

The Excavation and Conservation of a Knife and Shears Set from Grove Priory, Bedfordshire

KAREN WEBSTER

SUMMARY

Routine X-ray of the iron finds from Grove Priory revealed this unusual and rare object. Conservation, X-raying and analysis showed it to consist of two knives and a pair of shears inside a leather box scabbard.

The knives have a most unusual handle construction, consisting of a very short iron scale tang, secured by one rivet, into a slot at the end of the decorative gunmetal component which acts itself as a scale tang for the fixing of alternate bone and ?horn panels. Both functional and decorative rivets are present on the handle.

The knife blades have inlaid makers marks. The scabbard has internal compartments of leather and has crude decoration of incised lines on the exterior of the shears compartment.

INTRODUCTION

Rescue excavation by Evelyn Baker for Bedfordshire County Council Planning Department's Archaeological Field Team took place in advance of sand extraction on the site of Grove Priory near Leighton Buzzard, Bedfordshire.

Grove Priory was a royal manor first documented in Domesday. As the royal manor of Leighton it was given to the Abbey of Fontevrault in 1164 by Henry II. It was one of only six alien houses of the order in England; not only was the manor exploited so as to send money to Fontevrault, but it appeared to be used by the king as if it were still his own. It reverted to a royal manor at around 1300, being in the hands of Mary of Woodstock (daughter of Edward I and herself a nun of Fontevrault) and then Maud of Lancaster. The last royal Lady of the Manor was Princess Cecily, mother of Edward IV, when the demesne block was separated from the rest of the manor in 1480. After that the site went into decline, with the focus of the manor shifting to a nearby site; the medieval buildings appear to have been partially in use until the early 17th century.

The knife and shears set was one of several hundred iron objects recovered from the site during thirteen years of excavation. Preliminary post excavation work (full analysis is in progress) places

the set in a small garden or courtyard within the main domestic and administrative area. (Fig 1.)

CONDITION BEFORE CONSERVATION

What was apparently one object was routinely X-rayed before conservation during 1985-6. It soon became apparent that it was unique amongst the finds from the site; the author is not aware of parallels for it from other sites.

EXAMINATION AND CONSERVATION

When the object arrived at the laboratory it was mostly covered with heavy concretions of soil and corrosion. (Plate 1.) Where concretions were

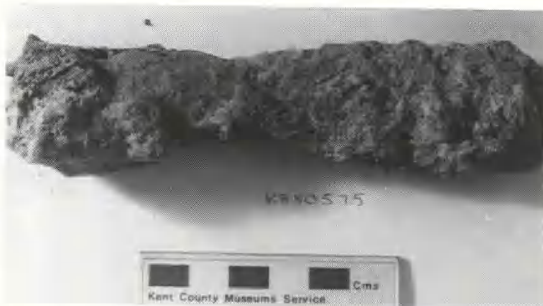


Plate 1 Before conservation (side view)

absent, traces of bone, copper alloy handle and rivets were visible. The concretions appeared to contain brown, powdery material thought to be mineralised organic material, perhaps leather. Incorporated into the concretions were the mineralised remains of many insect larval cases.

Visual examination revealed little information about the object, other than the presence of iron and copper corrosion products; the general shape though, suggested a knife of some sort. Initial X-raying showed the object to consist of two scale tang knives with another object laying on the backs of the

