

PROCEEDINGS
OF THE
CAMBRIDGE ANTIQUARIAN
SOCIETY

(INCORPORATING THE CAMBS & HUNTS
ARCHAEOLOGICAL SOCIETY)



VOLUME LXX

1980

IMRAY LAURIE NORIE AND WILSON

1981

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THE UNIVERSITY OF CHICAGO
DEPARTMENT OF CHEMISTRY

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BY
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AND
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AN IRON AGE SWORD AND SCABBARD FROM ISLEHAM

I. M. Stead, A. P. Hartwell, J. R. S. Lang, S. C. La Niece and N. D. Meeks

An iron sword, in its decorated bronze scabbard, was found in the course of harrowing a field at Isleham, Cambridgeshire, on the 4th March, 1976. It seemed very likely to have been recently re-deposited, for spoil had been distributed there following a ditching operation the previous winter. As the field had been ploughed no deeper than usual, and the scabbard could not have been in the plough-soil for any length of time, its likely provenance was the neighbouring ditch. The find-spot, TL 65407555, is 1.5km north-east of Isleham church and only 60m south of the River Lark which here forms the county boundary between Cambridgeshire and Suffolk.

The farmer, Mr P. J. Flatt, of Church Farm, Isleham, took his find to Cambridge and had it identified at the University Museum of Archaeology and Anthropology, where he offered to sell it. But it proved impossible to raise the funds at Cambridge so it was offered to the British Museum, whose trustees sanctioned its purchase in July, 1976. (Fig. 1)

Soon after the discovery the site was closely examined by Dr J. A. Alexander, who surveyed the field and examined the sides of the ditch, but to no avail. A metal-detector located objects up to 0.25m deep, but found nothing of any antiquity. He concluded that the scabbard was a stray find which might conceivably have been buried in a former course of the River Lark.

When discovered the two bronze plates of the scabbard had become detached at the bottom, with the back plate bent outwards. The ends of the two plates were 40 or 50mm apart and between them could be seen the tip of the iron sword. There was a deep gash on the right side of the back-plate, about the middle, but otherwise the scabbard seemed quite solid and in very good condition. It was covered with a layer of encrusted dirt, but where this had broken away the bronze shone in almost pristine condition and there were clear traces of decoration. What little could be seen of the sword suggested that it was not in good condition: it was considerably corroded and had lost its tang. After photography and radiography it was decided to remove the sword from its scabbard to allow a thorough study of both the scabbard plates and the sword and to facilitate conservation by separating the bronze from the iron.

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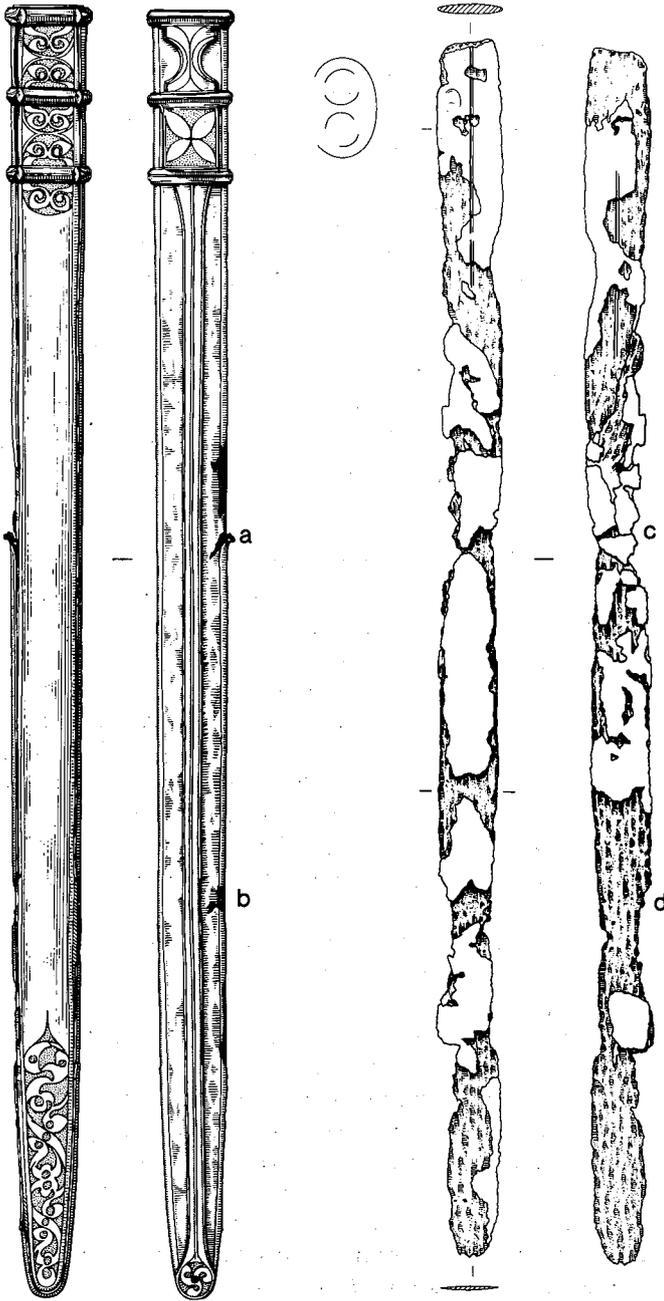


