

LUCERNA



THE ROMAN FINDS GROUP
NEWSLETTER

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Lucerna

Roman Finds Group Newsletter 23

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Editorial

This issue is very full, and I am extremely grateful to all the contributors for their hard work.

Writing equipment has been the subject of much study on the continent in recent years, and now a remarkable group of styli from Elms Farm, Heybridge (a site which has produced many exceptional small finds), has provided the stimulus for Hilary Major's typology of decorated styli in Britain.

There is a good crop of small articles, and a long contribution from Bavaria. Though this is a study of some unusual deposits in two late 6th-century graves, the piece has major implications reaching back into the Roman period. The paper is an object lesson in avoiding preconceptions, and examining pot contents carefully.

For your light relief and entertainment during a peaceful tea-break, this issue includes the first of what I hope will be a series of crosswords. 'Digger's' archaeological-historical crosswords have been a feature of 'Essex Past and Present' for some time, so apologies to Essex residents who may have long memories for clues and their answers!

Our new Meetings Co-ordinator, Ellen Swift, has been working overtime, arranging venues for this autumn and spring 2003, as well as completing arrangements for Segedunum this spring. If you would like to host a meeting, or have ideas for a topic, let her know. A booking form for Segedunum is included in this issue, and if you want to know the full programme, do contact Ellen by email, snail mail, or phone. Contact details on p 34.

Ellen would be grateful if you could find the time to fill in her questionnaire – also enclosed. She aims to present the findings at a conference at Durham, Promoting Roman finds in context and theory, in the autumn.

Richard Hobbs, our Secretary, will shortly be moving departments within the British Museum. He is leaving Portable Antiquities, where he made a tremendous contribution to the project, to go to Prehistoric and Early Europe, replacing Catherine Johns. She will be sadly missed, but may then have more time to write articles for Lucerna.

Nina Crummy

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Information for contributors

Post your contributions to Nina Crummy, 2 Hall Road, Copford, Colchester CO6 1BN, or email them to nina.crummy@ntlworld.com, Deadlines May 30th for inclusion in the July issue, and November 30th for the January issue.

Emailed text should be either a .txt, .rtf, or .doc file. Illustrations should preferably be simple line drawings or uncluttered photos. Emailed pictures should be .tif or .jpg files. Remember not to breach copyright law when sending illustrations.

Roman decorated iron styli

Manning (1985, 85) produced a basic typology of Roman iron styli which has been widely used, and is based principally on the degree of separation of the point and stem. All decorated styli were classed as type 4, a very broad and heterogeneous group. It is clear that the classification of decorated styli will bear refinement, and the following is a preliminary note on an attempt to group a number of published examples. Styli are the only class of Roman iron object which are regularly embellished with moulded bands and inlay in other metals, and consequently are potentially more closely datable than most other ironwork, particularly if different groups can be identified and dated. It is also difficult to imagine a village blacksmith making the more elaborately decorated styli, and they surely must have been a specialised product, produced at a limited number of workshops, and possibly an import from the continent.

The impetus for this study was the finding of a relatively large number of styli at Elms Farm, Heybridge, Essex. Thirty styli were found, all made of iron, of which thirteen were decorated in various ways. They include one of the most elaborately decorated examples from this country (fig 1, i). The site, which was excavated in 1993-95, and funded by English Heritage and Bovis Homes, was a Late Iron Age and Roman rural settlement, with a central temple (see Atkinson and Preston 1998 for an interim report). The Late Iron Age site seems to have been of some importance, but a slow decline appears to have set in by the second century. This is not the sort of site where one would expect to find large numbers of styli, especially the more elaborately decorated ones, which must have been valued (and valuable?) possessions. The reason for the presence of so many styli at a relatively low status site is not, however, considered here. I do, however, think it is unlikely that they were being made on the site.

CONSTRAINTS ON THE STUDY

Iron styli of any kind may be difficult to recognise, as they tend to resemble nails when covered in concretion. Any decoration is usually hidden by corrosion, and its recognition is dependent on identification

from X-rays. None of the decorated styli from Elms Farm were recognised as such prior to X-ray. Few reports specifically mention X-rays, particularly older finds publications, and in some reports the objects have obviously been drawn without the use of X-rays, implying that decorated styli may have been missed during cataloguing. Published drawings of styli are often unsatisfactory, since they are usually at 1:2 (the normal reduction for ironwork), making it difficult to see the details of the decoration. The text doesn't always clarify the drawing - it may, for example, mention inlaid bands, but not how many. Without seeing the original objects, some styli can only be provisionally grouped. However, given the tendency of ironwork to disintegrate during storage, I suspect that not all decorated styli survive, particularly those from older excavations.

THE RANGE OF DECORATIVE TECHNIQUES EMPLOYED

The styli from Elms Farm employed a variety of decorative techniques which incorporate most of the repertoire found on styli. They fall into three main groups: moulded bands, incised decoration, and applied non-ferrous metals. There is also rare use of stamped decoration.

The moulded bands (the term 'moulded' does not here imply casting) can take various forms, from simple beading to polygonal sectioned bands (stylus handles are normally circular in section). Three of the Elms Farm styli had bands with polygonal sections, some with non-ferrous applied bands, a feature which has been rarely recognised elsewhere. It is not something which can be easily seen on X-rays, and can in most cases only be identified during cleaning. It was therefore probably more widely used than is evident from the published examples.

Incised decoration most commonly takes the form of one or more circumferential grooves. Other incised decoration includes spiral grooves, fine rilling, cross-hatching, and oblique lines. Grooves may originally have contained non-ferrous inlay, so it is, perhaps, misleading to differentiate between examples with inlaid grooves and those with grooves but no inlay.

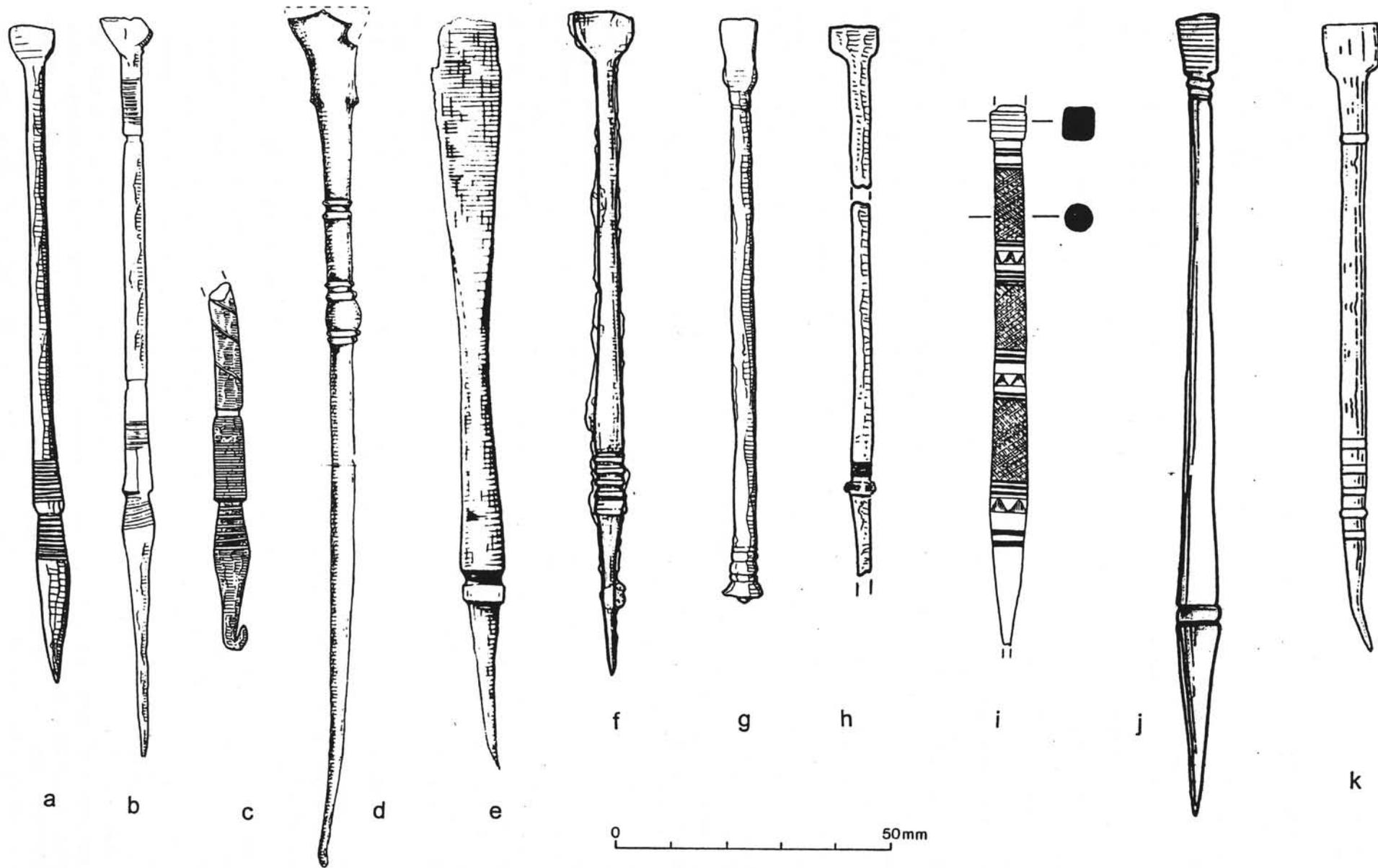


Fig. 1 Group 1 a) Gestingthorpe b) Caister-on-Sea c) Elms Farm; Group 2 d) Harlow; Group 3 e) London; Group 4 f) Verulamium; Group 5 g) Gestingthorpe; Group 6 h) Elms Farm; Group 7 i) Elms Farm j) Gorhambury; Group 8 k) London, St. Magnus House.

Applied non-ferrous metals were most commonly in the form of wire, or narrow strips, set into a groove. The applied metals from the Elms Farm styli were analysed, and proved to be exclusively brass. Virtually all known examples are described as 'copper alloy', the exception being one from Brancaster which has both brass strips and silver lattice (Group 5; Sparey Green and Hinchliffe 1985, 53, no 77).

THE GROUPS

The groups are based on a sample of seventy-six styli, from thirty-four sites. The sample includes four styli which I consider to be dubious, and sixteen styli which were not grouped, either due to incompleteness or lack of similar styli. Eight groups were tentatively identified (and may yet be subject to change!), based on the form of the stylus, and the style of decoration. The criteria used for the form were the method of separation of the point and handle (as with Manning's typology), the general shape of the handle (i.e. straight or bulbous), and, to some extent, the shape of the eraser. Unfortunately, the erasers are often damaged or missing, so although I consider that the eraser shape may be relevant (and is one of the particular features of Group 2), it has generally been afforded less importance in this scheme than other features.

It should be emphasised that, on the whole, the groupings are rather loose, and do not necessarily imply that the styli are contemporary, or were made in the same place. In a few cases, however, styli from different sites are similar enough to suggest that they did come from the same workshop.

GROUP 1 (Fig 1, a-c)

This is the most coherent group, linked by the unusual form of the point, which is strongly separated from the handle, and bulbous. The erasers are semi-circular or straight-sided where present. Five examples were identified, including two from Elms Farm; the others are from Caister-on-Sea (Darling 1993, 101, no 422), Gestingthorpe (Manning 1985a, 51, no 200) and Magiovinium (Neal 1987, 52, no 106). Three of the examples are similar enough to strongly suggest that they are the products of the same workshop (Fig 1a-c; from Elms Farm, Caister-on-Sea, and Gestingthorpe). The only securely dated example is early

Roman (Elms Farm). The bulbous point is also present on a stylus from London with a copper alloy handle and iron point (Manning 1985, N25). The handle is decorated with incised cross-hatching and polygonal sectioned panels. It is probably from the Walbrook, and therefore likely to be 1st to 2nd-century in date, supporting an early Roman date for the type.

The decorative motifs present include rilling, spiral and circumferential grooves, sometimes inlaid with wire, moulded beads, polygonal-sectioned bands and moulded decoration.

GROUP 2 (Fig 1, d)

Styli of group 2 are characterised by the shape of the eraser, and the style and positioning of the decoration. The eraser is waisted, and the decoration consists almost exclusively of low beaded elements with flanking grooves or slight ridges. Six examples were identified, from Bancroft villa, Brough-on-Humber, Harlow, Lullingstone and Richborough. Where datable, they are from Late Roman contexts. Waisted erasers are probably a late Roman form.

GROUP 3 (Fig 1, e)

The three definite and one probable member of this group are typified by their long, slightly splayed erasers, and single reels at the base of the handle. The three definite examples are all in the British Museum, and were seen by Manning as a distinct group, his type 4a (Manning 1985, N28-N30). The probable example is from Baldock, and is slenderer, with a shorter splayed eraser. The reel is present, but not flanked by a groove. One of the incomplete Elms Farm styli probably had a splayed eraser, and could belong to this group. None of the examples is dated.

GROUP 4 (Fig 1, f)

This group features semi-circular erasers, with a handle that tends to swell slightly towards the point, but not invariably. There is slight separation of the point and handle. The decoration consists principally of grooves at the junction of the point and handle, sometimes with similar decoration below the eraser. The grooves are sometimes inlaid with non-ferrous bands. Eight examples were identified, five of which came from dated contexts (although only one was

closely dated), and a 3rd-century date seems likely for most of the group. Although they are not similar enough to suggest a common source for all of them, most are from East Anglia/Herts, including three from various sites in Verulamium, which suggests that they are an eastern type, even if not all from the same workshop.

GROUP 5 (Fig 1, g)

This is a somewhat disparate group in terms of decoration and eraser shape, but all have distinctly differentiated points. The junction between the handle and point is sharply defined, with the point forming a spike set in the middle of the end of the cylindrical handle, which is sometimes slightly flared at the point end. The decorative techniques used are variable, including polygonal-sectioned bands on one example from London, and circumferential grooves, sometimes inlaid. The group includes the above mentioned stylus from Brancaster, with a silver lattice inlay. It is unlikely that the group is the product of a single workshop. Dating ranges from early 3rd to 4th century, with one example from Maiden Castle (Wheeler 1943, 286, no 2) exhibiting the waisted eraser typical of group 2, and of possible 4th century date.

GROUP 6 (Fig 1, h)

The members of this group, while somewhat similar to Group 4, have parallel-sided erasers, and a copper alloy bead (or a moulded iron bead inlaid with copper alloy) between the handle and point. Copper alloy bands are present on the handles. Only four examples were identified, two from Aldborough (Bishop 1996, 34, nos 195 and 197) and two from Elms Farm, one of which is very similar to the Aldborough styli. The second is rather more elaborate, incorporating a polygonal-sectioned panel and crimping on the bead, and is possibly not a member of this group. Both the Elms Farm styli are from dated contexts: the one (fig 1, h) more closely resembling the Aldborough styli is late 4th century, whereas the more elaborate example is from an early Roman context.

GROUP 7 (Fig 1, i-j)

This group, of which there were nine examples, has a swelling at the junction between the handle and point, more pronounced on some examples than others,

with an undifferentiated point. It includes the most elaborately decorated stylus from Elms Farm, which has the handle entirely covered in decorative elements. Most, however, have simple decoration consisting of circumferential grooves, often round the thickest part of the handle (*ie* at the junction of the handle and point). Five are from dated contexts, from the second to 4th century, and there are possibly at least two sub-groups represented, mid-Roman and late Roman.

The Elms Farm stylus (Fig 1, i) is an exceptional piece of craftsmanship, though now in poor condition, and cracked, with the eraser missing. The decoration consists of bands of applied circumferential brass strips; three moulded polygonal-sectioned segments with triangular facets pointing alternately up and down, with an applied strip of brass round each segment; and three panels of applied lattice made from very thin brass strips. It is unclear whether the lattice was made up before application to the stylus, or whether it was laid strip-by-strip directly onto the iron. It came from a pit fill dated to the mid 2nd to mid 3rd century.

Group 8 (Fig 1, k)

The group has straight sided erasers, slender handles and undifferentiated points. The decoration is simple in all cases, consisting of one or more grooves and/or inlaid bands. Nine examples were identified, plus two possible examples. Of the five dated examples, four are from 2nd-century, or possibly 2nd-century, contexts.

To conclude, this preliminary look at the grouping of decorated styli has already produced some evidence for the existence of workshops producing a particular style of stylus (*eg* Group 1), and for a restricted date range for some types (*eg* Group 2). It would be interesting to compare the range of decorative technique and forms with those found on the continent. Are the very elaborately decorated styli such as Fig 1, i continental imports? If anyone knows of any parallels in Britain or abroad for this exceptional stylus (or any of the other styli) I would be very grateful if you could contact me.