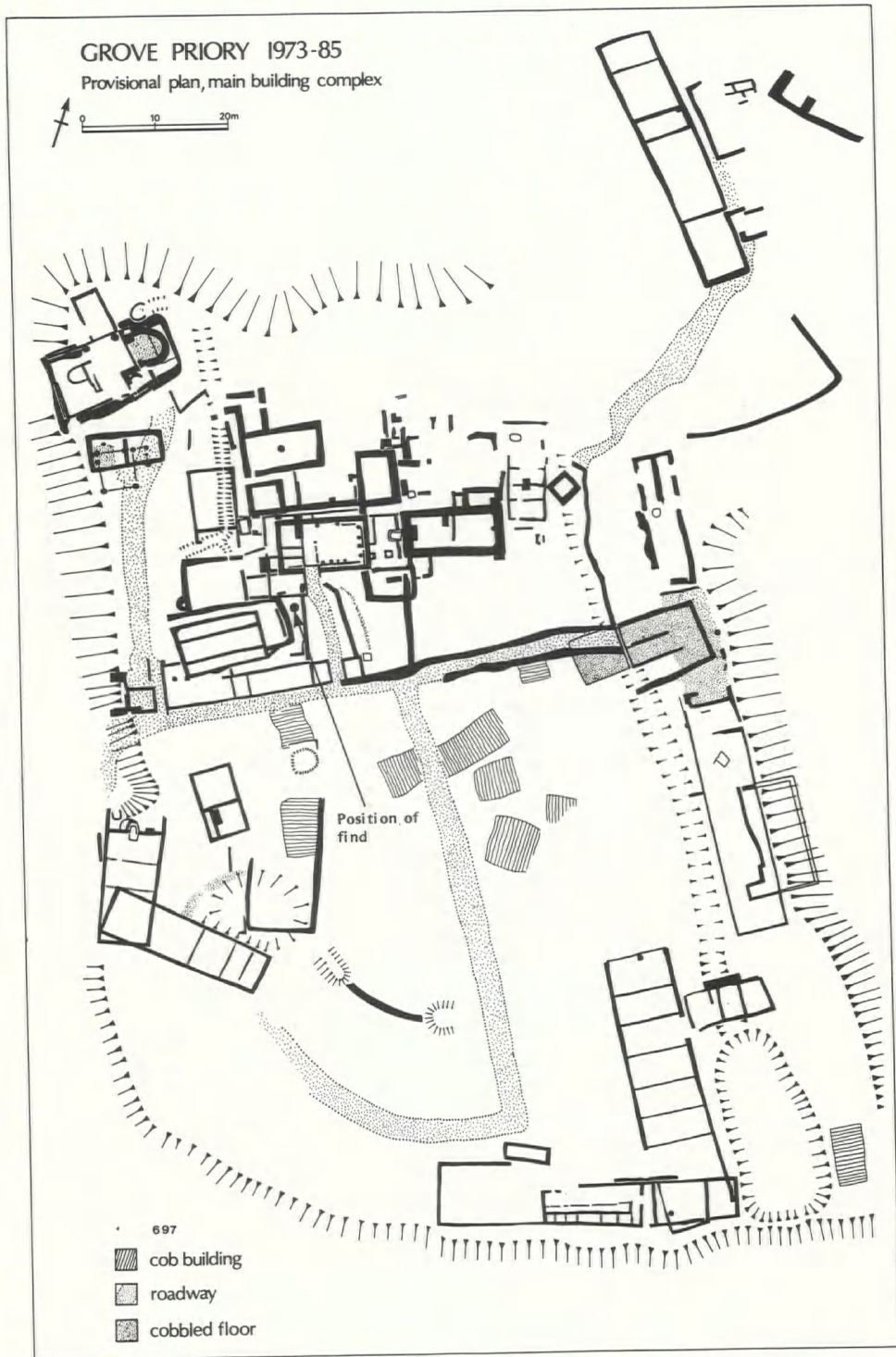


Fig 1 The position of the object within the buildings and earthwork plan; Grove Priory alias the royal manor of Leighton

knife blades. Further X-raying from a variety of directions and at different exposures was done, and stereoscopic X-ray images were obtained, helping to clarify many features which had been difficult to interpret.

After X-raying, the compact soil layer was removed mechanically with scalpel and soft brush whilst viewing with a low power binocular microscope. This exposed large areas of mineralised leather, with part of the knife handles protruding.



Plate 2 After conservation (side view)



Plate 3 After conservation (side view)

The visible copper alloy component of the handles was cleaned lightly with a scalpel.

No further cleaning, for example of the iron blades, was possible due to the extensive covering of leather. Similarly no stabilisation procedures were attempted, and lacquering or consolidation was considered unnecessary and inappropriate, since this might hinder future investigative work.

The copper alloy handles were qualitatively analysed using energy dispersive X-ray fluorescence analysis,¹ a non destructive technique. This was undertaken by Dr P. Wilthew of the Ancient Monuments Laboratory, London.

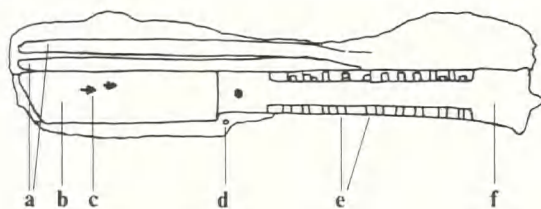


Fig 2 Details visible on X-ray no KCMS 954 (side view)

- (a) iron shear blades
- (b) iron knife blades, two superimposed
- (c) inlaid maker's marks
- (d) "starburst" pattern on scabbard
- (e) copper/copper alloy rivets
- (f) gunmetal "tang" (two superimposed)

THE OBJECT

The combination of cleaning, X-ray examination and analysis led to the retrieval of considerable information about the object, much of which is not apparent by visual examination alone.