Fig. 1. Both sides of the Isleham scabbard and sword (scale $\frac{1}{4}$) and a detail of the stamp on the sword (scale full size). Figs. 1 to 4 have been drawn by Robert Pengelly.

THE SCABBARD

The scabbard is composed of four pieces of bronze: the two main plates; a long decorative strip on the back; and a separately-cast piece comprising the suspension-loop, upper loop-plate, mouth-guard and two reinforce bands.¹ The front plate is 767mm long and 43mm wide. Straight at the top, slightly tapered and rounded at the bottom, it is convex across its width with the centre of the underside raised up to 4.5mm above the level of the edges. Except at the top, which turns slightly outwards, all edges are inturned and bordered on the outer face by a broad groove and narrow ridge. The outer surface is highly polished, with panels of decoration at the top and the bottom: the upper panel extends for 111mm, starting about 10mm from the top, whilst the lower panel is 164mm deep and there is an undecorated length of 450mm between the two. This plate is in excellent condition, with a very little corrosion in the fillings of the decorated areas, but it has been damaged at two points on the left edge. At 320mm from the top the edge has been buckled outwards, and at 516mm there is a jagged cut some 5mm long.

The back-plate is wider, because its edges have been wrapped round those of the front-plate. It too is 767mm long, and its width is 44.5mm at the top, tapering only slightly to about 38mm at 650mm from the top and then more sharply to 25mm at 750mm and so to a rounded end. The overlapping edge, on average 3mm wide, is bordered by a slight groove and the back of the scabbard has a similar bordering groove some 3 to 4mm from the edge. There is no chape, and the overlap of the back-plate continues round the tip. Like the front-plate, the outer surface has been highly polished, but tool marks are clearly visible on the reverse. On the inner surface there is a transverse crack about 22mm long some 30mm from the top, and a rather similar but vertical crack about 43mm long whose lower end is 210mm from the bottom. The back-plate is not as well-preserved as the front. Its outer surface is pitted with corrosion which in places has eaten through the entire thickness. There is one particularly badly-preserved patch some 150mm long in the upper part on the right side, while centred some 230mm from the bottom a band of corrosion crosses the sword diagonally and coincides with the point where the back-plate was bent slightly away from the front-plate. The top right of the diagonal band of corrosion (Fig. 1, b) coincides with the gash cut into the edge of the front-plate. The second piece of damage to the front-plate, the buckled edge, also corresponds to damage at the back – for here is a deep diagonal cut some 30mm deep with curled, but uncorroded and sharp edges (Fig. 1, a). Whilst this deep cut is not obviously ancient, it did not stand out sharply and cleanly when the scabbard was first inspected, and there is a correspondence with the damage to the iron sword. Unfortunately there is no objective way of establishing whether the scabbard was damaged in antiquity or more recently either in the ditch or on the surface of the field. One can be more positive about its wear, for the decoration is so sharply defined that the scabbard can have seen very little use.