Hilary Major
Essex County Council Field Archaeology Group
Fairfield Court,
Fairfield Road
Braintree CM7 3YQ
hilary.major@essexcc.gov.uk

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WAX SPATULA HANDLE FROM YORKSHIRE

On the Portable Antiquities Database there is an entry for a metal-detector find from Beadlam, near Helmsley, in North Yorkshire. Though described as a knife-handle in the form of a helmeted bust of Mars, the object has been so clearly described that it can readily be identified as the ninth Minerva bust wax spatula handle from Britain: 'In form of a helmeted bust with rounded shoulders. The head is rounded, while the body and slot are flat, apart from a heart-shaped decoration on the breast. The face is worn, the nose completely eroded, with one eye visible. At the bottom, there is a slot to take a blade. Length 45 mm.'

Unfortunately, no image was made of the Helmsley handle when it was reported, though its description matches the handles illustrated here perfectly and it is also the right size. The heart-shaped decoration is the *aegis* worn by Minerva and instantly identifies this image as that of the goddess rather than Mars, as originally supposed on the database.

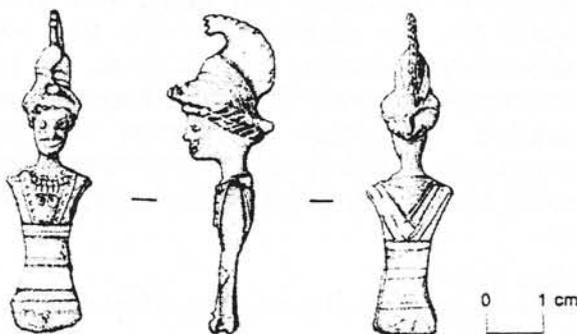


Fig 1: A5 handle from the Vicars Farm site, Cambridge. Drawing by Andrew Hall. Copyright Cambridge University Archaeological Unit.

The late George Boon suggested that these Minerva bust handles were from razors (1991, 30-2), but recent work has shown that they, and other related handles described by Boon, are from spatulae used to smooth over sections, or whole pages, of writing on wax tablets. Wax spatulae have been the subject of considerable study on the continent over the past few years, with three main forms, A-C, identified by Michel Feugère (1995). Type B splits into two subtypes, and type A into five, of which those with Minerva bust handles form subtype A5 (Fig 3).

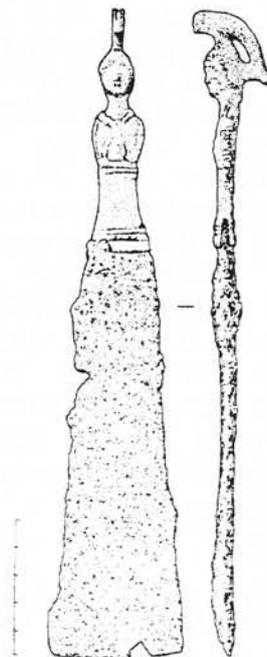


Fig 2. Complete A5 wax spatula from Ospringe, after Whiting 1923. Copyright M Feugère. Scale in cms.

Feugère's initial research produced a list of eight examples of variant A5 from Britain (1995, 326). Unfortunately, one was a duplicate. (I am grateful to Jenny Hall for clearing this up.) To the remaining seven can be added a recent find from Cambridge (Fig 1), and now the Helmsley example. (A Minerva bust from Cheshire, cited in Jackson & Potter 1996 as a parallel to the handle from Stonea, is of unusually thin curved section and more likely to be an appliqué.)

The revised British list is as follows:

1. Kenchester, Herefordshire. Boon 1991, 31, fig 4, h; Feugère 1995, 326, no 1.
2. Kingscote, Gloucestershire. Henig & Paddock 1993, 89, fig 3, 9; Feugère 1995, 326, no 2, fig 4, a.
3. Woodeaton, Oxfordshire. Kirk 1949, 40, no 2, pl 4, F; Pitts 1979, 96-7, pl 213, 218; Boon 1991, fig 4, j; Feugère 1995, 326, no 3, fig 4, b. (There may be a second from Woodeaton: Kirk 1949, pl 4, E; Pitts 1979, pl 23, 217; Boon 1991, 32, footnote 76.)
4. Silchester, Hampshire. Toynbee 1964, 81; Pitts 1979, 97, no 219, pl 28; Feugère 1995, 326, no 4, fig 4, c.

5. Museum of London 12846, accessioned 1932, acquired earlier, provenance unknown. Lindgren 1978, 96, pl 68; Pitts 1979, 96, no 215; Feugère 1995, 326, no 6 (and duplicated as no 5, fig 4, d).

6. Ospringe, Kent. Whiting 1923, 66, pl opposite 65; Whiting *et al* 1931, pl 55, bottom; Dunning 1958, 16, pl 3; Boon 1991, 30, fig 4, g; Feugère 1995, 326, no 7, fig 2, a. Here Fig 2.

7. Stonea Grange, Cambridgeshire. Potter & Jackson 1982, fig 3, 4; Jackson & Potter 1996, fig 112, 95; Feugère 1995, 326, no 8, fig 4, e.

8. Cambridge, Cambridgeshire. Crummy 2001. Here Fig 1.

9. Helmsley, Beadlam, North Yorkshire. Portable Antiquities Scheme: Finds ID yorymm404.

In Britain the best-preserved A5 spatula, its iron blade intact apart from some damage along the edges, came from a grave at Ospringe, Kent (Fig 2). Others from graves on the continent have been found with inkwells and other writing equipment, such as styli, and it is probable that at least some of the graves also originally contained writing tablets, long since decayed. The dating evidence suggests that A5 handles belong to

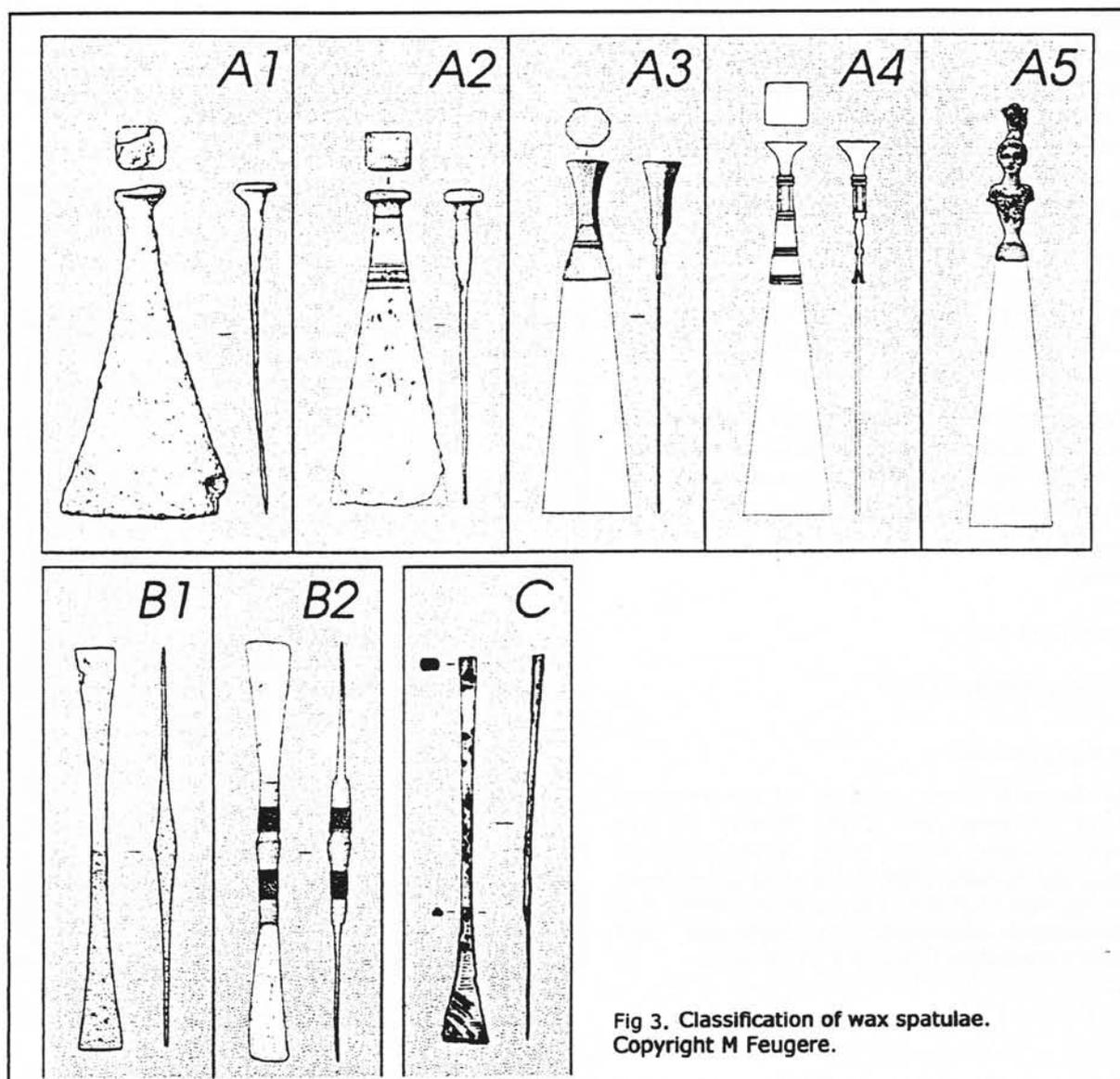


Fig 3. Classification of wax spatulae. Copyright M Feugere.

the 2nd century, perhaps running into the early 3rd century.

The Yorkshire A5 handle is the most northerly known in Britain, and it may be associated with the occupation of the villa at Beadlam. The other examples are scattered across the south, from London (probably), Cambridge and Stonea Grange in the east to Kingscote and Kenchester in the west. The number from Britain compares to one each from Holland, Austria, Hungary, Italy, Portugal, Romania and Morocco, four from Belgium, eight from France, and ten from Germany (Feugère 1995, 326-331).

Complete spatulas such as that from Ospringe are evidence for literacy, and the use of the image of Minerva on a writing utensil points to her function as goddess of learning. There is, however, a sub-text to these handles. Detached from its iron blade, the handle may take on an independent life as an image of the goddess in any of her aspects, of which perhaps the most important may be as goddess of the healing arts, the Roman Minerva Medica, or in Britain perhaps conflated with a local goddess, eg Sulis Minerva at Bath. The two Minerva bust handles (probably only one from a wax spatula) found at the temple at Woodeaton were probably votive offerings, as may have been the Cambridge find, which came from a small settlement with monolithic post settings dating to the 3rd and 4th centuries.

I would be grateful if anyone recognising further examples of wax spatulae with a handle of any form, or spatula blades without a handle, would get in touch with me at the address below.

A bibliography of the continental material as well as the British can be found in Feugère 1995, while post-1994 references can also be found at on www.instrumentum.net.

Nina Crummy,
2 Hall Road,
Copford,
Colchester CO6 1BN
Essex
nina.crummy@ntlworld.com

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Richard Hobbs & Simon Holmes of the Portable Antiquities Scheme, and Craig Barclay of the Yorkshire Museum, helped track down details of the Helmsley handle. Michel Feugère generously allowed Figures 2 & 3 to be reprinted here, and the Cambridge University Archaeological Unit kindly gave permission for Fig 1 to be used.

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RFG Spring meeting at Segedunum Roman Fort

New museum, new displays

FINDS FROM THE ROMAN NORTH

topics include the displays at Segedunum, recent discoveries at Newstead, writing tablets, jet and shale, and brooches

**Monday 15th April
10.30 am to 4.00 pm**

Booking form enclosed with this issue

A gold amulet-pendant from Eaton Constantine, Shropshire

In July 2000, a small gold object was shown to Mike Stokes, of Rowley's House Museum, Shrewsbury, by its finder, Mr Niall Mennice. Mr Stokes immediately recognised it as a tubular Roman amulet-case pendant. The object was duly reported to the local Coroner as required by the 1996 Treasure Act, an inquest was held in December 2000, and the pendant was found to be treasure. It has since been acquired by Rowley's House Museum and the finder has received the appropriate reward.

The object is a simple cylindrical tube of gold designed to hang horizontally from its three suspension loops on a chain or ribbon. The circular plates closing the ends of the tube are very neatly soldered, as is the lengthwise join of the tube. There is no decoration other than the lightly reeded surfaces of the loops. The object has been damaged by crushing. Overall it is 2.5 cm in length, has a diameter of 6 mm, and weighs 4.4 grammes. The metal is of extremely high purity; semi-quantitative X-ray fluorescence analysis carried out in the Department of Scientific Research, British Museum, reveals a gold content of 99 per cent.



Gold amulet-case pendant from Eaton Constantine, Shropshire. Length 25 mm. Photo: British Museum

Tubular amulet-cases, often containing a magical inscription or a substance credited with supernatural power, have a very long history. In the Classical world, they occurred from Hellenistic to late-Antique times, but similar objects were also used in Middle Kingdom Egypt, in India, medieval Persia, and various Islamic and Jewish contexts up to post-medieval times – and, no doubt, many other times and places. The idea of wearing an item of jewellery that contains

something of power or of special significance to the wearer is still current in the wearing of lockets enclosing a picture or other memento (eg a lock of hair). The Graeco-Roman amulet-case combines that concept with the age-old protective power of a religious symbol, the modern equivalents of which include crucifixes, Stars of David, and the like. A Romano-Egyptian portrait of the late second century which shows a young boy wearing a gold amulet-case on a plaited leather necklace is illustrated in the catalogue *Ancient Faces* (Walker and Bierbrier 1997, no 94)

There is a late-Roman gold amulet-case in the Thetford treasure, deposited at the end of the fourth century AD or the beginning of the fifth (Johns & Potter, 1983, no 30), and the catalogue discussion includes a full survey of the type, including a wide selection of parallels. An earlier, but still valuable, discussion is to be found in the catalogue of the Ténès, Algeria, treasure (early 5th century AD) (Heurgon 1958, 57-9). As far as I am aware, until the discovery of the Eaton Constantine pendant, the Thetford example and one from York (MacGregor 1976, fig 8, 72) were the only specimens recorded from Britain.

In the absence of any association or contextual information, close dating of the Eaton Constantine amulet is difficult. There is no decoration to provide stylistic evidence pointing to earlier or later Roman taste, but the relatively small size of the object may in itself hint at an early Roman or Middle Empire date rather than one in the fourth century. Unfortunately, none of the small, decorated examples appears to have any archaeological context, but several of the larger specimens do have associations dating them to the third century and later, possibly suggesting some rudimentary typological progression based on size. Barbara Deppert-Lippitz assigns a late Hellenistic date to a very small (13 mm) amulet-pendant with granulated ornament (Deppert-Lippitz 1985, no 35), though on stylistic considerations alone. The Thetford amulet is nearly 40 mm long, and some other examples from hoards of the 3rd-5th centuries AD elsewhere in the Roman Empire are considerably larger. One of the two in the Ténès treasure (Heurgon

1958, Pl V, no 5) has a length of 72 mm and weighs 20 g.

The finder of the Eaton Constantine pendant and his associate also showed Mr Stokes other Roman objects found in the same general area (within a 50 m radius of the findspot), and these, including a *sestertius* and a dolphin-type fibula, were predominantly 1st-to-2nd-century objects. On this evidence, a date in the 2nd century might be tentatively suggested for the pendant. The high-purity gold is typical of good Roman jewellery at all times and has no chronological implication.

The Eaton Constantine gold amulet-case is an interesting item of Roman jewellery and it is a most unusual find from Britannia. The new Treasure Act and the Portable Antiquities Scheme have improved communication between metal-detectorists and local archaeologists and museum curators, and the fact that an important single item such as this one is now safely in a museum collection, where it will remain available for study, is a credit to all concerned.

Catherine Johns
 Dept of Prehistoric and Early Europe
 British Museum
 London

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Roman waterworks

Recent excavations at 30 Gresham Street in the City of London have proved particularly rewarding. Earlier this year, a gilded bronze arm, possibly from a life-size statue of the emperor Nero, was discovered thrown into a stagnant pond that had been filled by AD70. Now two examples of Roman water-lifting systems have been excavated that allowed water to be scooped up from the bottom of

deep wells in a continuous loop, known in the ancient world as a bucket chain.

In summer 2001, two large deep oak-lined wells were excavated, still waterlogged after nearly 2000 years. The first smaller well, constructed in AD63, had been in use for less than ten years when the superstructure of the well collapsed. A number of wooden containers were found at the bottom resting in a half-barrel, which may have acted as a sump. These would have been linked together to form a continuous bucket chain operated either by a human treadmill or animal powered. There are three relatively complete containers, hollowed from solid oak, with thin nailed lids and fragmentary remains of about nine others. A narrow slot had been cut into one side to allow each container to fill with water (each box only having a capacity of about two litres). The slots appear on opposing sides of the surviving examples, suggesting that one wheel had perhaps turned two bucket chains simultaneously. An oak roller, which may have been part of the gearing system, was also excavated from the well. This device clearly represents part of a new integrated system following the destruction of the town by Boudica in AD 60/61.

