned shaft. This shape is relatively uncommon. The head is off-centre, is slightly domed with inward sloping sides. The nail is 66mm long and the head is 15mm wide and 4mm thick. Sub-group B consists of the examples with disc-shaped heads and tapering square-sectioned shafts. The point of **2773** is split, and that of **2774** curved. They are 44mm and 29mm long respectively.

Headless nails.

There are eight examples of this group (**2765-71, 2781**). All share the common feature that the head is undifferentiated from the shaft or is only just so by a very small flat expansion of the shaft end. The shafts are either square or circular-sectioned and taper. The nails are divided into two sub-groups by their comparative dimensions, into 'larger' (A) and smaller (B) examples. Five nails are included in Sub-group A (**2765-68, 2781**), and all measure about 28mm in length and 4mm in width or 6mm in diameter. The other three examples for sub-group B (**2769-71**), two examples measure 18mm in length. The sections are very similar and measure between 2.5-3mm.

Miscellaneous nails.

Bliss stated there were two examples in this category though the database lists three (**2775, 2777, 2780**). Their defining characteristic is that they cannot easily be placed in the other nail groups. One has a small disc head with a long rectangular-sectioned shank made by looping a strip of alloy. The other (**2780**) is more reminiscent of a modern rivet and may be modern.

Tacks.

A total of 44 objects is included in this group (**3391-3434**) which contains three different forms. The tacks also show a large range in length, from 7mm to 28mm. The upper end of this range is comparable to the lengths of object classified as nails.

Sub-group A (**3391-8, 3433-4**) consists of ten examples with small disc heads and tapering square-sectioned shafts. Unlike the members of the other group these tacks are made by casting as single pieces. Bliss states that three examples have curved ends (**3392-3** but the third example mentioned **2765** is defined as a headless nail in the database. Four of the tacks are complete and only the points are missing in two examples. They vary in length from 12mm (**3393**) to about 17mm (**3396**), and the heads vary in diameter from 2.75mm (**3392**) to 5mm (**3396**).

A second easily recognisable sub-group consists of tacks with a sheet copper alloy shaft rolled to form a relatively thick cone and a flat, hammered head formed by folding over the end of the sheet (Sub-group A – **3399-416, 3426**). The tacks are small and squat in appearance, and 19 were recovered. **3399** and **3412-5** clearly show the folded hammered head. **3407** has a curved point. Of the 11 complete examples, the lengths range from 21mm (**3401**) to 7mm (**3407**), and the head size ranges from 3mm square (**3407**) to 9.5mm (**3414**).

Sub-group C consists of the remainder of the tacks (**3417-25, 3427-32**). It is a more miscellaneous sub-group than the previous two but the members do share a number of common characteristics. The 15 examples all have rolled, circular-sectioned tapering shafts, and many appear to be 'headless' or have undifferentiated heads. They may originally have

had applied heads. The lengths are mostly between 10mm and 17mm, although that of **3430** is 27mm. This is unusually large for a ‘rolled’ shafted type.

Uncertain.

Eight examples (**3367-74**) are too fragmentary to be able to identify whether they are bosses or lead-filled studs. Four still have lead attached to the obverse side. One is very corroded. Three studs may be hollow domed. **3350** in the database print-out as a cap should perhaps also be included here since it may represent a decorated stud or a lead-filled boss. There is no evidence for a shaft. The surface is decorated with a flower pattern with 15 petals and has a central pit and a flanged edge.

Stud washers / end plates.

Sixteen disc plates or shallow convex dishes and one square one with central perforations are catalogued as washers (**3375-90**), three of these are more hesitantly so identified. Their identification is made on the basis of their similarity to objects from other sites described as functioning as washers to studs.

They vary considerably in size ranging in diameter from 20mm (**3376**) to 27mm (**3386**). **3384** is quite a thick example (1.5mm) and its perforation is flanged or burred. **3385** is a particularly thick ring (2.5mm) and has a bevelled inner edge. It is possible that **3384** and **3375** represent stud heads. **3377** is square.

Iron

The small finds index stated that there were 212 nails and the database print-out has 207 records (**5242-451**). The Type and Sub-type codes relate to the Manning typology (Manning 1985, 134). Not all of these relate to furniture and building as the Type and Sub-type codes make it plain that 28 of the records relate to hobnails from shoes (**5383-409, 5425**)². Three iron studs are also recorded (**5415-7**).

Other fittings

Copper alloy

Double-spiked loops.

There are seven examples of this type, also known as a split pin (**2537-43**) They are made from a bar of square or D-shaped section, into a loop with a parallel arms below which may have pointed ends (one example) or blunt ends (two examples). In one case the ends have been bent out. As normal for the type the ones from Wroxeter vary greatly in size and length. The complete examples range from 30mm to 39.5mm and the strip width from 1.75mm to 3mm square.

² It has to be suspected that the recording of the nails was incomplete. There are in total 2499 records of iron in the database print-out. As recorded the nails represent only 8% of that. Generally, as a rule of thumb, between half and two thirds of any Roman iron assemblage will consist of nail fragments. Possibly only complete nails were recorded but that seems unlikely as one would have expected considerably more of the shorter Manning Type 1B which are the typical joinery nail. There are only 52 of those recorded in the database print-out compared to 67 of the generally much rarer types 2, 7, 8 and 9. (HEMC)

Staples / joiners' dogs.

Five objects are included in this class (**2555-9**). They are made from a flat-sectioned strip bent at two points to form a flat-bottomed 'U'-shape. The arms vary in length from 9mm (**2559**) to 22mm (**2555**). The length is about 20mm to 12mm. Staples are usually associated with wooden objects and larger iron examples are used to join timbers together (joiners' dogs). These examples may have been used on a box or furniture. It remains possibly that the carefully made example, **2557**, may represent a small square-shaped buckle loop.

Collars.

Eight objects are included in this class, **2544-51**, although the identification of their use as 'collar' is not certain in some cases. They vary widely in size and shape. Collars had many functions and were used to strengthen a weak point and to combine together two parts. Some examples are also decorative. **2551** and **2544** have incised lines. **2547** has triangular grooves. The pieces consist of flat-sectioned strips of alloy bent into a closed circle. The objects included in this class are as small as 6mm in diameter (**2547**). **2550** is a particular heavy piece of curved plate (5mm thick) with a large perforation. It has an uneven surface and is possibly turned.

Several examples deviate from the simple curved strip form. **2548** is a thick collar with a square notch cut at one point. **2545** has a short tab extension at one end which slots into a small roll of sheet alloy which acts as a sleeve joint. **2544** and **2546** are oval-shaped. The latter consists of a sheet with a rectangular perforation in the centre; and the former of a thick strip with a sub-rectangular perforation, cut with slanting sides and the ends show an inner flange.

Ferrules.

Three ferrules were recovered (**2552-4**), a narrow conical form and two caps. **2552** is thimble-shaped with two opposing slots cut in the sides near to the top. It may be silvered or soldered. It is 15mm diameter and 11.5mm in length. **2553** is also a cap form, but is only 5mm deep and 18mm in depth.

Other materials

The database print-out records 17 iron collars or possible collars (**4495-4510, 6753**), and seven ferrules (**4488-94**), and five lead washers (**7753, 7807, 7859, 8162, 8212**).