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Metalwork from the Cyfarthfa Ironworks Stables site, Merthyr Tydfil

Dr Tim Young

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Dr T.P. Young

Abstract

The material comprises an assemblage sixty two pieces of metalwork, all except one ironwork, frequently associated with horse-drawn transport and agricultural equipment.

The ironwork comprises fittings for one or more wagons, including two strakes (tyre segments), an unusual thin iron plate carrying two bolster stakes with wheel securing chains (possibly acting as a protective surface for the back of the wagon's bed) and part of a leaf spring. Agricultural machines are presented by two blades from horse-drawn mowers (scythe mowers) and part of a seat from a mower or similar piece of equipment. A heavy-duty 'D' is probably an under-shaft breeching 'D' - of a size to suggest it belonged to either a substantial wagon, or to some horse-drawn farm implement. The assemblage also includes very less diagnostic pieces, including various long bolts (at least some of which are fashioned in a very similar way to the bolster stakes, suggesting they also belong to the wagon(s)) and a series of both wrought and cast iron fitments designed to be mounted onto timber (and therefore possibly also from the wagon(s)).

The horse haulage is represented by 11 horseshoes and the ironwork from a pair of hames with tug chain attachments and one with a rein loop. The assemblage also includes a curry comb.

The only iron artefact certainly of an industrial nature is a small cast-iron foundry ladle (for moving molten iron between the cupola furnace and the moulds. Even in this instance it is possible the artefact was re-used in the stables.

Unfortunately the material is all unstratified and it is not closely datable. The cart fittings include strakes which suggest, but do not prove, a date in the first half of the nineteenth century, for continuous iron tyres become predominate later in the century. Horse-drawn mowers developed into the form seen here (with teeth moved by a bar) in the 1830s, with various patent designs. Essentially similar forms continued in production until well into the 20th century. The present examples lack the more diagnostic components and there are no makers' marks on either of the blades. It would appear likely, but is far from certain, that the ironwork assemblage was deposited on the site in the first three quarters of the nineteenth century, based on the presence of strakes and on the known involvement of the Cyfarthfa estate in the running of several farms in the immediate area.

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Introduction

The submitted metalwork has been examined in the 'as-submitted' state; it has not been cleaned or submitted to X-Radiography. Any conclusions are therefore based on observations obtainable by that means only.

The assemblage has not been illustrated, although many items would be worth drawing when the site is published.

Results

Components of wagons

A group of eight pieces are likely to have been components of a wagon or wagons.

The largest component of a wagon is a thin iron plate (875mm long, 90mm wide and 4mm thick) which probably covered the rear of the bed of a wagon (Cat. #1). It has two bolts, 210mm long, approximately 425mm from the ends, with low rounded heads above the plate, fastened by square nuts. The gap between the plate and the nuts indicates the bolts were fastened through 170mm of timber (probably corresponding to the thickness of the boards and the underlying bolster). Each end of the plate carries a bifurcated bolster stake 45mm from the end. The vertical section is 620mm long, fastened through the base and the underlying woodwork in the same manner as the inner bolts (with a round section), with a main upright part of octagonal section and at the top a 120mm long square section, to which the sigmoidal outer branch is a welded, leaving a gap of 60-65mm for a horizontal timber, below a rounded and threaded upper section bearing a square nut. The outer branch curves away from the upright, then down parallel to it. The base of the sigmoidal branch bears a nut and has a washer-like collar approximately 200mm above the base.

The vertical branches of the bolster stakes bear complex shackles at their bases, bearing two external- and on internal-facing loop (which attaches the shackle to the stake). The external-facing loops provide attachment for chains. One chain has a link for attachment to the shackle 110mm in length with a 180° twist in its centre, then a 720mm length of double (rope) chain, with 50x72mm links, then a second twisted link, attached to two successive rings of 80mm diameter formed of 5mm rod. The second chain comprises four elongate links (102x47mm, 102x38mm, 43x140mm and 48x130mm of 10mm rod), with a ring of 52mm diameter formed of 8mm rod attached to the third, and a looped spike (202mm long and 20mm diameter with a 40mm outside diameter loop at right angles to the shaft); the whole forming a 'dog and ring' fastening. These chains form locking chains for the rear wheels of the wagon.