A remarkable collection of ironwork and charred wood was discovered in the second larger well, constructed in AD 108/9 and destroyed by fire some years later. It consisted of a series of sturdy angled iron bars and flat straps, linked by substantial pins, which once formed a continuous chain to hold about twenty buckets. The condition of the ironwork is unbelievable and some of the uncorroded links are still articulated. Fragmentary evidence from the buckets indicates that each was a rectangular box narrowing slightly at the opening. The iron chain would have revolved slowly around a drivewheel, powered by a human treadmill. The water supplied may have been for use at the Roman amphitheatre, just north of the site or at the small Cheapside baths, to the south, where a wooden container was also found during the 1955 excavations but not identified. Finds from this well included a large bronze cauldron, which had survived intact but dented, a complete Highgate pot, stamped roof tiles and complete box-flue tiles.

These are the most complete examples to be discovered outside the Mediterranean and seem to be the finest-preserved throughout the Roman world. Time Team are producing

a documentary about the site at Gresham Street which will be screened some time in the future. As a joint project between the Museum of London and Time Team, it is hoped that a full-scale working version will be built somewhere in the Museum next year - so watch this space!

Jenny Hall,
 Early London Dept,
 Museum of London,
 150 London Wall,
 London EC2Y 5HN
jhall@museumoflondon.org.uk

Bronze vessel from Middlewich

Recent excavations in Middlewich, on a site between King Street and the River Croco, have uncovered the backs of properties that would have fronted on to the line of King Street, the Roman road from Wilderspool to Sandbach. Apart from the Roman road itself, other remains were largely confined to pits and ditches but the high water table led to the survival of wattle-lined pits and a plank-lined well. Along with finds of an inscribed barrel lid and writing tablet, these are some of the best remains of Roman timber from Cheshire. The planking from the well gives a dendro date of AD 96-7.

Amongst the copper-alloy artefacts is the decorated base or *umbo* of a *patera* or *trulleus* which came from a fairly shallow, shapeless feature cut into the natural sand subsoil close to the Roman road.



Fig 1. The underside of the Middlewich vessel.

The vessel has been cast and lathe finished. The underside of the base has a footring, about 75 mm in diameter and 10 mm high, and pronounced moulded concentric rings (Fig 1). In between the footring and the mouldings are two concentric circles, possibly compass marks.

The *umbo* is decorated with a rouletted border and the raised area is decorated with S-shaped 'tendrils' coming from a central point (Fig 2). There are four circles (?grapes) at the terminal of each tendril. There is a half-moon shape between each tendril which though not joined together, are on the line of a faintly-drawn circle, possibly another compass mark.

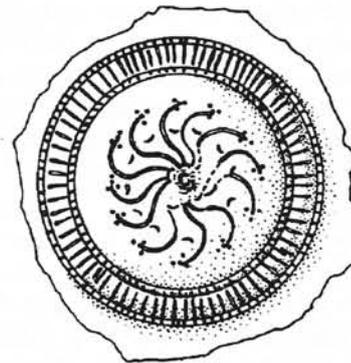


Fig 2. The decoration on the *umbo*. Scale 1:2 approx.

Although I have found many examples of similar vessels (Bishop and Coulston, 1993, fig 64; Boon 1961; Boon 1984; den Boesterd 1956), I have been unable to find a parallel for this style of decoration.

Gillian Dunn
 Chester Archaeology
 27 Grosvenor Street
 Chester
 CH1 2DD
g.dunn@chestercc.gov.uk

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Ivory folding-knife handle from Silchester

Excavations by Reading University at Silchester in 2000 produced a remarkable folding-knife with an ivory handle showing a pair of dogs mating. Traces of leather noted at conservation suggest it was stored in a leather pouch, or perhaps wrapped in a piece of leather. A conventionally-shaped scabbard would not have been used, as the knife was found with its blade closed. The object is described as shown in Fig 1, with the animals upright with heads to the right.

The animals are carved in a naturalistic style, set on a small platform, or ground and were intended to be viewed as shown in the illustration. Seen from the other side their faces are obscured. As often happens with animals carved to be viewed in profile, when seen face on they appear asymmetrical. Their fur is shown by incised straight and wavy lines that follow the contours of their bodies. Comparison with mating felines clearly shows that these animals are definitely dogs, as female cats lie on the ground during mating. Though it is difficult to be certain of breed and size, the dogs are neither tall long-limbed hunting hounds nor necessarily small lap-dogs. Though the possibility that this was a hunt scene was considered, the stances of the dogs are precisely those that would be assumed in life by a mating pair.



Fig 1. Ivory-handled knife from Silchester.

Behind the dogs the ivory is solid and elliptical in section, with an incised cross set at the base on the front side and a single

diagonal line at the rear. There is a distinctive extension in height closest to the dogs, an exact parallel for which can be seen on an ivory handle from Huttwil, Switzerland. The part of the handle closest to the blade is rebated and has two grooves around the circumference. This area was originally covered by a band of copper-alloy sheet, now almost completely disappeared. The blade is pivoted on a copper-alloy pin set through the lower side of this rebated area.

The iron blade is short and wide, with a straight edge. The back angles upwards slightly, then curves down to the tip. The edge of the blade slots into a central gap in the platform. When open it would lie in a straight line with the underside of the platform, the angled back facing upwards. The blade form is similar to that of many clasp-knives, but is particularly closely matched on one from Vicques, Switzerland.

Boon identified small folding-knives like this one as toilet knives, but the possibility remains that they may be razors. The short blade and the angled back would allow the thumb to control the blade quite precisely.

The image of a solitary dog is often shown on the handles of folding-knives, both metal and bone or ivory, and another well-known scene is that of a hound chasing a hare. Another hunt scene shows a panther springing upon a deer. Other handles show erotic scenes between humans, both couples and threesomes. The Silchester knife combines these two themes in an image that must have been intended to be erotic, though, being two domestic animals of the same species, the scene must have been one commonly viewed in everyday life, and so the eroticism is perhaps not as powerful as if coupling between a human and an animal were depicted, or two animals of different species.

Silchester, of course, has many dog burials, either whole or partial, and the pit the handle came from also contained two complete dog skeletons. The handle, in this context, takes on a religious aspect which subdues or subverts its erotic message to one of procreation and therefore the triumph of life over death.

The pit is cut by the foundations of a late 3rd century Roman building, and contained late

2nd to early/mid 3rd century pottery (c 175/200-225/50). Further evidence of a ritual aspect to the deposit came from two sherds, probably both from a single jar, which had both been perforated twice. Pierced sherds and vessels, as well as dogs, are a feature of Silchester's 'religious' life.

Hella Eckardt
School of Archaeology &
Ancient History
University of Leicester
Leicester LE1 7RH
he8@le.ac.uk

Nina Crummy
2 Hall Road
Copford
Colchester CO6 1BN
Essex
nina.crummy@ntrlworld.com

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C Smith 1908 *A guide to the exhibition illustrating Greek and Roman life*, fig 180

R E M Wheeler 1930 *London in Roman Times*, fig 19

protruding between the first and second fingers), more prophylactic than obscene. The particularity of this family is the existence of a circular central perforation, of a diameter which seems too large for the use of the object as a pendant. Amulets of this type exist in bronze, the most common category, but also in bone. In both cases, a simplified typology would arrange them into two classes: more or less horizontal, and curved or very curved.

Bone horizontal amulets, of which a good example was found at Colchester (Grep 1983, 139, fig 164, no 4258), seem to be slightly more frequent than the curved bone type, to which the two objects from London belong (Wardle 2001, 7, with figure). The rarity of the curved form is perhaps more apparent than real; the stylisation of the terminals is sometimes extreme, and a tendency to break does not facilitate its identification.

Here is a short list of the 'bidules' of this kind known to me. They keep their mystery as far as their precise use is concerned; the diameter of their central perforation suggests, as indicated by Mrs Wardle, that they were set on a pole or stove.

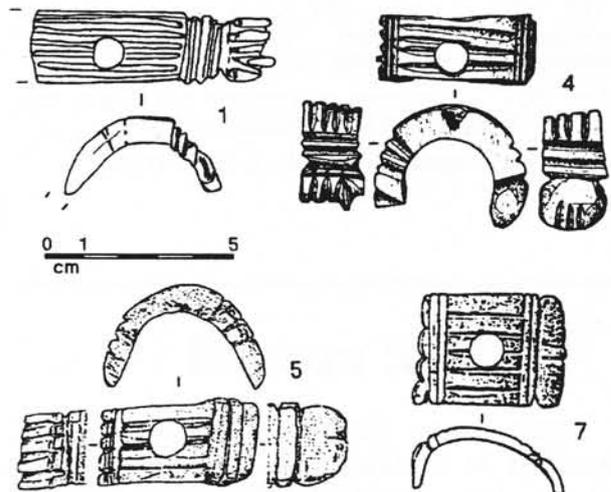


Fig 1: Bone curved amulets with phallic representations: 1, London; 4, Augsburg; 5, Baden; 7, Rosinos de Vidriales.

No more mystery?

Among the numerous series of amulets with phallic representations, a rare type shows a more or less schematic phallus on one end, and at the other a clenched fist with the well-known gesture of the 'fica' (the thumb

- 1 & 2. London (Wardle 2001) (here Fig 1, 1);
- 3. Oberstimm (Schönberger 1978; ASS München 1975.89), incomplete (phallic end broken);
- 4. Augsburg, Kornhausgasse 4, Claudius-Nero level (Bakker 1985, 103, fig 60, no 21), complete object (here Fig 1, 4);
- 5. Baden, Armee-Spital (Unz 1974, 88, fig 1, no 17), complete object (here Fig 1, 5);

6. Windisch (Unz 1973, fig 13, 161);

7. Rosinos de Vidriales (Zamora), camp of the Ala II Flavia, Claudian-early Flavian (Carretero Vaquero 1998-99, 66, fig 2, no 26); looking at the illustration, the object, seen from above and by profile, seems to lack its two extremities(?) (here Fig. 1, 7).

Pierre Abauzit,
13 Rue Simone Weil,
34500 Béziers,
France

Acknowledgments

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Box appeal

In 1998 and 1999 excavations were conducted at Grateley South, Hampshire as part of the Danebury Environs Roman Project. The excavation revealed an oval enclosure of 1st century BC-1st century AD date and several Roman buildings. Both Iron Age and Roman finds were recovered and include items of jewellery such as bracelets, finger rings and pins, and iron tools.

Of some interest are the remains of two boxes, one with iron fittings and the other with copper alloy. From a grave came a group of joiners dogs, double spiked loops, a loop-headed pin with ring and a lock plate, while from a pit were recovered a group of

rectangular and curving plates and studs. The studs are of tripartite construction with an iron shaft and domed copper alloy head filled with a white metal. This filling is currently being analysed by Dr Peter Northover of the Department of Materials, Oxford University. Of interest is the dentate decoration at the edge of the rectangular plates (Fig 1, opposite). A quick review of the literature has revealed little in the way of comparative decoration, and I would be very grateful to learn of any similar examples.

Emma Harrison
Institute of Archaeology
36 Beaumont Street
Oxford
emma.harrison@arch.ox.ac.uk

REVIEW

The Romano-British 'small town' at Wanborough, Wiltshire, by A S Anderson, J S Wachter & A P Fitzpatrick
Britannia Monograph 19, 2001 380 pp, 11 plates, 126 figs

This monograph presents the results of six seasons of excavation by three site directors at Wanborough, a small town on Ermin Street between Silchester and Cirencester. The excavations took place between 1966 and 1976, the earliest, by Ernest Greenfield and John Wachter, in response to threats from road building, the latest, by Scott Anderson, in advance of a flood water lagoon scheme.

Three main periods were detected, all divisible into phases. Period 1 dates to Nero-Vespasian, when Ermin Street was built, and a single wooden building. There are numerous brooches dating to this period, and indeed some pre-dating it, as well as the odd piece of military metalwork.

In the 2nd and early 3rd centuries (Period 2) the settlement took off, with numerous timber buildings constructed, and one with stone foundations. A *mansio*, picked up by aerial photographs, lies to the east of the excavated area, and may have been the nucleus of the settlement.

Period 3 dates from AD 230 to 400+, a time when several buildings with stone foundations (but probably timber superstructures) were erected both fronting onto Ermin Street and at some distance

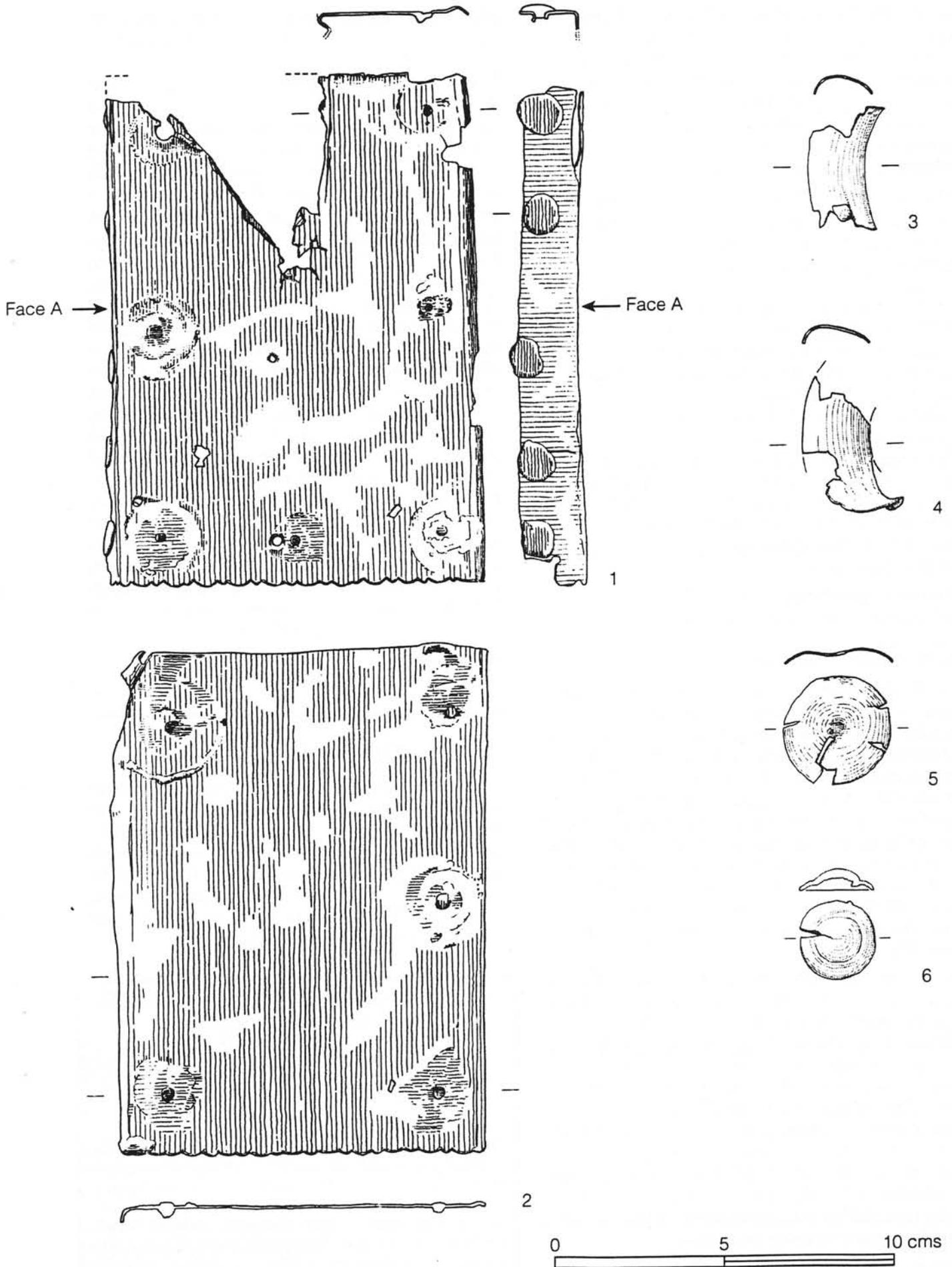


Fig 1. Box fittings from Grateley, Hampshire.

it. A few unusual timber-framed buildings had sleeper-beams laid directly on the ground, and some had joists resting on stones to lift the wooden superstructure above the ground. These buildings lay close to a stream and their designs may have been attempts to raise the floors above damp ground or flood-water level.