The object as a whole consists of a decorated leather box scabbard with internal leather compartments housing two apparently identical knives and a small pair of shears. The scabbard and contents are incomplete, with the ends of the blades and scabbard missing.

THE KNIVES

The two knives appear to be identical in all respects and therefore the following description applies to both.

The blade: The blade is of iron with approximately parallel edges, having a blade depth of 13-14 mm.

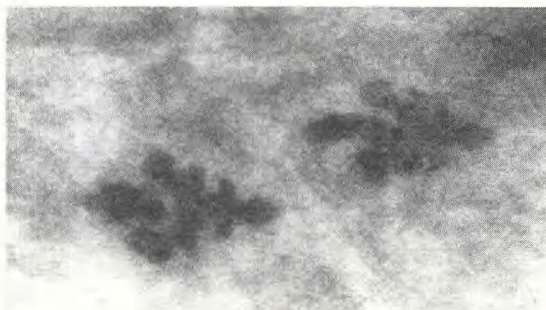


Plate 4 Inlaid maker's marks. Direct enlargement using X-ray KCMS 941 as the negative. Length of mark 4 mm

The existing blade length is approximately 51 mm (measurements taken from X-ray images) but is incomplete. The general style of the knife suggests the original blade length was considerably more.

Makers marks: Two similar makers marks are visible on the X-ray plates. Stereoscope pairs of X-ray images indicate one mark on each knife blade. The marks are inlaid, fleur-de-lys,² probably of a tin-based alloy³ and thought to be on the "mark side" of the blade.⁴

The iron tang: From the blade extends an iron scale tang 8 mm long which is secured into a slot in the end of the copper alloy handle by one rivet.

The handle: The handle construction is most unusual, consisting of a copper alloy component acting as a scale tang but in the plane at right angles to a conventional scale tang. *i.e.* the organic panels are rivetted to the top and bottom of the tang, rather than the sides. (Figs 3 and 4.) This "tang is

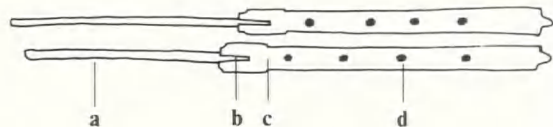


Fig 3 Detail of knives visible on X-ray (KCMS 950 and 943) from above:
 (a) iron blade
 (b) true iron tang
 (c) gunmetal "tang"
 (b) functional copper/copper alloy rivets

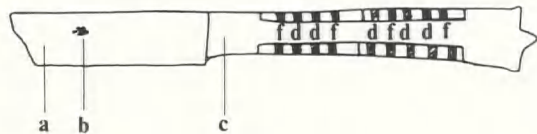


Fig 4 Detail of knife drawn from X-ray (K. 941), side view
 (a) iron blade
 (b) maker's mark
 (c) gunmetal "tang"
 (d) decorative rivets
 (f) functional rivets

considerably thicker than conventional scale tangs and the amount visible between the organic panels increases the decorative effect.

The ends of the "tang" widen to give the effect of shoulder plate and end plate. The "end plate" has leaf-shaped decorative recesses but surviving surface detail is poor due to the nature of the corrosion products present.

Some X-ray images suggest that the "end plate" may be perforated, perhaps to allow for a cord or chain to be attached. X-ray fluorescence analysis shows the copper alloy "tang" to be of gunmetal (copper-zinc-tin alloy). A trace of lead was also detected.

Rivets: Nine copper or copper alloy rivets are present along each side of the gunmetal "tang". These appear to be solid, rather than hollow. The X-ray images suggest that only four of the nine rivets are functional *i.e.* pass into the "tang". The remainder are hammered into the organic panels for decorative effect (Figs 5 and 6).

Organic Panels: X-ray and visual examination indicate that the handle originally consisted of four panels of organic material rivetted on to the gunmetal "tang", two on the top, and two on the underside. Diagonally opposite panels are of the same material (Figs 5 and 6).