An isolated bolster stake (Cat. #2), is 650mm long and has narrower sections for passing through timber, one 130mm long between a terminal nut and washer at the change of section from 18 to 24mm, the other gap 120mm long lying between a forged outward-widening expansion and a terminal nut and washer. The general style and preservation of this pieces suggests it may have been from the same wagon as the complex rear bolster plate and stakes (Cat. #1).

An under shaft 'D' (Cat. #3) is of stout construction and would appear likely to have also belonged to a heavy wagon, rather than to a cart or implement. The item includes an approximately 990mm long and 82mm wide curved cladding (possibly galvanised or tinned), indicating the 'D' was on a round shaft. The cladding and the 'D' itself are linked by three stout bolts at 112mm intervals, passing through the shaft, the cladding and the tail of the 'D'. Forward of the loop the head of the 'D' passes back through the shaft and cladding. The margins of the cladding were also held flush to the shaft by a series of nails around its periphery.

Two wheel strakes are present (Cat. #3 and #4). The smaller is of section 80x15mm and was fastened by eight stout nails; it subtends 60° and has a radius of approximately 600mm. The larger has a section of 80x22m and was fastened by nine nails; it subtends 60° and has a radius of approximately 770mm. The strakes are of sizes that would be compatible with deriving from the front and rear wheels of the same or similar vehicles.

A short length of gently curved wrought iron bar (Cat #6), 320mm long with a section of 23x8mm, has a radius of curvature along its midline of approximately 750mm. It was fastened to a wooden substrate by four nails spaced along its length. This piece would appear to be likely to have been a protective facing strip from a wheel face.

A wrought iron bar 1200mm long with a scroll at one end and remains of two bolts connect the bar to another bar or plate (Cat. #7), appears to be a fragment of a leaf spring. The missing scroll would have added an extra 100mm to the length of the item. The main bar has a 70x12mm section. The bar is stout and is probably more likely to be from springing of a wagon than springing solely of the driver's seat.

A substantial hinge (Cat #8) is also tentatively suggested to have been a wagon component. The main hinge plate (500x65x12mm) has a curved distal end, is fastened by two nuts and bolts to timber 65mm thick, and curves into the hinge (it is unclear if this curvature is original), which is formed by folding over and welding the outer sections of the plate. The central gap carries a tapered, ringed bolt, the whole hinge fastened together by cotter bolt with split pin. The ringed bolt is 110mm long with a square nut and 50mm square washer.

Components of agricultural implements

Two blades from horse-drawn sickle mowers (Cat. #9 and #10) have substantial cast iron mountings, arms 1220mm long, with 15 bolts to support teeth (almost all missing) and three mountings for the moving bar. The outer end of the bar carries a teardrop-shaped, slightly curved, nacelle containing a small wheel. The blades do not carry any makers' marks.

A small fragment of a cast iron seat from an agricultural implement (Cat. #11) measures 300mm x 110mm) with the casting a maximum of 7mm in thickness.

A length of steel roller chain (Cat. #12), with links of 75mm (3 inch) between pin centres, fastened with hollow pins and 12mm thick central washers (making the links 35mm thick overall), survives for a length of eleven links. Two links carry 113x50mm subtriangular catch plates bolted to the outside of the chain (two bolts through the chain linkages and one outer one with a 35mm thick central washer). The piece has three links then a link with plates, followed by five links then another link with plates, followed by a further two links. Such drive chains providing both a drive and an intermittent 'pulse' are employed in such implements as seed drills and bailers.

A 380mm long timber strapping (Cat. #13), formed of 50x9mm section bar, wrapped around the end of a 110mm thick timber and secured with three bolts (175mm long with 30mm square heads and nuts) is probably from the end of a vehicle shaft. Such a simple

and stout design is likely to be from an implement rather than a cart or wagon.