The report on the structures by period is brief, and the bulk of the volume consists of finds reports. The various sections of the pottery report take up about 130 pages, with useful illustrations of the forms/fabrics found in the individual period phases. There are 177 brooches, but this number includes many pins and pin fragments. Almost all are illustrated, including the latter, though the point of illustrating a fragment of a pin lacking each end eludes me. Most of the brooches date to the 1st and 2nd centuries, as is expected for southern British assemblages, but most were residual in late contexts or unstratified. This must sound a warning for the rest of the assemblage, and a similar pattern of dislocated deposition is apparent in the bone pins.

The coin graph has a strong finish in the late 4th century, and there are several pieces of late metalwork to go with this peak, such as buckles and strap-ends.

As is often the case with excavations spread over many years and producing large finds assemblages, some of the finds reports were submitted 17 years before the date of publication. In a few the subject matter is discussed in some detail and related to the context dates, others consist almost wholly of catalogue entries. It seems likely (and indeed typical) that the context details may not have been available to those who finished their reports early. This may account for the inclusion of an unstratified medieval thimble.

As well as brooches, the copper-alloy assemblage includes a fine array of toilet instruments, there is a neat little pewter hoard, and the iron objects include a wide range of metal- and woodworking tools, and, most unusually, 36 styli, of which only four are illustrated. An eraser end with bronze decoration is catalogued but not illustrated. This is proof positive of Hilary Major's comments on p 2 of this issue of the treatment of styli in finds reports, and is in odd contrast to the illustration of the ?brooch pin fragments mentioned above.

There is therefore some imbalance in presentation in this volume, but all in all this

will be a useful source to be mined for parallels, some of which may be stratified.

The real potential of the Wanborough report may not be realised until research is done into finds assemblages from small towns in general. As with Wilcote and Elms Farm, the Wanborough excavations were rich in metal finds, and it would be interesting to see if this is a real richness per cubic metre of soil shifted compared to an urban site. Given the number of 1st-century brooches and the comparative lack of contemporary contexts, it should be real. If so, does the reason lie in a lack of disturbance of the archaeological levels over the centuries, or was there a contemporary reason? As so many of the brooches were unstratified or residual, lack of disturbance is unlikely to be the answer (though it may be the nature of the disturbance). However, recent excavations at Silchester (urban but not reoccupied in the medieval period, and so perhaps a good touchstone for comparison with unreoccupied small towns) have turned up many unstratified and residual 1st-century brooches, but in nowhere near the numbers from Wanborough. A contemporary answer is perhaps then the most likely.

Nina Crummy

Questionnaire

Ellen Swift would be very interested to hear your views on careers in finds studies and perceptions of finds research in the archaeological community and would be very grateful if you would spare the time to fill in and return the questionnaire enclosed with this issue. Please pass it on to other finds specialists who might be interested.

Finds Research Group 700-1700

Monday 10th June
Colchester Castle Museum

Getting more for your money: coins for archaeologists

One-day conference aiming to provide non-numismatists with an overview of the information available from the study of Anglo-Saxon, medieval, and post-medieval coinage. Tokens and non-official issues also included. Details from: Philip Wise, Museum Resource Centre, 14 Ryegate Road, Colchester CO1 1YG. Email: philip.wise@colchester.gov.uk

Spindle, Whorl, Pot – a remarkable group of grave goods from Pfakofen, Lkr. Regensburg, Bavaria

In 1993 in Pfakofen, near dispersed prehistoric settlement traces, a row-grave cemetery of early medieval date was discovered. It had not previously been recognised through either earlier finds or aerial photograph surveys.¹ The find spot lies in tertiary hilly countryside, about 20 km south of Regensburg (Fig 1), on the northern edge of the village and about 250 m away from the local church, which documentary evidence of 1185 referred to as *ecclesiam phaphinchoven*.²

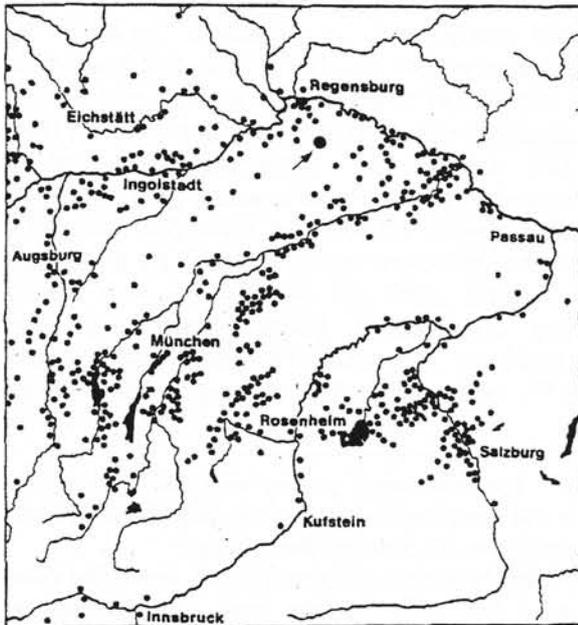


Fig 1. The arrow just below Regensburg points to Pfakofen.

The valley of the Grossen Laaber river is part of the early Bavarian settlement area, well-irrigated and with fertile loess soil. Pfakofen is also connected to the so-called Ochsenstrasse (Oxen-road), which lies at the foot of the slope along the right bank of the Grossen Laaber river. This ancient route has been equated with the road of the Nibelungen, which crossed the Donau at Pförring and, cutting off a loop in the river,

¹ First interim report: S. Codreanu-Windauer, Ein neu entdecktes Reihengräberfeld in Pfakofen, Arch. Jahr Bayern 1993, 121ff.

² J. Schmid, Die Urkunden-Regesten des Kollegiatstiftes U.L. Frau zur Alten Kapelle in Regensburg I (Regensburg 1911) 2

runs via Plattling to Straubing-Alburg, where it joins the alignment of the Roman road.³

The cemetery at Pfakofen was excavated between 1993-1996, and 515 graves were discovered. Two graves are particularly important and are briefly described here:

Grave 74 consisted of an adult female inhumation.⁴ The dead woman lay in a wooden coffin (Fig 2A). The skeleton had been disturbed by grave robbers from the upper arms to the upper thighs, so that few grave goods were in their original position. Of 55 beads, only eight, found on the inner side of the right arm, were still strung

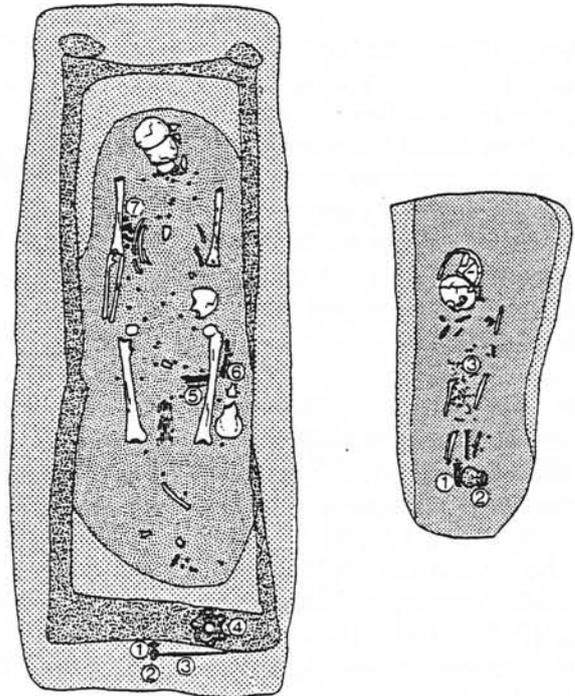


Fig 2. Plans of Grave 74 (A) and Grave 87 (B).

together (Fig 2A, 7), the rest were scattered in the robber pit. together with the remains of thin silver sheeting, fragments of bronze,

³ M. Roedig, Copien, Notizen und Arbeiten über Zaitkofen und Pfakofen. Das Fürstl. Thurn und Taxische Herrschaftsgericht in Niederbayern, Hist. Ver. Oberpfalz, MS. O 151; W. Torbrügge, Die Landschaften um Regensburg in vor- und frühgeschichtlicher Zeit, Regensburg-Kelheim-Straubing, Führer zu arch. Denkmälern in Deutschl. 5 (Stuttgart 1984) 36, 42 ff.

⁴ The anthropological report on the skeletal remains from the Pfakofen cemetery has yet to be published.

an iron buckle and a mussel shell. An iron knife on the left thigh was undisturbed (Fig 2A, 6), but a comb and comb-case may have been displaced by the robbers (Fig 2A, 5). Between the knees of the body lay, embedded in wooden fragments, small unrestorable bronze fragments with a tiny silver rivet. The most remarkable feature of the burial was the recovery of four objects which had probably originally been placed on top of the coffin at the foot end and so had been missed by the grave robbers. Lying close together were a ceramic biconical spindlewhorl, 20 mm long (Fig 3, 11), and a bone hemispherical spindlewhorl, 31 mm in diameter, decorated with fine rilling (Fig 3, 12). The latter was found on the blunt end of a bone spindle, 252 mm long, slightly thicker on the lower third, and terminating in a finely-worked hook (Fig 3, 13). Above the spindle was a small pottery vessel with sloping sides and six spouts set around a central opening, 65 mm in diameter.

Grave 87 consisted of an undisturbed inhumation of a young girl also lying in a wooden coffin. The burial contained a large amount of bead jewellery (Fig 2B, 3), which had been scattered over the whole area of the body. By the feet were a comb (Fig 2B, 1), a small cramp made from a strip of iron, 11 mm long, and a hand-made bag-shaped beaker with stamped decoration, 92 mm high (Fig 2B, 2).

Both these graves contained a large number of beads, which enable the two burials to be dated. Some of the 55 beads which remained in the adult female Grave 74 can be dated to the last third of the 6th century AD.⁵ They can be linked chronologically to Grave 27 at Basel-Bernerring, dated by coins to 560/570⁶; the dark blue beads with multicoloured trails suggest a later date of c AD 600.

Despite the damage done by the grave robbers, it is clear that the other furnishings in the adult female burial Grave 74 were of very high quality. This is shown by the recovery of the small fragments of silver sheeting (Fig 3, 2) and the silver rivet (Fig 3,

3).⁷ This is not the case for the young girl in Grave 87. Her undisturbed furnishings are certainly striking because of the large quantity of glass beads recovered, but all are of common mass-produced types.

The grave goods from the foot of Grave 74 are the most important, particularly the spindle (Fig 3, 13). Examples of wood, the most commonly-used material, do not usually survive, and bone examples are also rare. Therefore, in contrast to their relatively common whorls, spindles are not often found in row-grave cemeteries.⁸ Known examples range in length from 120 to 150 mm⁹, and taper smoothly to a point, with the thickest part (6-8 mm in diameter) lying near the centre. At 252 mm, the spindle from Pfakofen is much longer than other early medieval examples, and it also differs in having a hook at one end. That the find is a spindle and not a hooked needle is demonstrated by its shape (the thickest part is in the lower third of the shaft) and by its association with a whorl. The bone whorl (Fig 3, 12) found the spindle's end has a perforation 75 mm in diameter, and so could only be placed 70 mm up from the spindle's tip. Bone spindlewhorls, as well as biconical clay whorls such as Fig 3, 11, are often among the grave goods placed in the inhumations of adult females and young girls.¹⁰ Bone whorls of more or less

⁷ *ibid.* The other early graves, with the exception of Grave 314, contained brooches; the early Grave 314 and the later Grave 40 produced dress fittings.

⁸ Classified by Martin (Footnote 6), 90. From this came the new find of a spindle from the cemetery at Strasskirchen bei Straubing. We are grateful to H. Geisler for this information.

⁹ Sirmau Grave 63, length about 123 mm: R. Koch, *Katalog Esslingen*, Veröffentl. Staatl. Amt. f. Denkmalpflege Stuttgart A 14/II (Stuttgart 1969), 93, Taf 23, B1. Duggingen, 128 mm: *Jahrb. SGU* 49 (1962), 97, Abb 58. Zueteren, 149 mm: A. Dauber, 'Neue Funde der Völkerwanderungszeit aus Baden', *Bad. Fundber.* 21 (1958), 157 ff, taf 56, 5. Goldbach, 139 mm: B. Schmidt, *Die späte Völkerwanderungszeit in Mitteldeutschland*, Katalog (Südteil), Veröffentl. Landesmus. f. Vorgesch. Halle 25 (Berlin 1970), 63, Taf 59, k. 5). Münnerstadt, length 122 mm, or about 61 mm: R. Koch, *Bodenfunde der Völkerwanderungszeit aus dem Main-Tauber-Gebiet*. *Germ. Denkmäler Völkerwanderungszeit A 8* (Berlin 1967), 144, Taf 24, 4.

¹⁰ Overview in: U. Koch, *Das fränkische Gräberfeld von Klepsau im Hohenlohekreis*. *Forsch. u. Ber. z. Vor- u. Frühgesch. Baden-Württemberg* 38 (Stuttgart 1990), 169 ff. Most recent: R. Reiss, *Der merowingerzeitliche Reihengräberfriedhof von Westheim*. *Anz. Germ. Nat. Mus., Wiss. Beibände* 10 (Nürnberg 1994), 140.

⁵ U. Koch, *Probleme merowingerzeitlicher Glasperlen aus Süddeutschland*, *Ann. 6 Congrès Assoc. Intern. Hist. du Verre* (Liège 1975), 138 ff.

⁶ M. Martin, *Das fränkische Gräberfeld von Basel-Bernerring* (Basel 1976), 140, 261 ff.

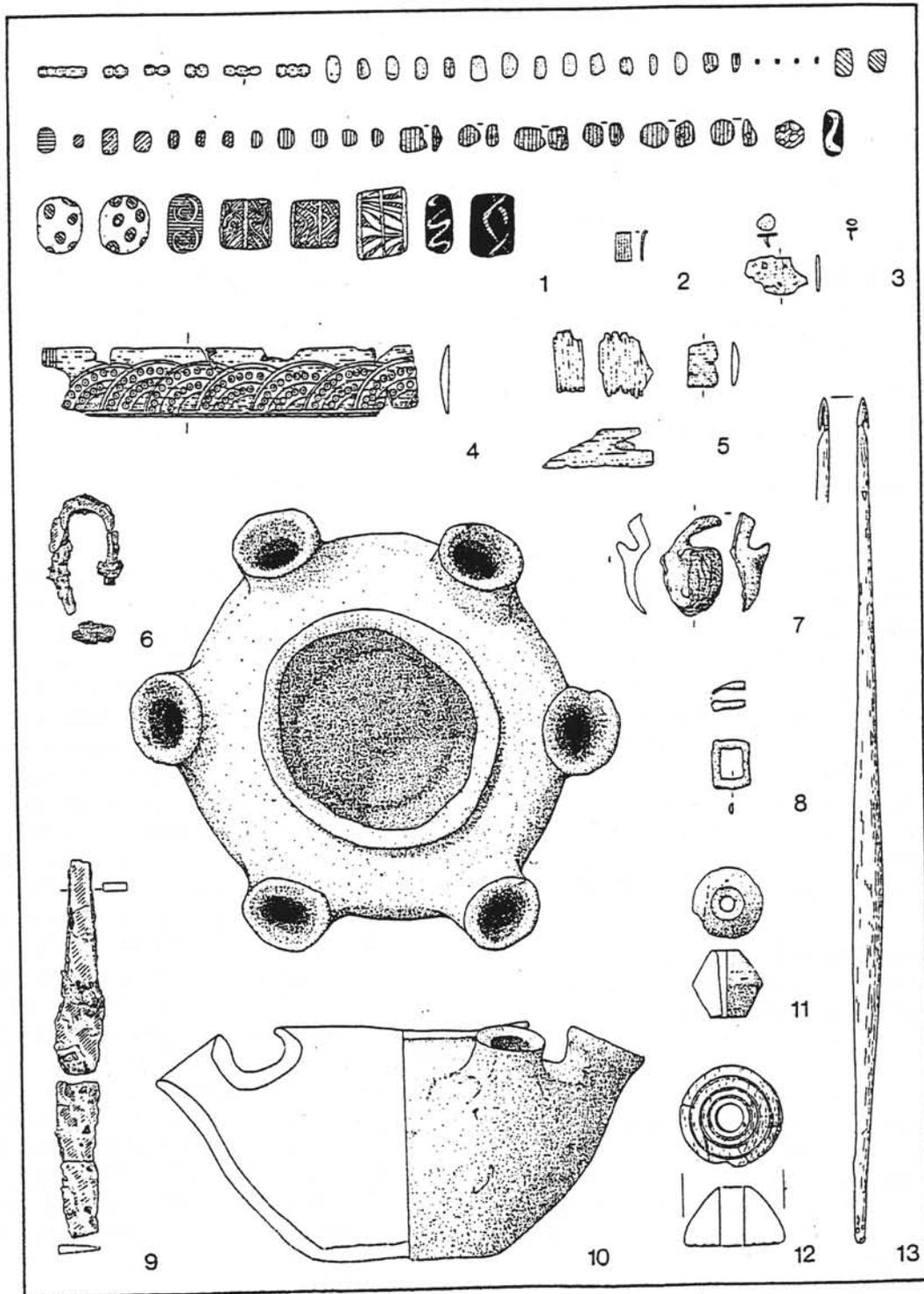


Fig 3: Grave goods from Grave 74. 1...glass and amber; 2-3...silver; 3, 8...bronze; 4-5, 12-13...bone; 6, 9...iron; 7...mussel shell; 10-11...ceramic. Scale 1:2.