The suspension-loop is a separate casting comprising not only the reinforces above and below, but also an upper loop-plate in the form of a decorative plaque and a

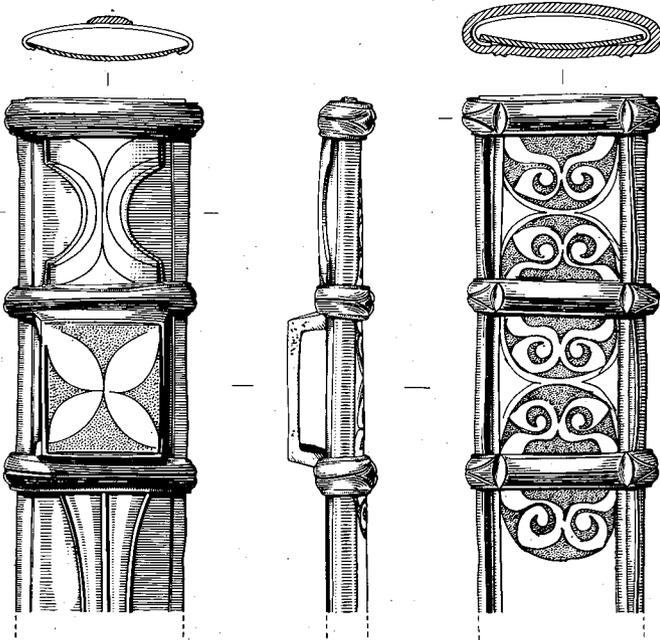


Fig. 2. The upper part of the Isleham scabbard (scale $\frac{2}{3}$).

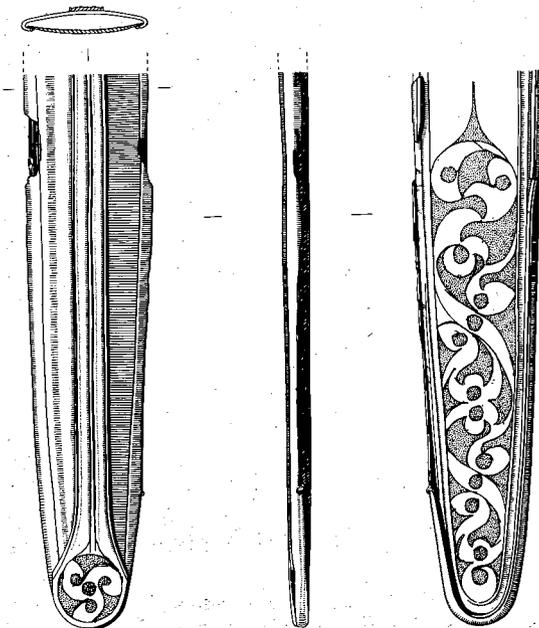


Fig. 3. The lower part of the Isleham scabbard (scale $\frac{2}{3}$).



Plate 1. Detail of the decoration at the bottom of the front-plate of the Isleham scabbard. (Photograph by courtesy of the trustees of the British Museum).

mouth-guard in the same form as the reinforces. The whole is 102mm long; the reinforces are 50mm and the mouth-guard 51.4mm wide; the suspension-loop is 31.5mm deep and raised 7.5mm above the scabbard. The reinforces are grooved on the back and have transverse lip-mouldings on the front; the plaque has simple linear ornament in the form of two facing arcs; and the suspension-loop itself is decorated with four symmetrical petals with a stippled background. The original casting was not a success, and faults at the junction of the bottom reinforce and the suspension-loop on the left side had to be rectified by casting-on more metal. The repair shows as a bulge on the inside of the suspension-loop and as lines between the two metals on the side and at the bottom. The reinforce was still extremely weak, however, and the crack opened when the scabbard was being dismantled in the course of conservation.

The fourth piece of bronze in the scabbard is a strip attached to the back-plate, from the suspension-loop to the bottom, on the back. Typologically it is derived from a lower loop-plate, but it plays no part in securing the suspension-loop and is purely decorative. At the top, where it is clasped by the lower reinforce, it is 23.5mm wide but it rapidly tapers to 12mm and then very slightly to a minimum of 10.5mm before expanding at the bottom to the full shape of the scabbard-tip. For its entire length the strip has been soldered to the scabbard (p. 66); at the bottom there seems to be a hole in the centre, as if intended for a rivet, but if so it was not used. There is a ridge and grooves along the centre and others along each edge, and the strip terminates in a circular panel decorated with a triscele against a stippled background.

There are four panels of ornament on the scabbard, two on the front-plate, one on the suspension-loop and one at the bottom of the lower loop-plate. The engraved or inscribed outlines (p. 67) have punched infilling, and all might well have been executed by the same craftsman. Close examination shows that the even flow of the design has been executed by a surprisingly jerky hand – some of the circles at the bottom of the front-plate, for instance, have irregular outlines gouged out in a very ham-fisted way (Pl. 1). In several places outlines stray from the intended course and are repeated, as in a sketch, whilst some of the punched stippling runs into and even beyond the outlines. In comparable linear designs it has often been possible to detect the faint sketch-lines of a scribe,² but there are no such marks here, and given the careless workmanship they would almost certainly have survived. It seems that the design was transferred to the metal by some other means. From this point of view it is interesting to note that the design on the lower part of the front-plate seems trimmed – as if it had been intended for a slightly broader field (cf. the sketches, Fig. 4).