Horse Equipment

An iron curry comb (Cat #14), 100x120mm, is formed from a thin iron sheet (possibly originally plated), turned up at the edges, 12mm high, together with three transverse channel pieces with similar upturned edges riveted to the base at each end. The eight upturned sheet edges are all serrated, with the serrations spaced at around 3mm and surviving to a maximum of 2mm tall;. A wire c3.5mm diameter forms a complex loop, passing through though holes 70mm apart each long side of the base and through each of the channel plates; the wire forms a simple external loop in the centre of the long sides (only surviving undeformed on one side). One long edge of the baseplate bears small riveted attachment loops at either side.

A symmetrical pair of hames (Cat. #15 and #16) are each 530mm long and formed of thin, possibly originally plated, iron forming a sheathing over the original wooden core. The hames are very simply designed: the bottom attachment hole (perpendicular to the plane of the hame) has an internal diameter of approximately 9mm. The lower hole of the left hame bears a single small chain link. The lower section is very slightly sigmoidal and 170mm long, at which point the hame turns and is almost straight to the upper ring, with is 13mm internal diameter (and parallel to the plane of the hame). The widest part of the hame is formed by the iron rolled around a cylinder of about 38mm diameter, towards either end the hames narrow and the sides of the tube are overlapped for 35mm (top) and 45mm (bottom) before each of the attachment holes

There are just two attachments. The lower is a shackle like attachment, 85mm long and 50mm wide of approximately 10mm wrought iron rod, attached though the hame to a 75mm x 25mm x3mm plate. This staple is attached to a large basal link, 65x40mm, swelling into a 42mmx46mm smooth plate on the inner(?) side and then a chain of twisted loops (two links surviving on the right hame and three on the left) forming the attachment for the tugs. On the left hame a ringed spike protrudes 160mm above the staple. This merely has a flared attachment (like a nail head) on the inside if the hame. It is formed of 5mm wire and has an 18mm o/d loop formed at its end with a welded closure. This loop bears a ring 64mm by 74mm of 8mm rod. The hames are therefore of rather small size (probably appropriate for a large pony) and of simple construction. The attachments are simple – with a functional tug attachment with attached chain and an upper rein ring. Such hames could be used for either driven or led haulage.

Eleven horseshoes (Cat. #17-27) present a wide variety of form and size. Most (9/11), but not all of the shoes show toe clips, some show rear caulks (5/11). Only two shoes show a fuller. The shoes are either flat, or convex on the base (probably from wear rather than design). Two shoes show slightly unusual shapes, one narrowing rapidly to 12mm wide (from 30mm) on the left side, the other narrowing to 6mm on the left side (from 28mm) whilst also rising to 22mm thick (from 8mm).

The sizes range from a length of 140mm and a width of 136mm up to a length of 170mm and a width of 152mm and a length of 160mm and a width of 180mm. These correspond, in an approximate manner, to shoe sizes for up to a large Welsh Cob, but are smaller than Shire horse shoes.

Metallurgical items

A cast iron foundry ladle (Cat. #28) measures 495mm in diameter at rim and is 300mm tall. The wall varies between about 6.5mm in thickness and 8mm. The base is rounded. There are two surviving pegs at 110° in plan, which extend 100mm out, are 55mm diameter at base, and are 30mm diameter at their rounded tips. Traces of mortar inside may be fragments of lining, but may alternatively be corroded-on building debris. Most of the internal surface is rusted, but clean of any refractory.

Fittings for use on timber

The collection includes a variety of pieces of ironwork designed to be used on woodwork. The following items may include some that were fittings for wagons, but not specifically identifiable as such, whereas others may be structural items or fittings from the stables themselves.

A staple (Cat. #29), 380x140mm overall and formed in 18mm rod, with tips flattened and clenched at 125mm gap, bears 3 flattened hooks. Each hook measures 125x60mm, with the outer ones facing inwards and the inner one forwards. This may have functioned to support a feed bag or sack.