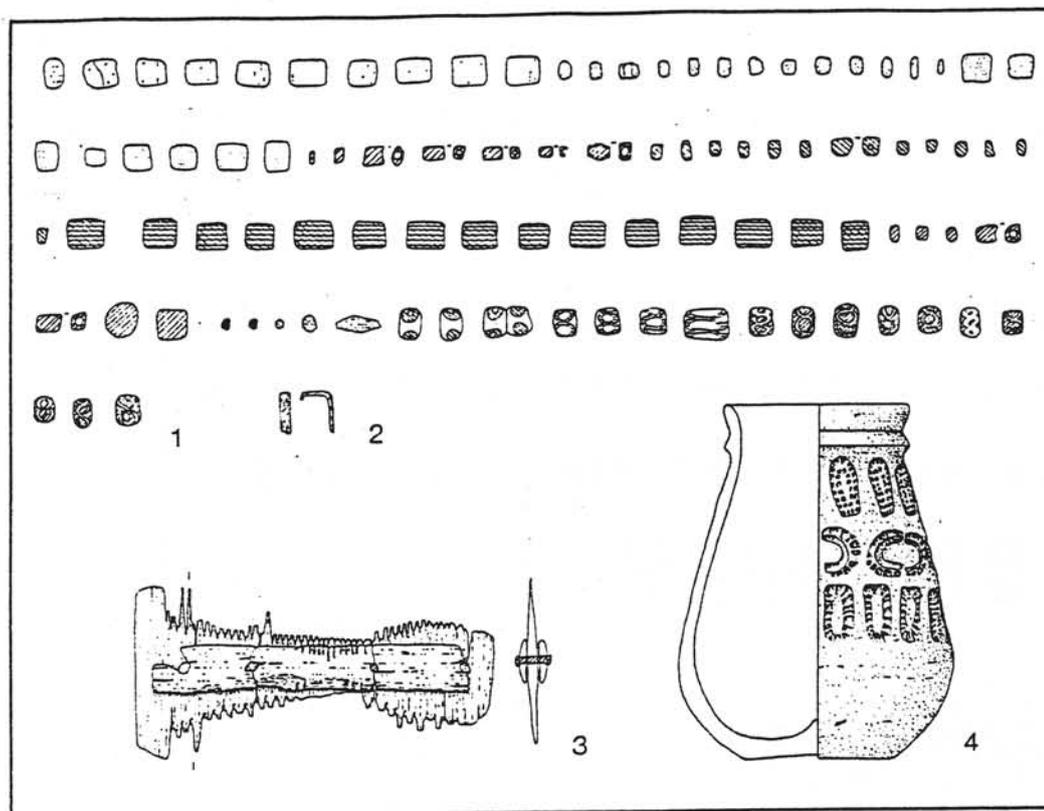


Fig 4. Grave goods from Grave 87. 1...glass; 2...iron; 3...bone; 4...ceramic. Scale 1:2.

hemispherical section appear to be typical of the second half of the 6th century.¹¹ Among the many forms of decoration used on bone whorls, the fine concentric rilling on the Pfakofen examples is relatively simple and is also found on the whorl from Grave 7 at Gnotzheim.¹² The small biconical ceramic whorl, in a brownish reduced fabric (Fig 3, 11), is a common type which cannot be closely dated.¹³ It should be noted, however, that its perforation is so narrow that it could only be fitted onto the very tip of the spindle.

Grave 74 and Grave 87 are also linked by the deposition of pottery vessels, which is otherwise rare in Pfakofen and elsewhere in the region¹⁴, and in particular by the

deposition of a pot at the foot of the deceased. While the small bag-shaped beaker in Grave 87 (Fig 4, 4) is of a type commonly found in the Regensburg area¹⁵, the vessel with the adult female in Grave 74 is unique (Fig 3, 10). It belongs to the unusual group of ceramic spouted vessels first classified by E Grohne¹⁶. An example of the form, with three spouts, from the Roman period site at Bürs, Altmark¹⁷, is fairly close to the Pfakofen piece, with sloping sides and a central opening around which the spouts were similarly arranged; the two vessels may have shared the same function. While Grohne suggested that modern spouted forms might be used as flower vases, he found no satisfactory explanation for those of prehistoric or early historic date. However, he stressed the important point that the form was unsuitable for use as an oil-lamp, and therefore by association so are all spouted ceramic vessels.¹⁸ Despite Grohne's work, the interpretation of similar forms as lamps has obstinately persisted in the

¹¹ U. Koch, Klepsau (Footnote 10), 169 ff; R. Koch, Main-Taubder Gebiet. (Footnote 9), 76.

¹² H. Dannheimer, Die germanischen Funde der späten Kaiserzeit und des frühen Mittelalters in Mittelfranken. Germ. Denkmäler Völkerwanderungszeit A 7 (Berlin 1962), Taf 24, A 14.

¹³ R. Koch, Main-Taubder Gebiet. (Footnote 9), 76.

¹⁴ U. Koch, Der Grabfunde der Merowingerzeit aus dem Donautal um Regensburg. Germ. Denkmäler Völkerwanderungszeit A 10 (Berlin 1968) *passim*. Th. Fischer, Das bajuwarische Reihengräberfeld von Staubing. Kat. Prähist. Staatssammlung 26 (Kallmünz 1993), *passim*.

¹⁵ Perhaps also U. Koch, Donautal (Footnote 14), 107 ff, Taf 97, 13.

¹⁶ E. Grohne, Die Koppel-, Ring- und Tüllengefäße. Bremer Wissensch. Gesellschaft (Hrsg.), Abhandlungen und Vorträge 6, Heft ½ (Bremen 1932), 94 ff.

¹⁷ Grohne (Footnote 16), 118, Taf 43, a.

¹⁸ Grohne (Footnote 16), 111 ff.

specialist literature. Thus, J Werner identified a 70 mm high hand-made ceramic vessel with four spouts and a central opening from Grave 1 at Bollwerk as a lamp.¹⁹ This richly-furnished female grave, dating to the third quarter of the 6th century²⁰, also contained a complete set of brooches, a silver perforated spoon, a second ceramic vessel, and a weaving batten. Another vessel similar to that from Pfakofen came from Grave 9 at Záluži.²¹ This pot, again identified as a lamp, had a central opening and four spouts and was placed at the foot of the grave, which was also dated to the third quarter of the 6th century.²² Somewhat different, but probably attributable to the same function because of its central opening and three spouts, is a baggy vessel, 170 mm high, from the richly-furnished female Grave 14a at Schlotheim, dated to the second half of the 6th century. Behm-Blancke suggested that this vessel might be interpreted as related to drink-offerings or drinking ceremonies of the Migration Period.²³ Pollen analysis²⁴ of the contents of this pot and of another small vessel from the same grave produced evidence for a honey-sweetened alcoholic drink, such as mead, with the result that the Schlotheim vessel was presumed to have been used for a cult drinking ceremony. However, the fact that in each case these so-called double-, triple-, and ring-vessels were found in well-furnished female graves²⁵

militates against their use in drink rituals associated with male blood-brotherhoods, as argued by Behm-Blancke.²⁶ The Pfakofen find is therefore of particular importance in resolving the question of the function of these vessels. To this end, the pot's contents were carefully saved for later research, and the outside surface was only lightly cleaned.

To establish the precise function of the spindle, the Archaeological Textiles Unit at the Bayerisches Landesamt für Denkmalpflege in Bamberg was approached and rapidly came up with the suggestion, based on comparison with other spindles with hooked ends, that it could have been used as a yarn-twisting spindle. This interpretation was confirmed by an examination of the relevant literature.

The spindle is one of the oldest and most important tools known, used to produce not only continuous thread for the manufacture of fine textiles, but also a range of threads of various types (Figs 5-6). The fibres can be pulled out of a bundle of raw wool to the required thickness, stretched, straightened, and given variable elasticity and torsion (Z/S spinning), before being cut off and wound up. Whorls of various shapes weigh down the

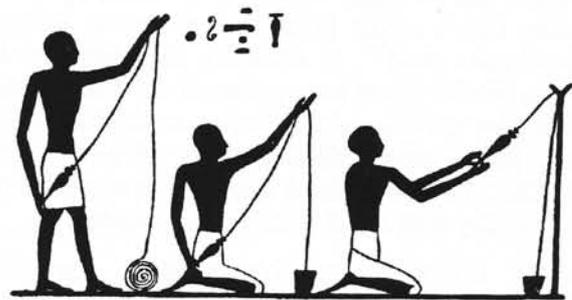


Fig 5. Men spinning. Beni Hassan, Egypt (after Forbes).

spindle and also keep it steady. The whorls also add to the rotation movement needed to produce an even thread. A small hook or incision at the top of the spindle keeps the thread in place during spinning. Light

¹⁹ J. Werner, Münzdatierte austrasische Grabfunde. *Germ. Denkmäler Völkerwanderungszeit A 3* (Berlin/Leipzig 1935), 85, Taf 6 A. Hüberner also considered this function for the spouted vessel from Worms: W. Hüberner, *Absatzgebiete frühgeschichtlicher Töpfereien in der Zone nördliche der Alpen*. *Antiquitas 6* (Bonn 1969), 137.

²⁰ The grave is dated by a silver coin of Totila (541-552). J. Werner attributed it with a date c 600: Werner (Footnote 19), 39 ff, 85.

²¹ B. Svoboda, *Böhmen in der Völkerwanderungszeit*. *Monumenta Archaeologica 13* (Prag 1965), 284, Taf 87, 10. (I am grateful to G. Morgenstern, BLD Landshut, for the translation of this text).

²² *ibid.* The buckle mentioned above with club-shaped projections with transverse grooves might be similar to that from Basel-Bernerring Grave 16, which is dated to the third quarter of the 6th century: Martin (Footnote 6), 87, Taf, 1, 7.

²³ G. Behm-Blancke, *Trinkgaben und Trinkzeremonien im Totenkult der Völkerwanderungszeit*. *Alt-Thüringen 16* (1979), 171 ff.

²⁴ H. Jakob, *Pollenanalytische Untersuchung von merowingerzeitlichen Honigresten*. *Alt-Thüringen 16* (1979), 112 ff.

²⁵ Behm-Blancke (Footnote 23), 201 ff. The function defined by Behm-Blancke was also accepted in the most

recent study of these unusual vessels: H-O. Muthmann, *Mehrfachgefäße* (Rheinfelden 1987), 332 f, 348 f.

²⁶ G. Fingerlin, *Grab einer adligen Frau aus Güttingen*. *Bad. Fundber. Sonderheft 4* (1964), 34. Pirling agrees with this sentiment regarding burial 2170 in Grefeld Gellep: R. Pirling, *Das römisch-fränkische Gräberfeld von Krefeld-Gellep 1960-63*. *Germ. Denkmäler Völkerwanderungszeit B 8* (Berlin 1974) 99 f, Taf 82, 12.

spindlewhorls were probably used for wool and heavier ones for flax²⁷ but the size and



Fig 6. Women spinning, on a Greek epinetron, 5th century BC (after Forbes).

weight of both spindle and whorl are also related to the desired thickness of the thread.²⁸ Whorls can be placed at either end of a spindle. To this day Egyptians place the whorl at the base of the spindle when spinning flax and at the top when spinning wool²⁹. To increase the weight of a spindle, two or even three whorls can be used, with two placed below the cone of spun thread and one below it.³⁰ With this method the weight and rotation of the spindle is sufficient for the production of yarn.

In our grave a bone spindle of 252 mm length was placed together with two whorls of differing weight next to a vessel, The spindle has a small hook and diagonal rilling at its upper end³¹. It appears that the bone whorls would have been placed on the lower end of the spindle while the ceramic example could have been placed onto either end³² (Fig 2A, 1-4). It seems likely therefore that the spindle was used with both whorls.

Ancient literary and iconographic sources document several methods for producing threads and yarns.³³ Turning the spindle to

the right would produce threads with Z-twist, turning it to the left S-twist (Fig 7). The threads would then be rolled into balls and

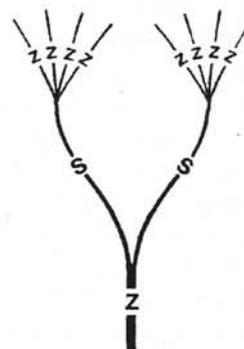


Fig 7. Scheme of S- and Z-spinning used to produce yarn.

placed in a basket or small vessel.³⁴ The ends of the threads would be pulled from these balls, knotted and then, using a spindle, twisted together into yarn. Yarn possesses increased strength, weight and volume and its surface characteristics are more attractive.³⁵

Catullus mentions the use of a spindle with a hook specifically for holding threads.³⁶ Once the spindle was full, the threads were taken off and wound into balls. He even mentions double threads which were kept in small baskets or vessels ready for further work.

Kimakowicz-Winnicki has documented spinning techniques in the Siebenbürgen area of Romania where ancient traditions survived into the 20th century. Among them is a yarn-making process where several balls are placed into bowls, with the threads leading to a hanging hooked spindle (Fig 8).³⁷ The local women use this technique when they do not have access to a spinning wheel.³⁸

²⁷ Elasticity is a characteristic of woollen threads which was countered by the use of heavier whorls: R. J. Forbes, *Studies in Ancient Technology*, IV, (New York, 1987), 154.

²⁸ *ibid* 154, 167.

²⁹ *ibid* 156

³⁰ *ibid* 159 f. Also see G. Grenander-Nyberg, *Spinning implements of the Viking Age from Elisenhof in the light of ethnological studies*, Nesat III Textile Symposium in York (London 1987), 73 ff.

³¹ Such rilling is common: Forbes (Footnote 27), 154, 160 fig 13, 168 fig 17.

³² M. von Kimakowicz-Winnicki, *Spinn- und Webwerkzeuge*, Mannus 2 (Leipzig 1930), 59 Abb 93. The whorl shown there is identical to our example and is identified as a yarn spindle whorl.

³³ Forbes (Footnote 27), 157 fig 12, 165 fig 15, 166 fig 16. Also H. Blümner, *Technologie und Terminologie der*

Gewerbe und Künste bei Griechen und Römern I (Leipzig 1875), 107.

³⁴ Forbes (Footnote 27), 168 fig 17; Kimakowicz-Winnicki (Footnote 32), 62 Abb 99.

³⁵ See C. Crockett, *Das komplette Spinnbuch* (Bonn 1980), 36 f. An additional whorl adds more momentum to the thread. G. Grenander-Nyberg, *Über die Z- und S-Drehung von Garnen in: I. Hägg, Ausgrabungen in Haithabu 20* (Neumünster 1984), 287 f.

³⁶ Forbes (Footnote 27), 167.

³⁷ Kimakowicz-Winnicki (Footnote 32), 62 Abb 99.

³⁸ *ibid* 61.



Fig 8. Siebenbürg method of spinning yarn (after Kimakowicz-Winnicki).

The fact that specific vessels occur both in the literary and iconographic sources sheds light on the find in Grave 74, where the spindle and whorls were found immediately next to the spouted vessel. The latter was therefore also probably used in textile production and so its contents were examined very carefully. Surprisingly, several fibres could be seen (Fig 9). These were identified as wool-fibres of different colours (blue, reddish-violet, green and yellow). Some of the red fibres may be silk. It seems certain therefore that the vessel and spindle are functionally related.



Fig 9. Wool fibres from the pot, Grave 74, Pfakofen. (Enlarged by about x 30).

Next, using an exact replica of both spindle and vessel, an attempt was made to establish their precise function.³⁹ It was assumed that the spouts would separate and distribute the threads during yarn-making, but the direction in which the threads passed

³⁹ We would like to thank H. Voss, Bayer. Landesamt f. Denkmalpflege Bamberg, and L. Breinl, Bayer. Landesamt f. Denkmalpflege Regensburg for the production of these replicas.

through the spouts was uncertain. The vessel is quite small and could only have held tiny balls of very fine threads. As the threads were pulled out the balls would easily become tangled. A better solution is to feed the threads through the spouts from the outside, then pull them together through the central opening to be spun into yarn (Fig 10). To maintain the tension, each ball was placed in a small bowl or basket.