The designs on the back-plate are quite simple – a four-petalled device on the suspension-loop and a triscele at the bottom of the lower loop-plate. On the front-plate, the upper design comprises five semi-circular panels set alternately inverted and upright and arranged to take account of the mouth-guard and the two reinforces (Fig. 2). In each semi-circular panel is a pair of 'heads' set heraldically back to back in a way which may have drawn inspiration from dragon- and bird-pair ornaments.³ The lower design on the front-plate is more complex (Fig. 3), and is composed of three elements, curved-sided triangles, circles and 'heads'. The description may be clarified if the piece

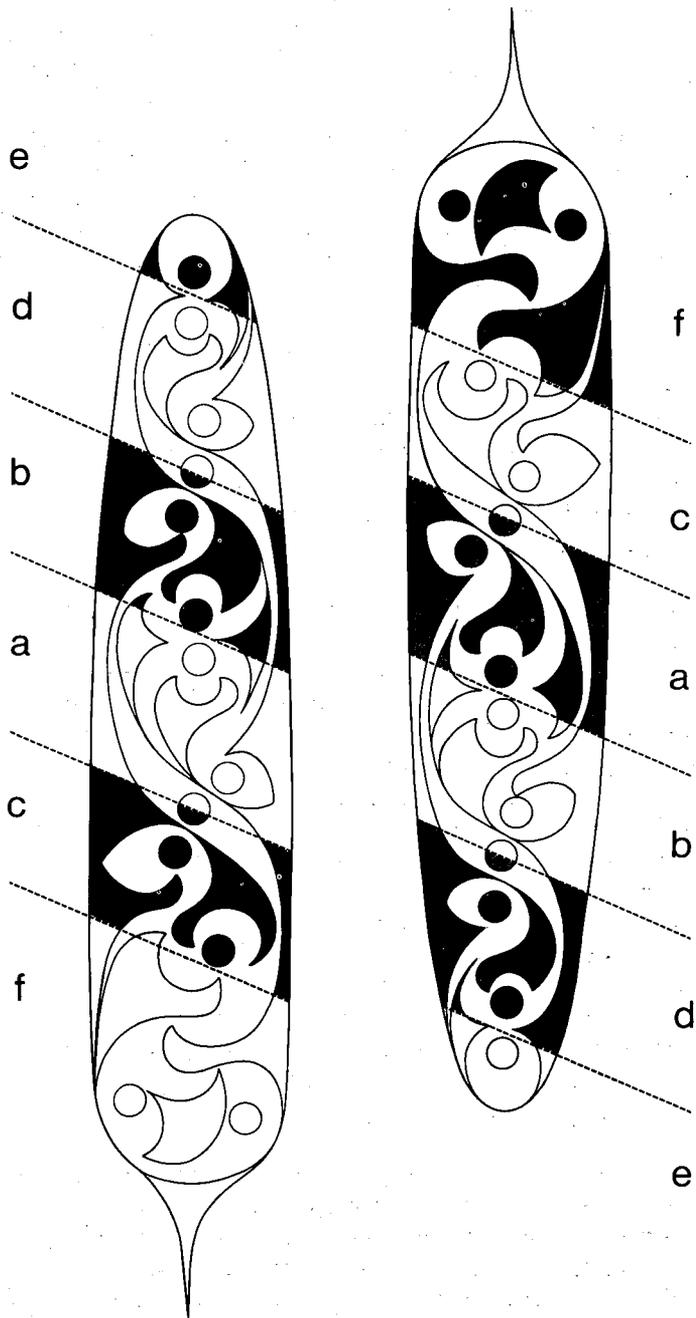


Fig. 4. Sketches to illustrate the composition of the design at the bottom of the front-plate of the Isleham scabbard (scale $\frac{2}{3}$).

is considered in six parts, lettered *a* to *f* on Fig. 4. The central parts, *a* and *b*, have the same motif, *a* being an inversion of *b*; very similar is the motif shared by *c* and *d*, again with *c* being an inversion of *d*. The design is rounded off simply at the bottom by *e*, and more elaborately capped by *f*, which introduces a large comma-motif filled with a delta and two circles. Although the design includes inverted repeats, it has not been re-traced exactly but drawn free-hand and tapered.