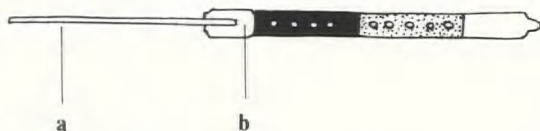


Fig 5 Handle reconstruction from above
 (a) iron blade
 (b) gunmetal "tang"
 bone
 ? horn

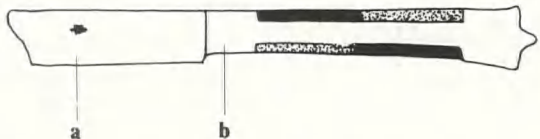


Fig 6 Handle reconstruction, side view
 (a) iron blade
 (b) gunmetal "tang"

The best preserved panels are of bone⁵ which has become stained due to contact with copper corrosion products. The other panels have not survived burial well. Slight traces, only, are left e.g. around the rivets. The traces have a layered, rather than fibrous, structure and are black with localised lustrous patches. The colours visible may be original or due to decomposition products. The original surface, or an impression of it, may be visible in the copper corrosion products between the two knife handles. The condition of the traces did not allow positive identification but the general structure and features visible suggest horn.⁶

Fibres: Between the "end plates" were found traces of creamy colour fibres. These were examined and identified as being of silk.⁷ Their presence may be intentional, e.g. indicating the remains of a cord, or may be the result of accidental contact during use or burial.

THE SHEARS

Interpretation of the object lying on the knife backs was difficult due to its high degree of mineralisation and the fact that images of all the objects in the scabbard were superimposed on the X-ray plates. However, stereoscopic pairs of X-ray plates suggest the object to be simple shears⁸ (rather than scissors). The blade length is approximately 75 mm but the blades may be incomplete. The maximum width of blade (calculated from the width of the scabbard compartment opening) did not exceed 17 mm.

It is not possible to determine how the blades overlap but the tendency, generally is for the left blade to overlap the right.⁹

The X-ray detail visible for the bow area is very poor due to the condition of the object. The shaping of the scabbard by the shears compartment opening suggests that the bow, at least in part, projected from the compartment and rested on a leather strip. This would facilitate access. The bow has only partially survived burial. There is a curved area of iron corrosion near the shears compartment opening which may be part of the bow or may be mineralised leather (perhaps a thong?) (Fig 7).

THE SCABBARD

The condition of the scabbard is very poor, particularly around the knife blades and shear blades due to disruption by iron corrosion products. It is missing from the underside of the knife handles.

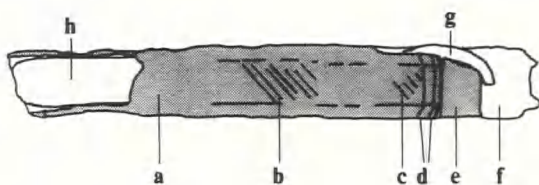


Fig 7 Details of leather scabbard from above
 (a) scabbard
 (b)
 (c) parallel decorative incised lines
 (d)
 (e) leather strip (? for shears bow to rest on)
 (f) knife handle terminals
 (g) iron corrosion (?? remains of shear bow or ?? heavily mineralised leather thong)
 (h) Shears blade covered with fibres from flesh side of leather (grain side of leather missing)

It is, however, possible to ascertain the following: The scabbard is of leather with the grain side on the outside. It has internal compartments of leather so that there is a layer of leather between the two knives and between the shears and the knives. It has definite box-like shaping near the mouth (perhaps it was treated to retain this shape e.g. cuir boilli). The mouth has been shaped to allow the knife handle terminals and shears bow to project. It is, at least in part, crudely decorated by parallel incised lines. This decoration appears to be confined to the shears compartment (Figs 7 and 8).

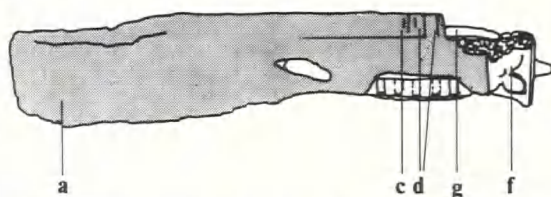


Fig 8 Details of leather scabbard, side view
 (key as for Fig 7)

One small unexplained feature was noticed on X-ray plate KCMS 954.¹⁰ At the bottom edge of the scabbard is a bright "starburst" pattern approximately 1.5 mm diam. The image is whiter than the surrounding area, indicating it is caused by a more dense material or by a thicker layer of material. It may be an accidental pattern caused by corrosion



Plate 5 "Starburst" pattern on scabbard. Direct enlargement using X-ray KCMS 954 as the negative. Actual diameter: approx 1.5 mm.

processes or perhaps is the remains of decoration, e.g. paint traces retained in recesses in the leather. It is only visible on MX film (Fig 2, Pl 5) and Ancient Monuments Laboratory Report 94/87.