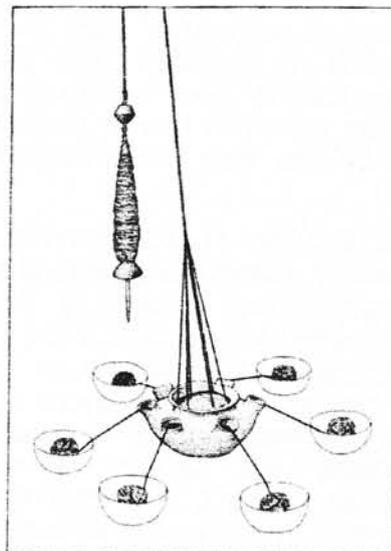


Fig 10. Reconstruction of spinning yarn by the method suggested by Grave 74. (Scale approx 1:6.)

In the case of Grave 74 at Pfakofen the threads must have been very fine indeed as is also indicated by the very slim spindle and the light whorls. It is also likely that the threads were treated in some way to increase their strength (this would be especially important if they were to be used for weaving); a smooth and lubricated surface would make their use in further textile working processes much easier.⁴⁰ Starch glue, tallow, wax and oils may have been used to treat the threads.⁴¹ A spouted vessel such as the one from Pfakofen may have contained fluids used to treat threads but, due to the difficulties of identifying such substances, no analysis was attempted.⁴²

⁴⁰ This is especially important for fine threads and embroidery threads, etc.

⁴¹ W. Senf, *Werkstoffkunde der Textilien II* (Berlin 1954), 135. Forbes (Footnote 27), 160, mentions the suspension of threads 'in grease', and Kimakowicz-Winnicki (Footnote 32), 62, Abb 103, mentions threads dragged through water.

⁴² We thank Dr M. Koller, Dörner Institut München for information and help on this subject. See also R. D. Bleck & M. Böhmel, *Chromatographische*

In this context we should again return to the spouted vessel from the female burial 14a at Schlotheim. Analysis there indicated the presence of honey, from which it argued that the vessel contained an alcoholic liquid. This suggestion was based on pollen analysis undertaken by H. Jakob, but has since been questioned by both chemical analysis and experimental archaeology⁴³. As a result, the function of the Schlotheim vessel is still unclear but the results from Pfakofen suggest that it was also used in textile production. It is possible that the wax residue identified by Jakob was used to treat threads. This link with textile production is supported by the high proportion of woad pollen.⁴⁴

During the analysis of the contents of the Pfakofen vessel, numerous objects of c 3 mm were extracted and proved to be small insects, identified as a type of scale insect⁴⁵, of which there are several species.⁴⁶ In the medieval period two were used, together with plant colouring agents, to produce red dyes.⁴⁷ These are *Kermes vermilio*, or Mediterranean kermes, and *Porphyrophora polonica*, which produced the so-called Polish cochineal. *Kermes vermilio* has been used since prehistoric times. The insect lives on the *Quercus coccifera*, a bush-like oak and

produces a highly-valued scarlet colour.⁴⁸ The colouring substance they produce is called kermesic acid. Pliny states that the juice of the young Kermes is matt and lacks strength and that the juice of the older insects fades quickly, but nevertheless this dye was very valuable.⁴⁹ Recent research has shown that *Kermes vermilio* was used to colour the textiles in the grave of the Celtic chief from Hochdorf, but whether the dyestuff or already-dyed fabrics were imported from the Mediterranean is unclear.⁵⁰

The huge importance of scarlet dye in the early medieval period is indicated by an account of Charlemagne written by a monk from St Gall, Notker the Stutterer (c AD 840-912). He describes how Charlemagne wore scarlet red wrappings on his shins and linen trousers of the same colour.⁵¹ Because of their value, the insects themselves were known as important trade goods.⁵²

In most cases, the species concerned was probably the Polish cochineal insect, *Porphyrophora polonica*, which in local folklore is also called St John's blood.⁵³ This is a parasite, which, in contrast to the very specialised Mediterranean species, lives on the roots of a variety of middle and southern European plants, in particular *Scleranthus perennis*, or Perennial Knawel (Fig 11). In Poland, Russia, the Ukraine, Prussia and Saxony these insects were used up until

Analysemethoden. Restaurierung und Museumstechnik 4 (Weimar 1981), 15 ff.

⁴³ Jakob (Footnote 24), 112. Behm-Blancke (Footnote 23), 171 ff. After only 5 months buried in soil, honey cannot be identified with chromatography. Bleck therefore states (Bleck & Böhmel (Footnote 42), 18: 'It is certainly impossible to detect sugar remains on archaeological material such as sherds or the soil contents of vessels. Any attempts would be futile.'

⁴⁴ Jakob (Footnote 24), 112, 114.

⁴⁵ The insect could only be identified by morphological criteria because deposition in the soil had washed out all the colouring, which therefore could not be analysed chemically. In contrast, the colouring agent is bound to fabric and threads through the mordant in the dye. This allows the colour to be detected on archaeological textiles.

⁴⁶ We would like to thank Prof. H. Schmutterer, University of Giessen, Dr Ch. H. Fischer, Hahn-Meitner Institut Berlin, Dr M. Koller, Dörner Institut München, and J. Banck, Freiburg i. Br. for information and comparanda.

⁴⁷ R. Scholz, Aus der Geschichte des Farbstoffhandels im Mittelalter. Diss. München (1929), 17 ff. W. Born, Der Scharlach, in L. Niencki, Die Kunst des Färbens mit natürlichen Stoffen (Bern, Stuttgart, 1984), 85 ff. Kermes is an oriental word meaning 'worm'. The term usually used in the medieval period is *vermilion*, *ibid* 85.

⁴⁸ E. Ploss, Ein Buch von alten Farben (München, 1989), 49.

⁴⁹ Blümner (Footnote 33), 242 (and for general comments 215 ff).

⁵⁰ J. Banck, Die Textilfunde aus dem hallstattzeitlichen Fürstengrab von Hochdorf, Gemeinde Eberdingen (Krs. Ludwigsburg). Nesat V, Textilsymposium Neumünster (Neumünster, 1994), 49 f.

⁵¹ 'Erat antiquorum ornatus vel paratura Francorum fasciloae cruales vermiculatae; et subtus eas tibialia vel coxalia linea, quamvis ex eodem colore...', H. F. Haefele, Notker der Stammler, Taten des Kaiser Karls des Grossen, Monumenta Germ. Hist. Scriptores rerum germanicarum, Nov. ser 12 (München, 1980), 46. Also Ploss (Footnote 48), 48 f and O. v. Gierke, Die Tracht der Germanen in der vor- und frühgeschichtlichen Zeit, Mannus Bibliothek 24 (Leipzig, 1922), 49.

⁵² Ploss (Footnote 48), 49. Scholz (Footnote 47), 17 ff suggests there were two types of kermes in the 12th century.

⁵³ A. Verheeken & J. Wouters, The Coccid Insect Dyes, Historical, Geographical and Technical Data, Bull. Inst. Royal Patrimoine Artistique 22 (1988/89), 226.

quite recently,⁵⁴ though it is usually argued that they were not used as early as the *Kermes vermilio*.



Fig 11. Life-cycle of *Porphyrophora polonica*, with its host-plant, *Scleranthus perennis* (after Born).

The insects producing Polish cochineal are described as very small, a description which agrees well with those found in Pfakofen, which had an average size of 3 mm. In their dry state they appear shrunk and wrinkly. Wouters and Verhecken describe adult females as 4-7 mm long, a size reached by a few of the specimens in the Pfakofen vessel (Fig 12). Polish cochineal insects can also be detected chemically by the presence of carminic acid⁵⁵ (*Kermes vermilio* produces kermesic acid).

Traditionally, the dark red tiny insects were collected from the roots of their host plants, a process which began with a religious ceremony on St John's day between 11 am and 12 noon. Hence the dye's name of St John's blood.⁵⁶ Harvesting the insect was a time-consuming task and only about 60-100 g of insects could be gathered each day. It is

⁵⁴ Scholz (Footnote 47), 19. Verhecken & Wouters (Footnote 53), 224. Born (Footnote 47), 88. Brockhaus, *Konversationslexikon* 9 (Leipzig, 1894), 159, 941.

⁵⁵ Verhecken & Wouters (Footnote 53), 226.

⁵⁶ Born (Footnote 47), 88. W. Wilmsen, *Handbuch der Naturgeschichte für die Jugend* 3 (Berlin, 1831), 450, talks about the harvesting of St John's blood, which was still used as a red dye instead of American cochineal till as late as 1831. Brockhaus (Footnote 54), 159, 941.

quite likely that the preferred host plants were cultivated deliberately to increase the ease of harvesting.

The insects were killed in vinegar and then dried; in this state, they could be stored and traded. Before use as a dye they had to be soaked in water for several days, then crushed and placed into dye-vat. The pre-treated wool or silk was first placed into the colouring bath and then carefully washed.⁵⁷

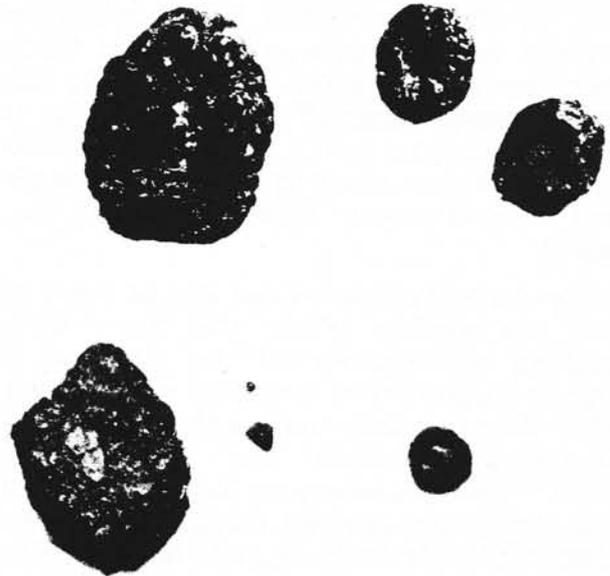


Fig 12. Top row: modern Polish cochineal insects (after Verhecken & Wouters). Bottom row left: Pfakofen kermes insects in 3 stages of development. Left hand insect 4.8 mm long Bottom row right: enlargement of the top right-hand insect from the three shown to the left.

This use of kermes for the colouring of textiles poses important question with regards to the Pfakofen find. As the insects were placed into the vessel whole they cannot have been used as a dye before deposition. The discovery of threads of different colours in the vessel also demonstrates that the pot did not contain a dye-mix when last used and deposited. The insects were placed into the burial as raw materials and therefore as a grave good in their own right. They were included as a *pars pro toto* for the expensive process of textile colouring and as such fit well with the theme of textile-working represented in this female burial.

This surprising result could be tested against another burial. The bag-shaped vessel from the young female burial Grave 87 was also examined and yielded the same result - it contained whole kermes insects as grave goods in their own right. No fibres were

⁵⁷ Verhecken & Wouters (Footnote 53), 226 f.

detected. Indirectly, this also confirms the specific use of the spouted vessel in the yarn-making process.

Our two burials are so far the only examples where it has been possible to prove scientifically the presence of a dye as a grave good, but it is possible that kermes insects or other dyestuffs were more commonly included in female burials. The spouted vessel and another pot from the female burial at Schlotheim provide a clue to this, as the report states that 'microscopic analysis revealed a large number of black shapeless objects which were certainly not charred plant remains'⁵⁸. There were also 'a few red objects which appeared to have traces of sugar attached'.⁵⁹ It seems likely that kermes insects were present in this vessel.

In this context reference can also be made to the very wealthy Nordic ship burial from Oseberg which contained the burial of a high-ranking woman, furnished with, among other things, a decorated carpet and a set of 50 weaving tablets and partly-worked braid.⁶⁰ Spindles were also found, as well as dye-plants such as woad, *Isatis tinctoria*. The context of these finds suggests that this elite woman was herself involved in spinning, dyeing and weaving.⁶¹

Apart from demonstrating for the first time the deposition of dyestuffs as a grave good, the importance of the Pfakofen burials also lies in the fact that they represent the oldest documented use of the Polish cochineal insect in Central Europe. The oldest written account is found in the *Capitulare de villis* (c AD 800).⁶² The source mentions female

workshops (*genetia*) which are to receive the raw materials necessary for textile production from the imperial farms.⁶³ The source mentions woad for the colour blue and madder and scarlet (*vermiculo*) for the colour red, and certainly demonstrates that the use of these agents for dyeing was well established by the 8 to 9th century.⁶⁴ Documents from the time of Charlemagne illustrate that the necessary plants were already cultivated by AD 800.⁶⁵ The fact that the *Kermes vermilio* insects are mentioned together with plants produced on imperial farms suggests that they were not imported from the Mediterranean. References to the deliberate breeding of these insects occur in several medieval sources, most interestingly in the Register of the monastery of St Emmeram in Regensburg from 1031.⁶⁶ Several villages are named as having to supply *vermiculi* to the monastery.⁶⁷ Dyestuffs were of great importance to monasteries and could be used for the colouring of textiles, book illumination and for medicinal purposes.⁶⁸

On most farms, payment in money replaced those in kind by the 11th century, but two

workhouses the required materials, namely flax, wool, woad, scarlet, madder, wool-combs, teasels, soap, fat, vessels and all the other small required objects). G. Franz, *Quellen zur Geschichte des deutschen Bauernstandes im Mittelalter, Ausgewählte Quellen zur deutschen Geschichte des Mittelalters* 31 (Darmstadt 1974), 50 ff.

⁶³ Scholz (Footnote 47), 19; for *genetiae*: E. Ennen, *Frauen im Mittelalter* (München 1985), 88; A. Geijer, Birka III, *Die Textilfunde aus der Gräbern* (Uppsala 1938), 40 ff.

⁶⁴ *Ibid.*

⁶⁵ Ploss (Footnote 48), 39; for madder: G. Heuzé, *Der Krapp* in: L. Nencki, *Die Kunst des Färbens mit natüüStoffen* (Bern, Stuttgart 1984), 125 ff.

⁶⁶ Ph. Dollinger, *Der bayerische Bauernstand vom 9 bis zum 13 Jahrhundert* (München), 455 ff. Dollinger mentions the payment of *vermiculi* in St Remy in the 9th century (*ibid.*, footnote 189); for more detail on the St Emmeram monastery see: H. Heimpel, *Das Gewerbe der Stadt Regensburg im Mittelalter* (Stuttgart 1926), 35 ff, esp 44. Heimpel also mentions the payment of *vermiculi* in the Register of Prüm (9th century; *ibid.*, 44, footnote 29). (The sources of the St Remy and Prüm dyestuffs is not known.)

⁶⁷ Dollinger (Footnote 66), Harting (no 2), Scheuer (no 3), Aufhausen (no 13), Hagelstadt (no 14), Dünzling (no 15), Peising (no 17), Herrenwalthann (no 19), Pforring (no 31), Unterhartheim (no 32), Hausen (no 35), Hohengebraching (no 49). Also see P. Mai, *Der St Emmeramer Rotulus des Güterverzeichnisses von 1031*. *Verh. Hist. Ver. Oberpfalz* 106 (1966), 87 ff.

⁶⁸ Ploss (Footnote 48), 36 ff.

⁵⁸ Jakob (Footnote 24), 112.

⁵⁹ *ibid.* 113.

⁶⁰ Ploss (Footnote 48), 25.

⁶¹ A. Bartel, when studying Merovingian fabrics often found very small fragments of braid, probably once coloured. A Bartel & R Knöchlein, *Zu einem Frauengrab des sechsten Jahrhunderts aus Waging am See, Lkr. Traunstein. Oberbayern. Germania* 71/II (1993), 419 ff. In iconographic sources of the 8/9th century there are also colourful bands in a variety of materials: H. Dannheimer & M. Dopsch, *Die Bajuwaren. Ausstellungskatalog* (Rosenheim, 1988), 223 Abb 147. E. Thiel, *Geschichte des Kostüms* (Berlin, 1980), 86, Abb 159, 87 Abb 158.

⁶² *Capitulare de villis* 43: Ad genicia nostra, sicut institutum est, opera ad tempus dare faciant, id est linum, lanam, waisdo, vermiculo, warentia, pectinos laninas, cardones, saponem, unctum, vascula vel reliqua minutia quae ibidem necessaria sunt. (You shall deliver, as ordered and at the correct time, to the female

farms still supplied colouring insects in the 11 to 12th century: the monastery received *vasculum vermiculi* from Hausen and *vermiculi coppers* from Hohengebraching.⁶⁹ The source mentions containers but it is impossible to estimate their size and therefore the volume of insects; their value ranged from 6 to 54 Pfennig.⁷⁰

An important aspect of this source is the direct link between the payment and use of insects and fabric-working. All the farms supplying the insects also had to supply linen and woollen fabrics (*pannum de lino/de lana*).⁷¹ These are therefore clearly farms engaged in textile-working. The fact that the insects had to be supplied at regular intervals suggests that they were deliberately cultivated and that the initial processing (killing in vinegar and drying) probably also took place on site. The source from 1031 probably records much older traditions and practices and it is therefore not surprising that Pfakofen is located in an area for which we have later accounts for the breeding and processing of Kermes insects. It seems likely therefore that there was a continuous tradition of dyeing using this insect from at least the 6th century onwards.