A stout, quarter round, bracing (Cat. #30) formed of 30mm diameter bar curved through an approximate right angle with 300mm radius, flattened at both tips, and perforated for bolts, may be a structural fitting, or possibly part of a fifth wheel or shaft base assembly for a wagon. The large 170mm and 155mm bolts leave gaps of 105mm and 88mm for the wood to which the iron was attached. The bolts are secured by 56mm square washers and 34mm square nuts.

A ring headed bolt (Cat. #31) 640mm long and 22mm diameter is bolted to a plate 15x55x108mm. The plate is oriented with its long axis parallel to the width of the head. The lower edge of the ring is broad and flat. It lies at 550mm from distal plate and 55mm wide. The ring is 40mm i/d, 70mm o/d, and 77mm tall from its flat base. This component would be to mount the stout ring either on a timber 550mm thick, or onto a group of timbers with that overall thickness.

Five wrought iron plates (Cat. #32-36) were intended to be mounted on wood, using either nails or screws (or a combination). Several of these bear holes, and the purpose of these may have been to protect the surface of timber where an iron bar or rod passed through it.

A mount (Cat. #37) of 290x100x25mm, thickening to 48mm for central170mm, contains two holes of 34mm and 20mm diameter with their centres 112mm from either end. The smaller hole is threaded, the larger possibly so. The mount was fastened by two 400mm bolts, passing through the thinner end sections of the mount, with70mm square 14mm thick nuts, spaced at 340mm from the mount. This mount would have permitted the bolting of 20 and 34mm bolts to a timber of between 340 and 390mm thickness.

A sub semi-circular mount (Cat #38) 60mm deep, 150mm wide, 15mm thick and150mm long, bears an internal nut 50mm nut with 25mm hole. The mount was

attached to the circular timber into which it was inlaid by, two very large internal mounting screws, of which up to 70mm length is preserved. This mount would have permitted the bolt of a 25mm thread into a timber of approximately 145mm diameter.

Several wrought iron bars have a similar shape, being folded up through 18mm at one end, and having the rounded opposite end pierced by a 25mm diameter hole. One of these bars (Cat. #39) is 605mm long with a 60x12mm section, the other two (Cat. #40, 41) are smaller, 340mm long with a 50x9mm section. These two smaller bars are linked in having the remains of a long bolt (Cat. #42), mostly of 17mm square section but becoming round at fracture. The head of the bolt is 35mm square.

A 460x40mm bar (Cat. #43) was upturned to 33 mm at one end with the upturned section pierced by a 20mm diameter hole. At the other end an apparently welded-on rod of 15mm diameter forms the remains of a short curving spike. The main section of bar is pierced by two corroded large-diameter rivets or bolts.

An unusual 155mm long bolt with hex nut and washer on 50mm round section then 30mm of 17mm square section, has corkscrew-like tapering 'tail'-like spike (probably formed by winding around a 20mm core).

Miscellaneous

A 12mm round bar forged into double hooked object (Cat. #45), 170mm wide, 70mm long, each hook 50mm external diameter, and with the hooks aligned at approximately 80 degrees to each another, is of unknown purpose (although use a form of chain carrier in a harness might be a possibility).

Fastenings

A round, threaded, bar (Cat. #46) 520mm long, is highly corroded so the original section unknown. It bears a square nut on one end, and a disc c.45mm diameter and 12mm thick the other.

A pair of very heavy bolts (Cat. #47,48) are 400mm long and c33mm diameter, with a 54mm square head, 30mm thick. They are secured with 52mm a/f hex nuts 33mm thick.

A simple staple (Cat. #49) is 130x75mm overall, fashioned in 11-12mm round rod, narrowing to 8mm wide flat spikes (perpendicular to plane of staple) each side.

An isolated ad broken bolt shank (Cat. #50) was 340mm length and 15mm diameter. The distal 80mm was threaded and bent.

A dog spike (Cat. #51) was 405mm long, 14mm diameter with the top squared and bent perpendicularly to a width of 38mm.