The scabbard was examined in the British Museum Research Laboratory in order to clarify details of manufacture, decoration and damage:

a. *Manufacture and Working*

The composition of the sheet bronze was determined by atomic absorption spectrometry before conservation.⁴ The precision of the method is $\pm 1\%$ for major elements and $\pm 30\%$ for trace elements. All elements mentioned could be determined down to at least 0.005% of the metal: copper 87%, tin 10.3%, lead 1.9%, iron 0.9%, antimony 0.2%, zinc 0.1%, silver 0.07%, nickel 0.06%, arsenic 0.05%, bismuth 0.003%, total 100.6%. The bronze is a pale yellowish colour as a result of the tin content.

The two sides of the scabbard are of sheet metal. Examination of a small piece under scanning electron microscope showed by the fine grain of the matrix metal that the scabbard had been well worked, and there is evidence of some working after the final annealing. Tool marks can be seen on the inner face of the scabbard, which was finished less carefully than the outside. Hammer impressions are still visible and also a series of marks made up of roughly parallel lines. These marks seem to show a repetition of the same configuration of lines and possible explanation is that a tool with a scratched surface was used to hammer the bronze. There are also a number of scrape marks at the tip of the scabbard and scratches down the length of it which were probably made by the sword itself. The edges of one half of the scabbard have been filed so that it would fit when the edges of the other side were folded over it. This filing has left rough parallel grooves. The top edge of the scabbard has been hammered down, presumably to ensure that it was flush with the mouth-guard.

Between the "lower loop-plate" and the scabbard is a distinct layer of metallic grey brittle material and at the bottom there is a hole in the middle of a decorative motif (triscele) which contains a similar grey material. Spectrographic analysis of the grey material from both areas showed that both have a far greater proportion of tin than was found in the surrounding bronze of the scabbard. Both contain some copper and the material from under the length of the "lower loop-plate" contained a trace of lead and silver. The high tin content in both samples indicates that both are soft solder. It is probable that the traces of copper, lead and silver are contamination from the corroding bronze around the solder.

b. *Decoration*

The linear decoration on the scabbard shows some variation. The design on the upper loop-plate is of broad grooves with V-shaped profiles of uneven width and line

(Fig. 2, left). There are marks in the grooves which could be explained as uneven tracing. However, if these lines were traced, the metal displaced to the edge of the grooves must have been polished away as the edges are now perfectly smooth. The line decoration on the suspension-loop is very similar to that on the upper loop-plate, except that on the suspension-loop the lines are more regular. However, the frame around the four-petalled motif is of deep straight lines, different in appearance from the other decoration. This frame may have been part of the original casting, but the curved lines of the four-petalled device have the characteristics expected of either tracing or engraving.

In contrast, the curvilinear designs on the rest of the scabbard are of very different appearance (Fig. 2, right, and Fig. 3). The grooves are about half the width of those described above; they are shallow and have a very smooth U-shaped profile. On both sides there is a sharp ridge of raised metal. There are no traces of individual tool imprints and the line and smoothness of the grooves give the appearance of being cut in continuous movements. The appearance of the grooves most resembles the effect produced by a scriber. They are unlikely to have been traced or engraved. Lowery *et al.*, *op. cit.*, apparently consider that a scriber is only suited for the preliminary sketching of a design on to metal. The Isleham scabbard has no such preliminary lines but we see no reason why a scriber could not have been used for the finished result, which is, after all, rather sketchy. On an experimental example of scribing, lines of similar dimensions and appearance were produced with no great difficulty.⁵

There is a series of deep parallel grooves on the "lower loop-plate". These show no signs of tool marks, but only fine parallel scratches running along the length of the piece. There is thus no concrete evidence for identifying the techniques used. The decoration is unlikely to have been cast since it would have been unnecessarily difficult to have cast such a long thin strip. Since the two central lines are so perfectly parallel to each other (i.e. when one bends to the right, so does the other) they must have been made by a single tool. Something like two nails protruding from a block of wood and scraped down the length of the piece could have been used. The grooves are deep and would have required repeated scraping. Whatever method was used to make the grooves, the scratches imply thorough polishing up and down with an abrasive material and this has certainly removed any clues that might have existed as to the tools used. The top end of the "lower loop-plate" is tucked under the suspension-loop but its decoration stops just before the lower reinforce, which would imply that the decoration was added after the scabbard was assembled.