The deliberate deposition of the insects in the female Graves 74 and 87 at Pfakofen suggests that both women were somehow associated with the collecting⁷² or processing of these insects, including the actual dyeing. It is also possible that the insects represented a very valuable commodity which was produced in Pfakofen and formed the basis of the community's wealth. Trade in this valuable dyestuff is documented early on⁷³ and Pfakofen's location near the so-called Oxen-road would have been an additional advantage.

Grave 74 also provides concrete evidence for complex textile-working techniques such as the production of yarn, which has always been used for a multitude of purposes such as weaving and stitching.⁷⁴ Specific tools are

not unusual in burials and our burial probably reflects this woman's personal work in her community.

*Dr Silvia Codreanu-Windauer,
Bayerisches Landesamt für Denkmalpflege,
Keplerstrasse 1,
93047 Regensburg,
Germany
codreanu.blfd@t-online.de*

*Antja Bartel
Bayerisches Landesamt für Denkmalpflege,
Außenstelle Bamberg Schloss Seehof,
96117 Memmelsdorf,
Germany*

Text translated by H Eckardt & N Crummy.

Picture credits

Figs 1-4, 7, 9: Bayerisches Landesamt für Denkmalpflege.

Figs 5-6: R Forbes, *Studies in ancient technology*

Fig 8: after M von Kimakowicz-Winnicki, *Spinn- und Webwerkzeuge*, Mannus 2 (Leipzig, 1930).

Fig 11: W Born, 'Der Scharlach', in L Niencki, *Die Kunst des Färbens mit natürlichen Stoffen* (Bern, Stuttgart, 1984).

Fig 12 top: A Verhecken & J Wouters, 'The coccid insect dyes, historical, geographical, and technical data', *Bull Inst Royal Patrimoine Artistique* 22 (1988/89)

Fig 12 bottom: Bayerisches Landesamt für Denkmalpflege (A Bartel).

Marschensiedlung beim Elisenhof in Eiderstedt 4 (Frankfurt am Main, 1981), 53 ff. Zwirne als Nähmaterial mit grossem Anspruch auf Haltbarkeit wurde und auch zum Zusammenfügen von Schuhledern, zum Nähen von Ledetfutteralen für Nadeln oder auch Messerscheiden verwendet: Heftfaden an Gürtelschnalle aus Eggolfheim, Lkr. Forcheim, Grab 111 und Nähzwirn für Lederfutteral aus Gelting, Lkr. Bad Tölz-Wolfratshausen, Grab 27: Dokumentation BLfD, A Bartel. Glatte geschlossene Zwirne gut vorbereitet eignen sich besonders als Perlenkettenfäden: Perlenkettenfäden von Gelting, Lkr. Bad Tölz-Wolfratshausen, Grab 43: Dokumentation BLfD, A Bartel. Zwirne als Reparaturfäden in Verbindung mit Metallen und auch für Riemenverteiler, Riemenbeschläge, Nietlasche:/ H. Farke, *Die Textilfunde aus dem fränkischen Gräberfeld von Alach, Alt Thüringen* 25 (1990), 184, 187 ff, 192; H. Farke, *Textile Reste an zwei völkerwanderungszeitlichen Vogelfibern, Alt Thüringen* 26 (1991), 197 ff. Frühmittelalterliche Brettchenbänder und Bändchen in Materialkombination: Bartel & Knöchlein (Footnote 61). Dazu auch Hundt (above), 69 ff. Siehe auch die Brettchengarnitur vom Osebergsschiff: Ploss (Footnote 48), 25. Eine Vielzahl von Brettchenbändern wedrden bei Geijer (Footnote 63), 76 ff, vorgestellt.

⁶⁹ Dollinger (Footnote 66), nos 35 and 49.

⁷⁰ The Register of St Emmeram for 1031 gives the payment for the value of a pig as 5-6 Pfennig; this is also the average value for the *vermiculi*: Dollinger (Footnote 66), nos 37 and 38.

⁷¹ See Footnote 68; also Heimpel (Footnote 66), 35 ff.

⁷² Perhaps children with their smaller hands were used for the collection of the tiny insects.

⁷³ Ploss (Footnote 48), 49.

⁷⁴ Nähfäden in vielfältigem Einsatz bei H.-J. Hundt, *Die Textil- und Schnurreste, Die frühgeschichtliche*

RFG & HMS Autumn Meeting at Exeter

Strong winds and driving rain did not prevent about 40 members of the RFG and the Historical Metallurgy Society gathering in Exeter for a joint meeting. The day's proceedings were started off by John Allen, Curator of Archaeology at Exeter's Royal Albert Memorial Museum, who described the collections, particularly those items connected with metal-working. Amongst these a few remarkable examples stand out: the Bronze Age rapier moulds from south-west Devon, the Coffinswell hoard of currency bars, found in bundles tied up by bracken stems, and the tin ingots from Bigbury Bay, of uncertain date.

In Exeter itself excavations have produced a great deal of evidence for post-medieval metal-working, in particular three important bell foundries. The best preserved also made domestic objects, such as skimmers and cauldrons. Some of the skimmer handles conveniently bore the founder's name – John Birdall.

Metal-working of the Roman period was found in the *fabrica* of the Roman fortress, where an aisled building appears to have been used as a finishing shop. Recent excavations have mainly taken place in the suburbs, often the industrial zone of Roman towns. A large array of small finds was out for examination, including the military and other objects not already on display.

Gill Juleff then spoke on *Early ironworking on Exmoor*. A major multi-funded project to examine ironworking on both Exmoor and its margins started four years ago and is now well underway and producing some informative results. It is concerned with the evidence for raw material production, *ie* mining and smelting, and its impact on the landscape.

Exmoor's iron deposits comes from lodes extending east-west across the moor. There are also copper and lead deposits, and lead/silver deposits near Combe Martin (where there may be evidence for silver-working). The iron lodes outcrop intermittently on the surface, where the ore weathers and oxidises, and so becomes easily smeltable. Nineteenth-century extraction of iron was usually done by mining underground, with the ore then sent to Wales for smelting, but some exploitation of

the lodes was also done from the surface, with the iron being smelted on the spot.

This surface extraction shows up as east-west trenches across the moor, one of which, known as Roman Lode, is 650 m long and up to 40 m deep. Variations were noted in the size of the spoil heaps alongside the lode, some small spoil-heaps being sited alongside small interconnecting pits dug down into the lode and often associated with work platforms. These spoil-heaps proved to be dump from smelting and contained charcoal as well as tap slag, thus enabling some radiocarbon dates to be done. Three sites proved to be Late Iron Age to Early Roman in date, one was immediately post-Roman (450-615), and several were medieval. The place names of several of these sites suggested that it would be worth while doing a place-name survey of the area (*eg* Roman Lode, Sindercombe, Blacklake Wood).

At Brayford slag could be seen everywhere in the village, in gardens and gateways *etc*, but obviously very disturbed by modern activity. Excavation of a large section proved possible where a tennis court had been terraced into the hill, which turned out to be a enormous slag heap, full of tap slag, furnace lining, charcoal *etc*. Several pot sherds, including samian and BB1 ware, and a coin were also found. The coin has not yet been dated. The size of the slag heap and the absence of any evidence for the smithing of iron suggested that the smelted iron was exported, not reserved for local use. Beneath the slag heap was a thick dump of grey clay, which could not be bottomed, but which was found to contain a little slag, evidence of smelting even earlier than the 1st- to 2nd-century date suggested by the pottery.

How metal and stone artefacts from Roman Cornwall might demonstrate the acceptance or rejection of Roman ideas was the substance of Henrietta Quinnell's talk. The comparative scarcity of metal objects such as coins could be due to Cornwall's acidic soil, but there also appears to be a long tradition against the digging of pits, a very efficient middening system being used instead. What few artefacts there are from pits could often be seen as evidence for structured deposition, one example being a deliberately folded woolcomb and a small lead weight.

At the enclosed settlement of Trethurgy there was a tradition of working the local soft igneous rocks into weights and mortaria. The latter are usually about 30 cm in diameter and their rims mirror the chronological development of Roman pottery forms. Their production may have been a household industry, but there is some slight evidence that they were exported, as one has been found in Exeter. Larger mortars known as Trethurgy bowls (Quinnell 1993) are also found, about 50 cm in diameter, with open rectangular skeuomorphic handles on the sides (Fig 1), the form perhaps copying those on a tin bowl from the Treloy, near Newquay (Penhallurick 1986). These mortars are also found beyond the region, with one coming from Lydney and another from as faraway as Richborough.

The stone weights vary from small to large, and most are slightly recessed on the underside. The weight data has been examined, but does not seem to conform to any particular standard. There seems to have been some copying of Roman metal forms; the small round weight found with the woolcomb mentioned above appears to copy the form of a bell, while some of the larger ones resemble Roman pyramidal weights.

The iron tools and other objects from sites across the county are Roman in style and craftsmanship. Many have been chopped up for recycling, which matches the lack of evidence for iron extraction in the area. The woolcomb had been ingeniously repaired. On the original the teeth had been cut into a preformed block, just like the teeth on wooden and antler combs, but some had broken off and new ones had been welded into position. This repair was not visible with the naked eye, but showed up clearly on an X-ray.

Nails and other structural fittings, such as joiner's dogs, had been enthusiastically adopted by the inhabitants of Roman Cornwall, and hobnails were also found in some numbers. The long-term curation of Roman metalwork appears evident from the fact that the few brooches from the county are usually of late 1st to 2nd century date but come from late Roman features and are not likely to be residual. They may have survived so long if regarded as symbols of wealth or status.

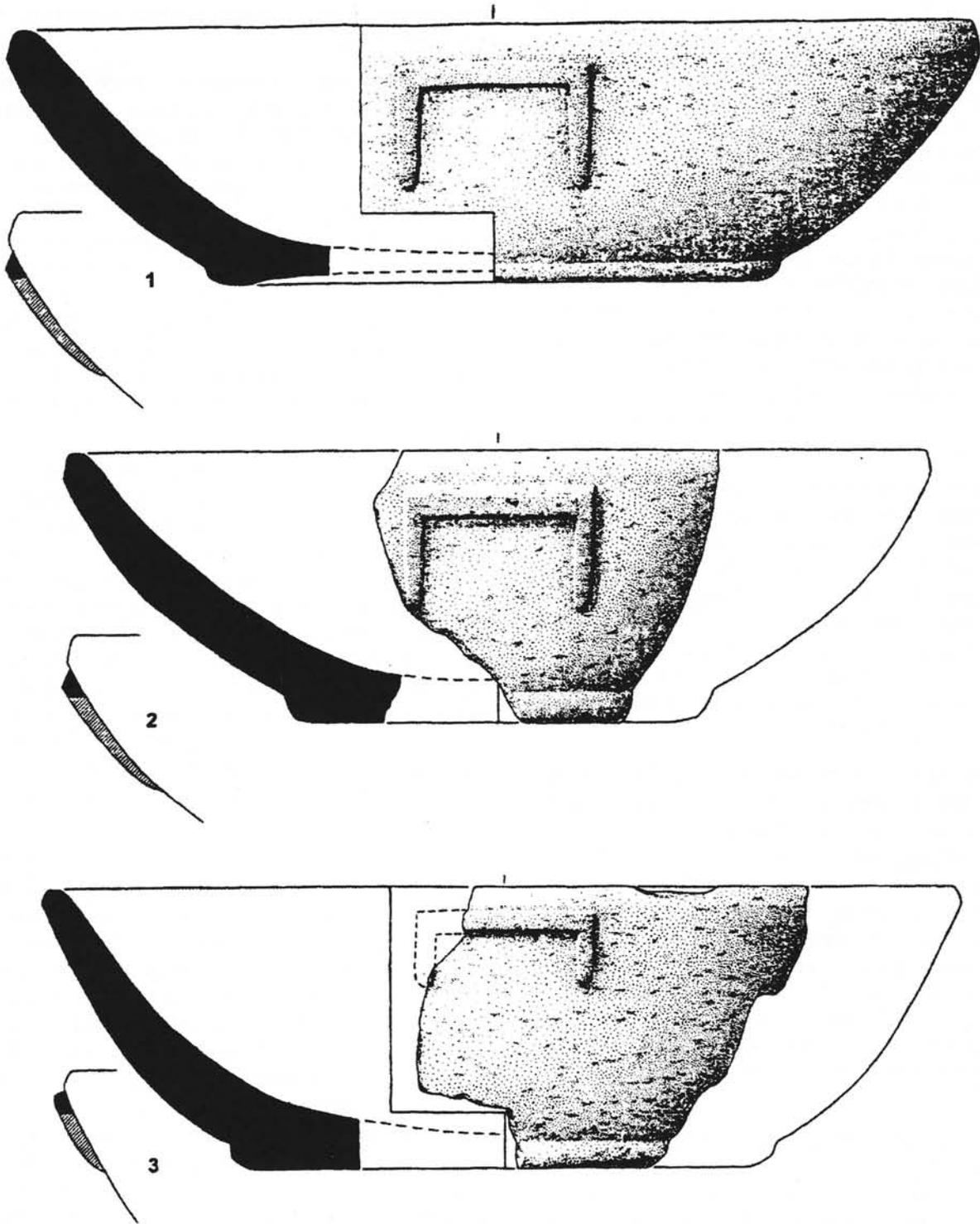
It appears that in Cornwall Roman things had been adopted where they served a practical purpose, but there was no evidence

for the 'conspicuous consumption' seen in many areas of Roman Britain, instead metalwork was curated where possible, or recycled if not.

Neil Holbrook (Cotswold Archaeological Trust) examined the evidence for coastal trade around the south-west peninsula. Whereas much of Britain's imported Gallic pottery followed a route up the Rhône and the Rhine and then across to the Thames estuary, the North African amphorae and *céramique à l'éponge* from the south-west pointed to an Atlantic route across the Bay of Biscay, while cross-channel trade had already been established in the Late Iron Age with Armorican pottery coming in to the ports at Hengistbury Head and Mount Batten, Plymouth.

The presence of the Roman army during the early years of the Roman period had been a considerable stimulus to trade, and the routes established then appear to have continued after it moved on. Black burnished ware travelled from Poole Harbour to Exeter and Plymouth, and with it came products of the Kimmeridge shale industry, Purbeck marble mouldings and veneers, as seen in Exeter's bath-house, and later on Purbeck marble mortars and buff-coloured tiles. It is not possible to say, however, if these things came in on the back of less tangible imports, such as corn or salt.

Among the products that flowed out of the region was smelted iron, from the Blackdown Hills in east Devon and from Exmoor Forest. Some may have gone to the Severn Estuary/Bristol Channel ports on the north coast, some to the Channel ports on the south coast. From south Devon came pottery, found in Cornwall, Dorchester and London (the riverside site of New Fresh Wharf/St Magnus House), slate for the roofs of buildings in Exeter and villas in south Somerset, and tin from the south side of Dartmoor. Cornwall's distinctive Gabbroic pottery travelled very little, but a few pieces are found east of the Tamar, and, though the Trethurgy stone bowls described above do not appear to have been exported in large quantities, at least one reached Richborough. Cornish tin was also exported. Though tin ingots have been found in the Thames at London, and much also went to the Mendip region to be alloyed with lead to make pewter objects, pewter flagons from a wreck have been washed up onto Goodrington Beach in Torbay, suggesting some pewter-working may have gone on in the region.



Trethurgy bowls made of elvan, a fine grained, often light coloured porphyritic rock, found in Devon and Cornwall. Drawings by Sandy Morris.

In summary, tin, pottery iron, building materials and some stone artefacts moved east along the coast, where the ports of Hamworthy and Clausentum may have risen to be more important than Poole Harbour, while black burnished ware, shale objects, Purbeck stone, and tiles moved west.

Neil ended by mentioning the site of Nornour in the Isles of Scilly, which produced large numbers of brooches, Dea Nutrix figurines, miniature pots, and coins. At first thought to be a workshop, it is now more likely to be a shrine, perhaps used by sailors.

Justine Bayley (English Heritage) then spoke about Roman non-ferrous metalworking in the south-west. Before examining the evidence for this area, Justine pointed out that metalworking is a series of processes - mining, smelting, refining, alloying, casting and/or working. Each stage started with raw materials, and in Roman times the metal was the valuable factor in these stages, not the time and effort, though these days the reverse is generally true.