A ring-headed spike (Cat. #52) was 210mm long in 8mm rod with a ring-head of 38mm external diameter closed with an abutted join not welded closed.

Raw bars and indeterminate fragments

There are five fragments of wrought iron bars with on additional features (Cat. #54-57), three fragments of iron strapping (Cat. #58-60), including one riveted overlapping join and one riveted join of sections oriented perpendicularly and one corroded mass of iron rods (Cat. #61) about which little further can be determined.

Copper alloy mount – oil lamp?

A copper alloy (brass) sheet of broadly hemispherical form of c.135mm diameter (but folded), and 40mm tall originally, bears an embossed pattern of six artichoke- or pine cone-like bracts with tapering central rib. The base has a 25mm diameter embossed groove c3mm deep within which it may have been flat; the upper margin has a groove of 4mm wide bounded by the rolled rim. There are corroded holes in the sheet, but apparently no original perforations. This is tentatively identified as the lower section of an oil lamp, probably surmounted by a glass oil reservoir that may have continued the bract design upwards.

Discussion

The assemblage is unstratified, but is reasonably coherent. Twenty seven pieces out of the sixty one derive from horse-drawn haulage and agricultural equipment; other pieces may also derive from similar uses. There is very little that might certainly be interpreted as structural ironwork associated with the stables buildings, although there are a number of iron fittings for woodwork of uncertain origin.

The dating assemblage is slightly difficult, if indeed the assemblage should be taken as a coherent whole. The wheel strakes are an element that went out of use rapidly in the mid-19th century, although there are rare known occurrences of strakes being used in wheel construction well into the early 20th century. The presence of a leaf spring of a substantial size (and therefore probably from the suspension of a cart or wagon, rather than a sprung mount for the driver's seat) would be suggestive of a date in the 1880s or later (when springs were introduced to wagon designs). The mower blades have not been identified to a particular manufacturer – and thus at present merely indicate a date in the century after 1830. The associated metalworking residues (Young 2014) date to the period of Cyfarthfa Steelworks (1882-1919) and there is little here to indicate that the metalwork assemblage does not from within that same period.

The metalwork assemblage, with its horse- and haulage-related items is directly related to the use of the stables; it provides a reminder of the important role that horses played in the overall Cyfarthfa operation, even very late in the life of the works.

The assemblage includes some interesting pieces which are worthy of deposition with the site archive in a suitable repository capable of caring for corroded ironwork.

References

YOUNG, T.P. 2014. Steelmaking ceramics and other archaeometallurgical residues, Cyfarthfa Ironworks Stables, Merthyr Tydfil. *GeoArch Report 2014-25*. 4pp.

Table 1: Summary catalogue of metalwork from the Cyfarthfa Ironworks Stables site.