The stippled decoration has been done with a tool of D-shaped cross-section, and the same tool was probably used for all of it. The stippled decoration on the rounded tip of the "lower loop-plate" has been done relatively neatly, from a consistent direction and angle. An experimental attempt to reproduce the effect shows that it is possible to make the holes of comparable depth with a free-hand stabbing action but that it is difficult to control their position. The decoration on the tip of the "lower loop-plate" was therefore probably done by steadying the tool at a slight angle with one hand while tapping with a hammer. However the stippled decoration on the front of

scabbard is so haphazard that it could have been done free-hand without the use of a hammer.

c. *Damage*

The scabbard was badly bent when found, with some corroded areas and tears, some of which are free from corrosion. It is worth noting that two lines of damage seem to run parallel and diagonal across the back. There is much less damage on the front. It is therefore possible that the diagonal cuts were made by a plough or harrow while the scabbard was lying face downwards.

As well as corrosion damage and gashes there are two straight cracks, best seen on the inside of the back-plate. Both cracks are largely covered and protected on the outside by applied metal decoration, in one case by the "lower loop-plate" and in the other by the upper loop-plate. As neither of the loop-plates show evidence of damage it is very likely that the cracks developed during the original hammering down of the metal although it is not possible to prove this conclusively. However, the break in one of the reinforces is certainly a casting defect with a repair cast-in but forming a bad join.

THE SWORD

The iron sword is in very poor condition. The hilt and the very top of the blade are missing, and the blade now terminates at the top end in a slightly sloping line whose upper part was 28mm below the level of the scabbard-mouth. This breakage and loss probably occurred in antiquity, for there was no sign of recent damage. The sword is now in two parts, of which the upper comprises a complete piece 230mm long extended by small fragments and flakes to 300mm; the bottom of this part (Fig. 1, c) coincides with the damage *a* to the scabbard. The lower part of the sword is 437mm long, and its tip was 30mm from the bottom of the scabbard: again there is damage coinciding with the ripping of the scabbard (Fig. 1, d, compare with *b* on the scabbard). The two parts of the blade do not now join, but when complete in the scabbard the surviving length of the blade was 709mm. Only a little of the original surface can now be seen, particularly for about 135mm from the top of the blade (Fig. 1, left) and again on the same side for about 80mm along the bottom right. Elsewhere along the blade, unshaded on Fig. 1, there is a smooth surface where corrosion products have taken the shape of the inside of the scabbard. The blade is 39mm wide at the top and 5.8mm thick at the centre. A shallow groove down the centre can be distinguished for 180mm on the one face and 145mm on the other, whilst the slight remains of the blade's surface preserve another more interesting mark. Between 26mm and 40mm from the top (Fig. 1, left, and detail) there are faint traces of a punched impression, whose remains show clearly on a radiograph. It comprises two circles, one above the other, in an oval or possibly pelta-shaped field – the left side is too badly damaged to be certain of the shape. The sword's surface has flaked dangerously near to the mark, so an electroform has been taken to make absolutely sure that it is recorded

in its present state. Armourer's marks are well known on continental swords,⁶ but this seems to be only the second to be recorded from Britain – the first being on a sword from Llyn Cerrig Bach, Anglesey, noticed some years after its original publication.⁷

The blade of the sword was examined in the British Museum Research Laboratory as part of a programme of technical examination of Celtic iron swords from Western Europe.

a. *Examination*

A wedge-shaped sample was removed from the blade at a distance of 90mm from the hilt. It was mounted in cold setting resin, polished and examined in both transverse and longitudinal section.

The sample was first examined in the unetched condition and then re-examined after etching, using both optical and scanning electron microscopes (SEM). A series of hardness measurements was made across the surface and then the sample was cut at right-angles to enable a similar examination to be made in a longitudinal direction parallel to the cutting edge of the sword. Detailed examination of the inclusions and matrix were made in three areas using the SEM.

b. *Discussion*

There are three fairly distinct zones which run along the blade, parallel to the surfaces and from the cutting edge towards the central rib. The carbon content and grain size and shape changes as the sample is traversed from surface to surface across these zones, and these changes are approximately delineated by two bands of inclusions.

The laminated form of the blade and the orientation of the slag inclusion plates suggests that this sword was fabricated from metal strips (probably three in number) of different carbon contents. The gradual changes in carbon content across the inclusion lines indicate that the sword has been held at an elevated temperature for an appreciable time allowing some macroscopic carbon diffusion to occur. No estimate of the carbon content is given since this is not an equilibrium structure. The central section contained a higher proportion of pearlite than the outer section and some areas near one of the defect lines were almost completely pearlitic. The pearlite was generally very fine showing some areas of very low inter-lamellar spacing.