The distribution of sites with evidence for non-ferrous metal-working shows some in Cornwall, only one in Devon, a lot in the Mendips, several in Dorset, and a scatter in Gloucestershire.

Tin ore, cassiterite, is specific to the Cornwall, where it was mined and smelted to produce ingots. These were exported to Bath and its immediate hinterland, where the tin was alloyed with lead from the Mendips to produce pewter. There are several finds of pewter moulds from this region, though there is also a scatter of moulds from elsewhere.

The evidence for lead smelting is usually confined to the production (extraction) areas, *ie* the Mendips, Wales, Derbyshire, and the northern part of the Pennines, but there is also evidence for lead smelting from London. Mendip lead contains silver, which was extracted as part of the smelting process. There may be evidence for silver working from Combe Martin in Devon.

The debris produced by the various stages of working non-ferrous metals is generally common to all the materials and all the areas. The evidence for processing usually consists of crucibles, droplets, and moulds, and, rarely, ingots and ingot moulds may also be found. Manufacture can be shown by the recovery of part objects, such as rods,

bars, and wires, or by offcuts, tools, and moulds. Special vessels can demonstrate that cupellation (extracting silver from silver-lead alloys) or parting (separating silver from gold) took place. Exeter has produced crucibles containing traces of silver and gold, and there is evidence from Cirencester for melting gold scrap.

The afternoon ended with talks on what science can offer the small finds researcher. Janet Lang, formerly of the BM and now doing post-graduate research at Reading University, explained the different techniques of radiography and metallography, and when each is best applied. In terms of time, radiography is generally quicker, especially simple X-radiography, as a surface has to be prepared for metallographic examination.

The most sophisticated X-radiography is 'real-time', in which the object can be scanned from various angles in a lead-lined room, with the pictures observed in an adjacent room on a TV monitor and then the most useful views captured on film. Even more sophisticated (and therefore expensive) is the use of neutron radiography to look at organic matter, particularly where screened by another material, such as metal.

Metallography consists of examining the micro- and macro-structure of objects to discover how they were made. The prepared surface can be viewed using either an optical, or a scanning electron, microscope. The optical microscope is used to look at large objects that cannot be put into an SEM, or where inlays are present, as these can be damaged in the vacuum of a SEM.

Janet then showed how these techniques had been applied to specific objects, such as the panther and spoons from the Hoxne hoard, and the grave goods from Mound 17 at Sutton Hoo. Radiography is useful for showing the details of construction (were vessels made by raising or by soldering parts together), decoration (including decoration lost from the surface but perhaps surviving as traces in the core of the object, and initial working (*eg* hammer marks). Metallography can be used to distinguish between objects that have been worked and annealed or cast, and can pick up where an object might have been partly cast or partly worked in some way (*eg* raising). Plating on an object shows up well on X-ray, but a micrograph will provide more detail. For her final example, she showed the sword from Mound 17,

where X-ray shows up the pattern welding of the blade, but metallographic examination can reveal if it was an efficient weapon.

David Dungworth of English Heritage explained how X-ray fluorescence analysis provides information about the alloys used to make tin, lead and copper-alloy objects. If only the surface of an object is examined, the result is only qualitative, but the object is not damaged. Care must be taken that the core of the metal is examined, otherwise the result is just an analysis of the surface corrosion. For quantitative analysis a sample must be taken, probably with a drill, and then the results set against a known standard.

David described the Eagle II XRF machine, which can both take fairly large objects and examine small areas on them. A series of XRF case studies followed. The first examined the theory that the decline in the zinc content of brass *sestertii* over the Roman period was due to recycling. This proved not to be the case, but instead to be a deliberate debasement of the metal, parallel to the debasement of the silver coinage. David's PhD research looked to see if there was any difference in the alloys used on various types of sites in northern Britain, such as rural, urban, military, villas, etc. One unexpected result was that farmsteads seemed to have a large number of brass objects. Bronze was the most common alloy, while few objects were pure copper. It may be that traditional 'recipes' were used for certain types of objects.

He is currently working on material from Housesteads, where the metal-working evidence (crucibles, droplets, offcuts, moulds) came from the rampart rather than the *fabrica*. Though the moulds were damaged, the enhancement facility on the Eagle II showed that buckles of typically military form were being made.

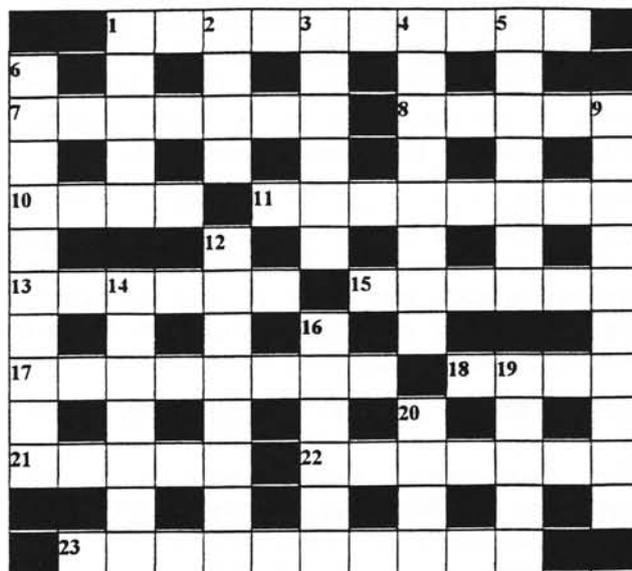
Nina Crummy

References

H Quinnell 1993 'A sense of identity: distinctive Cornish stone artefacts in the Roman and post-Roman periods', *Cornish Archaeology* **32**, 29-46
 R Penhallurick 1986 'Tin in antiquity', *Antiquity* **61**, 337-8

If you think you may have whole or incomplete pieces of Trethurgy bowls in your collection/excavated finds assemblage, please contact Henrietta Quinnell, 9 Thornton Hill, Exeter, Devon. EX4 4NN. Tel: 01392 433214, email: H.Quinnell@ex.ac.uk

Crossword by 'Digger'



Across

- 1. Request non-broken handmill (10)
- 7. Pre-Roman hard times (4, 3)
- 8. Door fitting covered by flat charge (5)
- 10. Strip the surface off a baker's tool (4)
- 11. The Incas were remarkably pure, and strangely vain (8)
- 13. Furniture lists found in reports (6)
- 15. One by one, make music – just the beginning and end of lullaby (6)
- 17. A couple rent out jewellery (8)
- 18. Laughable garden feature (2-2)
- 21. Country bumpkin, 50, after some harness (5)
- 22. Items of underwear for the most courageous (7)
- 23. Great pot is smashed – and kept in this (7, 3)

Down

- 1. Cite estimate (5)
- 2. Man brought up in ancient Iran (4)
- 3. It is necessary as bread is prepared, by the sound of it (6)
- 4. The vital mud I collected contained something Jewish (8)
- 5. A small number have a disturbed night. It's of no significance (7)
- 6. The underworld is placed well below, arguably (10)
- 9. Chinese emperors who were both useful and unpleasant (3, 7)
- 12. Member of a Civil War faction using a theodolite? (8)
- 14. Second-rate bat often used for holding up a shelf (7)
- 16. Note on a container – one with leaves in (3-3)
- 19. On the watch for beer? Right! (5)
- 20. Old light-vessel (run on oil) hit softly (4)

Answers on p 34

Conferences

Rescue open meeting 23rd February, London.

Theme: *English Heritage & Archaeology*. Guest speakers: David Miles and Lord Redesdale. Venue: Museum of London. Further information from Rescue - The British Archaeological Trust, 15a Bull Plain, Hertford, Hertfordshire SG14 1DX. Tel 01992 553377. Email: rescue@rescue-archaeology.freeserve.co.uk

Shaping understanding: Form and order in the Anglo-Saxon world, 400-1100

7th-9th March, London

Colloquium at The British Museum. Subjects cover the visual arts, texts, scripts, languages, religious practice, and social structures. Further details: Leslie Webster, Department of Medieval and Modern Europe, The British Museum, Great Russell Street, London WC1B 3DG. Tel 020 7323 8209. Email l.webster@british-museum.ac.uk

Cantate domino: Vicars choral colleges in English cathedrals 22nd-24th March, York

Venue: St William's College, York. Theme: archaeological, architectural and documentary evidence from all the English cathedrals with Vicars Choral Colleges. Speakers include: Warwick Rodwell, David Stocker, Tim Tatton Brown. Further details: Vicars Choral Conference, York Archaeological Trust, 13 Ogleforth, York YO1 7FG. Tel 01904 663000. Fax 01904 663024. Email: enquiries@yorkarchaeology.co.uk

IFA annual conference for archaeologists 25th-27th March, Leicester

IFA's 2002 conference will be held at the University of Leicester. Title: *Setting standards in archaeology*. Further details: Conference Committee, Institute of Field Archaeologists, University of Reading, 2 Earley Gate, PO Box 239, Reading RG6 6AU. Tel 0118 9316446. Email: admin.ifa@virgin.net

South East of England regional industrial archaeology conference 23rd March, Cranbrook

The Association for Industrial Archaeology's South East of England Regional Industrial Archaeology Conference (SERIAC), organised by the Medway Industrial Archaeology group. Venue: Cranbrook School, Kent. Further details: Bob Barnes, 3 Vespers Cottages, Cage Lane, South Marden, Ashford TN27 8QD, tel 01233 770355.

Computer applications and quantitative methods in archaeology 2nd-6th April, Crete

Venue: Heraklion, Crete. Main theme: *The Digital Heritage of Archeology*. Plenary and parallel

sessions, with papers, posters and demonstrations. Further details: CAA2002, Institute of Computer Science, Foundation for Research and Technology - Hellas, PO Box 1385, 711 10 Heraklion, Greece. Email caa2002@ics.forth.gr

Enlightening the British: Knowledge, discovery and the museum in the 18th century 4th-6th April, London

Venue: British Museum. 3-day conference setting the intellectual, social and political context for the foundation of The British Museum (250 years old in 2003). Further details: The Director's Office, The British Museum, Great Russell Street, London WC1B 3DG.

Email: director@thebritishmuseum.ac.uk

Carbon-14 and archaeology 9th-13th April, Oxford

The 4th C14 and Archaeology Symposium will be held in Oxford, organised by the Oxford Radiocarbon Accelerator Unit, Research Laboratory for Archaeology and the History of Art, University of Oxford. Further details: Dr Tom Higham, Oxford Radiocarbon Accelerator Unit, Research Laboratory for Archaeology and the History of Art, 6 Keble Road, Oxford OX1 3QJ. Email orau@archaeology-research.oxford.ac.uk

Symposium for Richard Reece 20th-21st April, Cardiff

2-day conference to celebrate the contribution of Richard Reece to archaeology and numismatics. Venue: Cardiff University, School of History and Archaeology. Will look at interdisciplinary themes involving numismatics and archaeology. Further details: Peter Guest, School of History & Archaeology, Cardiff University, Humanities Building, PO Box 909, Cardiff CF10 3XU. Tel 029 20876538. Email GuestP@cf.ac.uk

International millstone colloquium 16th-19th May, La-Ferte-sous-Jouarre

Colloquium to discuss the quarrying, working, trade and use of millstones, and their long-term history. Further details: Mouette Barboff & Francois Sigaut, Maison des Sciences de l'Homme (Salle 115), 54 Boulevard Raspail, 56006 Paris, France.

International Council for Archaeozoology 2002 conference 23rd-28th August, Durham

ICAZ 2002 will be held at the University of Durham. Proposals for sessions, workshops, papers and posters are currently invited. Further details: ICAZ 2002, Dept of Archaeology, University of Durham, South Road, Durham DH1 3LE. Tel 0191 374 1139. Email: icaz2002@durham.ac.uk. Website www.nmnh.si.edu/icaz

Books etc

The Romano-British small town at Wanborough, Wiltshire

by A S Anderson, J S Wachter, & A P Fitzpatrick.

See Review on p 14/16 of this issue. Britannia Monograph 19, 2001, 380 pp, 11 plates, 126 figs. £36 (till 30.4.02), then £44, including p&p. Order with the form enclosed in this issue.

Roman Alcester 3, northern extramural area

by P Booth & J Evans

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Roman Catterick and its hinterland, 1 & 2

by P Wilson

The results of over 40 years of excavation of this important small town. Covers relationship between civilian and military populations, and transition from Roman to medieval. Large assemblages of finds.

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L'artisanat romain: évolutions, continuités et ruptures (Italie et provinces occidentales)

edited by M Polfer

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Bibliographie Instrumentum 1994-2001

M Feugère et al.

6,000 entries presented alphabetically within 33 thematic chapters covering functional categories of objects and different types of craft production. The data also comes as an electronic database which allows users (Mac and/or PC) to save searches and sorted data in a personal folder.

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Stepping through time, archaeological footwear from prehistoric times until 1800

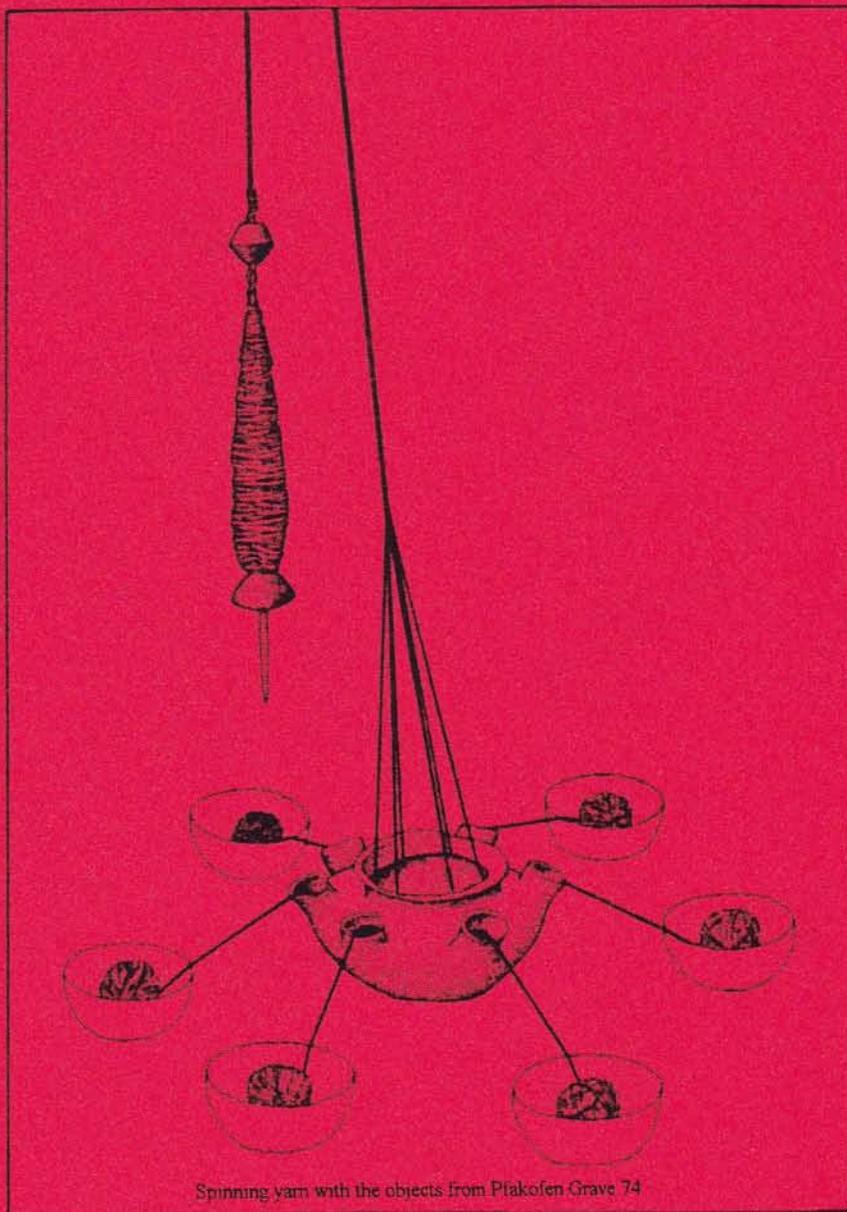
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Crossword answers

16. Tea-bag 19. Alert 20. Lamp
6. Disputably 9. Han dynasty 12. Leveler 14. Bracket
1. Quote 2. Eiam 3. Needed 4. Talmudic 5. Nothing
Down
ha. 21. Yoke 22. Bravest 23. Storage pit
Peruvian 13. Tables 15. Singly 17. Bracelet 18. Ha-
1. Quernstone 7. Iron Age 8. Latch 10. Peel 11.
Across



Spinning yarn with the objects from Pfakofen Grave 74