Cat #	Notes
	Components of wagon(s)
1	thin wrought iron plate, 875x90x4mm, probably from rear of wagon, with two bifurcated wrought iron bolster stakes 620mm long and rear wheel chains. Each pair of rear wheel chains, comprises a short length of long links with a circular ring and terminal hook, and a longer (720mm) length of double link chain (rope chain) who two terminal links, the two lengths together 'dog and loop' fastening.
2	bolster stake, 650mm long, one end 18mm diameter has nut and round washer, then 130mm gap to a slightly displaced washer at the change of section to 22/24mm round; other end has similar nut and small round washer, but has major step 140mm from end (120mm gap) where flattened out triangularly to one side
3	under shaft 'D':
4	wheel strake: subtends 60°, 600mm radius
5	wheel strake: subtends 60°, 770mm radius.
6	wheel edging?:320mmx23mmx8mm gently curved bar with 4 nails, curvature equivalent to radium to centre of approximately 750mm.
7	leaf spring: 1200mm long, one scroll missing (approximately 100mm missing), four nuts and bolts pass through and secure what was probably a second plate, now remnants dish outwards around each bolt on opposite side to scroll, 70mmx12mm section.
8	hinge, 500x65x12mm, curved distal end, Fastened by two nuts and bolts to timber 65mm thick, hinge plate slightly curved into hinge, which is formed by folding and welding the outer sections. The central gap carries a tapered ringed bolt, the whole fastened by cotter bolt with split pin. The ringed bolt is 110mm long with a square nut and 50mm square washer.
	Components of agricultural implements
9	blade from a sickle mower, with cast iron mounting and terminal wheeled skid.
10	blade from a sickle mower, with cast iron mounting and terminal wheeled skid
11	fragment (300mm x 110mm) of cast iron implement seat, 7mm at thickest
12	steel drive chain: steel roller chain with 75mm (3 inch) between pin centres, fastened with hollow pins; 12mm thick central washer making links 35mm thick overall , 113x50mm subtriangular catch plates with 35mm central washer .whole contains three links then a link with plates, followed by five link, then another link with plates, followed by a further two links. Links with catchplates carry three bolts to secure the plates to the chain and space them at the outside.
13	380mm long timber strapping, formed of 50x9mm section bar; 110mm gap between long sides; secured with three bolts, 175mm long with 30mm square heads and nuts
	Horse Equipment
14	curry comb: 100x120mm iron plate, turned up at edges 12mm high, with 3 channel pieces to give 8 longitudinal serrated edges; serrations spaced at around 3mm and 2mm tall; has wire though holes each side 70mm apart wire; c3.5mm diameter; one long face has two rounded (copper alloy?) mounts extending out15mm with hole and two internal rivets?
15	hame:
16	hame:
17	horseshoe: 170x152mm (lxw), 30mm at widest10 thick, slight toe clip at front, caulks at rear, rounded base
18	horseshoe: 126x125 mm (lxw), 18mm at widest, 7mm thick, thin toe clip, basal groove
19	horseshoe: 150x142 mm (lxw), 28mm at widest, narrows to 6mm and rises to 22mm on left side, rear caulk on right
20	horseshoe: 145x158 mm (lxw), 30mm widest, narrows to 12mm on left but stays standard thickness, slight toe clip, rounded base
21	horseshoe: 148x177 mm (lxw), 28mm widest, front missing, broad rear caulks
22	horseshoe: 160x180 mm (lxw), 28 wide 10mm thick, constant, big triangular toe clip, no caulks, slightly rounded base,
23	horseshoe: 140x136, mm (lxw), max 28, 12mm thick, tall toe clip, 14x15mm rear caulks, rounded base,
24	horseshoe: 140x146 mm (lxw), slightly keyhole shaped, 28 narrowing to 10 at rear, tall toe clip, no caulks rounded base slightly
25	horseshoe: 152x142 mm (lxw), 28mm max, narrows backwards, small toe clip, basal groove, slight basal curve in front
26	horseshoe: 156x160 mm (lxw), 28mm, 10mm thick, toe clip, mainly flat base
27	horseshoe: 150x150 mm (lxw), 30mm max, very wide toe clip, 22mm square rear caulks, mainly flat some rounding towards front