Jane Cowgill has commented as follows: "There are only a few examples, in the Museum of London, of leather box scabbards, and they have fewer internal compartments than this one. They usually have five sides and one seam at the back. The seam on this example would probably be by the cutting edge of the knife blades, but the object is too deteriorated in this area to see any stitching. It is likely that the leather was originally painted, although this may not be detectable now."

DISCUSSION

DATING

The general style of the knives — the blade shape and length, the decorative scale tang and terminal — strongly suggests a late 14th century date. The examples of fleur-de-lys makers marks at the Museum of London are dated 1360-1400. The shears are of a type which are commonly found in the late 14th century.¹¹

The style of the knives and their very decorative nature suggests a date of late 14th or possibly early 15th century.¹² There are no parallels in the British Museum. The nearest examples, with respect to knife handle construction, are two knives which

have iron scale tangs in the same plane as the gunmetal "tang" in this example.

PRACTICAL CONSIDERATIONS

This form of knife construction gives a very decorative knife, but one which, due to its relatively short iron tang held only by one rivet, seems likely to be inherently weak.¹³

Shears of this size are thought to be held in the palm of the hand and operated by combined action of finger and thumb. They are generally thought to be suitable for making single exact cuts, rather than for continuous cutting. It is suggested that such shears may represent the development of needle-point or sewing shears.¹⁴

The overall impression this find gives is of a highly decorative knife and shears set which may have been a gift for a lady to use on special occasions, or perhaps for cosmetic or toiletry use.¹⁵

NOTES

1 Ancient Monuments Laboratory analysis reference no: PTW 7/1/86. The method used was X-ray fluorescence analysis which is a non-destructive technique for qualitative surface analysis.

The area for analysis is irradiated with X-rays. This causes the atoms on the surface of the object to release energy in the form of further X-rays, known as secondary or fluorescent X-rays. Each element produces different, characteristic wavelengths of secondary X-rays, and it is therefore possible to determine the elements present.

By measuring the intensity of the secondary X-rays of a particular wavelength, an estimate can be made of the amount

- of that element present. For detailed quantitative analysis, other methods are necessary.
- 2 Jane Cowgill, Museum of London, verbal report.
 - 3 The author has conserved 21 other knives with makers marks from this site. Inlaid marks have been analysed by X-ray fluorescence. From experience of comparing the density of X-ray images and the later analysis results, the author feels strongly that in this instance the density of the X-rays image suggests a tin-based alloy (rather than copper or silver) for the mark.
 - 4 All the knives in 3 had their marks on the "mark side" of the blade, *i.e.* the left-hand side of the blade when the knife is held with the handle towards the holder. It is thought likely that this is the case here.
 - 5 Identification by Jacqui Watson, Ancient Monuments Laboratory, London, personal communication.
 - 6 Identification by Jacqui Watson, verbal report.
 - 7 Identification by Glynis Edwards, Ancient Monuments Laboratory, London, verbal report.
 - 8 Dr Barry Knight, Ancient Monuments Laboratory, verbal report.
 - 9 Jane Cowgill, verbal report.
 - 10 KCMS X-ray No. 954. Mx film. 70kv/1.0 min and 80kv/1.0 min.
 - 11 Jane Cowgill, verbal report.
 - 12 John Cherry, British Museum, verbal report.
 - 13 Jane Cowgill and John Cherry, verbal report.
 - 14 Jane Cowgill, verbal report.
 - 15 John Cherry, verbal report.
 - 16 For details of X-ray, and photographic programmes see Ancient Monuments Laboratory Report No. 94/87 by K. Webster.

ACKNOWLEDGEMENTS

I wish to thank the staff of the Ancient Monuments Laboratory for their help with analysis and identification of organic traces. My thanks also to Jane Cowgill and John Cherry for their most useful comments on the find.

Evelyn Baker provided information about the site and provided the site plan.

The object (small find 697, context GP 78/XIII/398/3) is presently in the care of Bedfordshire County Council. When post excavation analysis has been completed it will go with all other finds and records to Luton Museum as the gift of the landowners, the Church Commissioners.

The Bedfordshire Archaeological Council is indebted to the Planning Department, Bedfordshire County Council, for the grant to publish this paper.