The variations in hardness coincide with the observed microstructural changes, the lower values being recorded in the areas containing most ferrite. Taken as a whole, the values recorded were higher than expected for these types of structure. The cutting edge, although hard (415 HV on the Vickers microhardness scale), was not harder than much of the central strip (370 HV – 450 HV), while the metal close to the surface appeared to be generally somewhat softer (320 HV). The quality of the steel used to make the sword was good. The inclusion concentration was low except along the alignments, and although some phosphorus was present, no sulphur was detected.

Atomic Absorption analyses of a drilling from the specimen showed the presence in

very small quantities of the elements nickel (0.03%), cobalt (0.01%) and chromium (0.01%) which are similar to results obtained for other Celtic iron swords. Phosphorus, determined colorimetrically, was 0.01%, which is within the range of phosphorus contents found in similar swords.

No signs of cold working were visible so the finishing treatment must have been in the austenite region ($> 750^{\circ}\text{C}$). Very little porosity was observed suggesting that a large amount of hot working had been carried out. The acicular morphology of the pearlite and ferrite indicate that the sword was cooled fairly quickly from the austenite transformation temperature, probably in the air.

c. *Summary*

This sword was fabricated from three steel strips which were forged together in a laminar arrangement. Extensive hot working was performed and the sword was finally air cooled from about $750\text{--}800^{\circ}\text{C}$.

DISCUSSION

The Isleham scabbard may be compared with two other English pieces found to the north and south of it, in the Rivers Witham and Thames. Sword-scabbards with straight mouths, long almost parallel sides and rounded ends are distinctive of La Tène III, and indeed Déchelette thus classified and illustrated both the Witham and Thames scabbards.⁸ The three examples under discussion have characteristic British features, especially the full-length "lower loop-plate", and the fact that they are made entirely of bronze. Furthermore, the decoration on the Isleham scabbard is quite distinctively British. There can be no doubt that the three scabbards were native products.

The Thames scabbard, found at Battersea in 1858,⁹ is longer (771mm) and wider (47mm, excluding the mouth-guard) than that from Isleham. Its suspension-loop and loop-plates are cast in one piece with the two reinforces, the whole seeming slightly too wide for the scabbard, and the reinforces obscuring some of the decoration on the front plate. The upper loop-plate was rivetted to the back-plate of the scabbard, although the rivet had worked loose and when discovered the suspension-loop had slipped down the scabbard. The mouth-guard is a separate casting with a central rivet-hole which has no matching hole in the scabbard-plate. The original lower loop-plate is broken, and now overlaps a long "loop-plate" soldered throughout (like Isleham) and rivetted at the bottom. The upper part of the front plate is decorated with simple circles and punched dots. Unlike Isleham the Battersea scabbard has been repaired and seen very considerable wear. It does not have a sword in it.

The Witham scabbard is still longer (803mm) and broader (52.5mm, excluding the mouth-guard). It was found in 1787 with another bronze scabbard in the River Witham near Bardney Abbey.¹⁰ The suspension-loop and upper loop-plate are in one piece, the two reinforces and the mouth-guard being separate castings. These pieces seem to have been slotted into position and held by the mouth-guard clasping the top of the upper-loop-plate; no rivets were used, and there is no trace of solder. The "lower

loop-plate" is a separate strip of bronze rivetted in position and perhaps also soldered. The Witham scabbard is damaged at the bottom, and unlike the others it may at some time have had a short cast chape. As on the Isleham scabbard the front plate is decorated above, between and below the reinforces, but the decoration here is simpler. The motif below the lower reinforce is a reversed version of the design at the bottom of the front plate of the Isleham scabbard, a simple motif but in contrast with Isleham it is neatly executed and has well-spaced punched infilling. This Witham scabbard still holds its iron sword.

There is no other scabbard of this type, although one is tempted to see the decorative metal strip from St Mawgan-in-Pyder, Cornwall, as part of a "lower loop-plate".¹¹ It was regarded originally as the decoration of the spine of a shield, but as the strip is flat and not curved in section it is perhaps more likely to have decorated a scabbard. If so it would have been too long for a 'Brigantian' scabbard, but might have belonged to one of the type under discussion.