Cat #	Notes
	Metallurgical items
28	ladle: 495mm diameter at rim, 300mm tall, two surviving pegs at 110° extend 100mm out, 55mm diameter at base, 30mm diameter at rounded tip. Base of ladle rounded. Traces of mortar inside may be fragments of lining, but may alternatively be corroded-on building debris.
	Fittings for use on timber
29	staple: 380x140mm overall in 18mm rod, tips flattened and clenched at 125mm gap, bears 3 flattened hooks, 125x60mm, outer ones facing in, inner one across
30	quarter round bracing: 30mm diameter bar curved through approximate right angle with 300mm radius flattened at tips, perforated for bolts; 170mm and 155mm bolts for gaps of 105mm and 88mm, 56mm square washers and 34mm square nuts
31	ring headed bolt 640mm long 22 diameter bolted to plate 15x55x108mm; base of ring flat at 550mm from plate and 55mm wide; ring 40mm i/d, 70mm o/d, 77mm tall from flat base
32	wrought iron mounting plate, 460x84x12mm, with 12 mounting holes, many with remains of c. 3inch nails; central 14mm hole and 24mm holes near ends, not obviously threaded
33	wrought iron mounting plate, 230x150-100mm, 35mm square hole and at least 15 nail holes
34	wrought iron mounting plate, 50x112x9mm 17mm diameter central hole and two holes with screw and possible nail
35	wrought iron mounting bar, 305x33x6mm with two mounting holes in opposite corners
36	wrought iron mounting plate, 120x60x16mm; c17mm threaded hole, attached by four nails or screws
37	mount 290x100x25mm, thickens to 48mm for central170mm. Fastened by 400mm bolts with70mm square 14mm thick nuts; thick part has two holes 34mm and 20mm diameter with centres 112mm from either end
38	sub semi-circular mount: 60 deep, 150mm wide 15mm thick, 150mm long; internal 50mm nut with 25mm hole, two very large internal mounting screws up to 70mm preserved
39	60x12mm bar 605mm long; rounded end with 25mm round hole and 18mm upturn the other
40	50x9mm bar, 340mm long; rounded end with24mm hole, and 18mm upturn the other
41	50x9mm bar, 340mm long; rounded end with24mm hole, and 18mm upturn the other
42	two above linked by probable bolt 17mm square mostly, becoming round where broken 280mm from square head 35mm; no threading preserved.
43	460x40 bar upturned 33 mm one end with 20mm hole. Welded-on fragment of 15mm diameter curving spike one end;, 2 large diameter rivets or similar in main bar
44	155mm long bolt with hex nut and washer on 50mm round section then 30mm of 17mm square section, then spiral wound narrowing 'tail' around 20mm hole
	Miscellaneous
45	12mm round bar forged into double ring hooked object, 170mm wide, 70 long, each ring 50mm external diameter. The rings at approximately 80 degrees
	Fastenings
46	round threaded bar: 520mm long, original section unknown, square nut on one end, disc c.45mm diameter and 12mm thick the other
47	bolt: 400mm long, 54mm square head, 30mm thick, c33mm diameter 52mm a/f hex nut 33mm thick.
48	bolt: exactly as #47, but less well preserved.
49	staple; 130x75mm overall, fashioned in 11-12mm round rod, narrowing to 8mm wide flat spikes (perpendicular to plane of staple) each side
50	bolt shank: 340mm length of 15mm diameter bolt shank, distal 80mm threaded and bent
51	spike: 405mm long, 14mm diameter with top squared and bent perpendicularly to 38mm width
52	ring headed spike: 210mm long in 8mm rod with 38mm external diameter ring; abutted join not welded closed
	Raw bars and indeterminate fragments
53	bar: square bar 820mm long, 22mm section
54	bar: 420mm badly corroded bar - c20mm round probably
55	bar: 380x33x6mm bar

Cat #	Notes
56	bar: 830x25x9mm bar
57	bar: 950x60x20mm bar, bent
58	strapping: 50x2x275mm strip fragment
59	strapping: 130mm overlap of 47x2 strip with 2 rivets
60	strapping: 2 lengths of 35x3mm strip, each 500mm long approximately surviving, riveted at right angles
61	260mm long corroded mass of two rods?
	Copper alloy fitting
62	copper alloy oil lamp fragment? c.135mm diameter but folded, 40mm tall originally, embossed pattern of 6 artichoke- or pine cone-like bracts with tapering central rib; base has 25mm embossed groove c3mm deep; there are corroded holes, but no original perforations; upper margin margin has groove of 4mm wide with rolled rim

GeoArch

geoarchaeological, archaeometallurgical & geophysical investigations

Unit 6,
Western Industrial Estate,
Caerphilly,
CF83 1BQ

Office:	029 20881431
Mobile:	07802 413704
Fax:	08700 547366
E-Mail:	Tim.Young@GeoArch.co.uk
Web:	www.GeoArch.co.uk