The three scabbards of this type were all unassociated finds, although the decorated strip from St Mawgan-in-Pyder was found with a hinged brooch – a Hod Hill variety dating around the middle of the first century A.D.¹² The motifs in the decoration at the bottom of the front plate of the Isleham scabbard may be compared with those of the Hunsbury and Bugthorpe scabbards¹³ as well as the designs on the backs of some mirrors.¹⁴ Simple punched infilling, a feature of the scabbards from Isleham and the River Witham, is also found on the strip from St Mawgan-in-Pyder, but otherwise it is not often associated with engraved or traced decoration. Whilst a general context for the Isleham scabbard is easily defined, it is impossible to suggest a date closer than the century before the Roman conquest.

Interestingly the two comparable scabbards had been lost or deposited in rivers, and it may well be that the Isleham find was originally in the River Lark. This is by no means an unusual context for La Tène metalwork, and indeed since the discovery at Isleham in 1976 at least three other Iron Age scabbards have been found in old river courses in eastern England. River beds seem to produce more good quality La Tène metalwork than can be explained by casual loss, and it is very tempting to think in terms of ritual practices. Jacobsthal put the case strongly: "People would not have been such fools as to throw the bodies of slain foes, together with their stately arms, into the rivers: it is much more likely that these masterpieces of craftsmanship were votive offerings to river gods".¹⁵

NOTES

1. Terminology follows J. M. de Navarro, *The finds from the site of La Tène*, vol. 1, *Scabbards and the swords found in them*, part 1 (1972) 21-33.

2. e.g. P. R. Lowery, R. D. A. Savage & R. L. Wilkins, *Archaeologia* 105 (1976) 99-126, pl. xviii, c, the Great Chesterford mirror. It is suggested that a scriber was used for the final execution of the Isleham design (p. 67), but that is another matter.

3. e.g. de Navarro, *op. cit.*, pl. lxxiv, no. 1.

4. Dr P. T. Craddock's assistance in providing the analytical data is gratefully acknowledged.

5. The assistance of Ian McIntyre (Metals Section, British Museum Conservation Department) in undertaking the experimental scribing is gratefully acknowledged.
6. e.g. P. Vouga, *La Tène* (1923) 35-6, fig. 6.
7. H. N. Savory, *Bull. Board of Celtic Studies* 21 (1965) 374-6.
8. J. Déchelette, *Manuel d'Archéologie*, ii, 3me partie, 'Second âge du fer ou époque de La Tène' (1914) fig. 465, nos. 2 and 3.
9. B.M. 58.11 - 13.1. J. M. Kemble, *Horae Ferales* (1863) 193 and pl. xviii, nos. 4 and 4b; see also S. Piggott, *Proc. Prehist. Soc.* 16 (1950) fig. 10, nos. 6a and b, and the same illustration is used by Sir Cyril Fox, *Pattern and Purpose* (1958) fig. 73, 6a and b.
10. Lincoln Museum no. 9711.06. Andrew White kindly provided facilities to study this scabbard, and provided conclusive evidence that it was one of a pair of near-identical bronze scabbards found together. The second scabbard was destroyed in experiments carried out by George Pearson in the eighteenth century (*Philosophical Trans.* 86, 1796, 395-451, pl. xi, fig. 3). Pearson illustrates a scabbard which seems virtually identical to the survivor, and it is hard to believe in the existence of another (cf. S. Piggott, *Antiq. Journ.* 39, 1959, 20). The key reference for settling this issue is *Lincs. Notes & Queries* 3 (1892-3) 199-200: "This brass scabbard resembles exactly (the one destroyed by Pearson), only that the loops which hold it together are still more elegant, especially in the filing". See also a very useful pamphlet by White, *Antiquities from the River Witham*, part 1, Prehistoric and Roman (Lincolnshire Museums, Information Sheet, Archaeology Series no. 12, 1979).
11. *Arch.J.*, 113 (1956) 80-81 (where the recorded width has mistakenly been doubled, 5.8cm, 2 $\frac{1}{4}$ ins, instead of 2.9cm, 1 $\frac{1}{8}$ ins); Fox, *op. cit.*, 115 and pl. 67b.
12. *Arch.J.*, 113 (1956) 72, fig. 34, no. 17.
13. Piggott, *op. cit.*, fig. 3, no. 1a and fig. 2, no. 5.
14. e.g. the Mayer mirror, Fox, *op. cit.*, pl. 55.
15. P. Jacobsthal, *The Burlington Magazine* (75) 1939 (no. 436, July 1939) 28.

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