
The production and deposition of the Witcham Gravel Helmet

Jaime Kaminski and David Sim

In the nineteenth century an elaborately decorated Roman cavalry helmet was discovered during turf digging in the parish of Witcham Gravel, Cambridgeshire. The helmet was constructed of an iron bowl onto which a decorated copper alloy casing was attached. The outer copper alloy casing has been relatively well-preserved, but only the heavily corroded apex of the iron helmet bowl remains. The Witcham Gravel helmet find appears to be part of a much wider context of helmet deposition in watery places during the Roman occupation of East Anglia.

Introduction

On May 17, 1877, Augustus Wollaston Franks (1826–1897), the then director of the Society of Antiquaries exhibited a “very remarkable” Roman helmet that was “made of bronze, lined with iron” to the Society at Burlington House, Piccadilly (Anon 1877). The helmet was part of a collection of antiquities that belonged to Thomas Maylin Vipian (1845–1891) of Sutton, near Ely, Cambridgeshire. It had been discovered at a depth of “about four feet” during turf digging at Witcham Gravel (Figure 1) west of the small hamlet of Wardy Hill (Burgess 1877, 230–1). The helmet was similar to an example in the Musée d’Artillerie, Paris (Demmin 1911, 122), which, in conjunction with its unusual design, led Franks to suggest that the helmet was of late Roman date possibly belonging to a “mercenary in the Roman pay.” He promised a “more extended communication on a future occasion” although this never materialised.

In June 1880, once again under the auspices of Franks, Vipian loaned the helmet to the Royal Archaeological Institute. At the Institute’s headquarters in New Burlington Street, Mayfair it was one of the highlights of their ‘Exhibition of helmets and mail’ which took place between 3–16 June and included over 200 pieces of armour (cf. Burgess 1880, 463; Walford 1880, 83). The unusual design of the helmet with its raised roundels on the neck guard attracted considerable attention (see Figures 2 and 3). The novelty of design even led some commentators to suggest that it had been produced in Italy (Anon 1880).

After the exhibition at the Royal Archaeological Institute Vipian returned to Cambridgeshire with the

helmet where it remained in obscurity for over a decade. On 23 August 1891, Thomas Vipian died in Ely. In November of that year the helmet was purchased by the British Museum from the Rollin & Feuardent auction house who sold it on the instructions of the executors of Vipian’s estate. Since then the helmet has been on display in the British Museum (cf. Cook 1903, 729; Wilson 2001, 205).

Description

The British Museum accession record (1891,1117.1) describes the helmet as a: “Bronze, Roman helmet, head piece tinned, fronted with rows of embossed dots, neck piece with three large bosses, one cheek piece.” Labelled as ‘Auxiliary Cavalry B’ in Robinson’s typology of Roman helmets, it is the only surviving example of such a helmet form (Robinson 1975, 94–5, plates 250–2). Originally the helmet would have been constructed of an iron helmet bowl onto which various elements of copper alloy casing were attached. The copper alloy casing has survived well in the peat, unlike the underlying iron helmet bowl. Today, only the heavily corroded apex of the iron helmet core remains, where it has adhered to the copper alloy casing.

The well preserved copper alloy casing is made of four separate components; the tinned skull cap, the brow and occiput sections and the neck guard. There are also ear protectors and applied decoration in the form of three raised copper alloy roundels riveted to the neck guard and potentially three to the helmet bowl. These sections were connected to each other and then this entire casing was attached to the iron helmet core by two flat split pins at the front and rear, and two rivets at each side on the bowl and six rivets around the trailing edge of the neck guard. A raised decorative roundel that was soldered into place in the front of the helmet was used to conceal the head of the split pin on the surface of the helmet, at the front and rear. The helmet has sustained a linear blow above the right brow although it is impossible to determine if this impact occurred prior to deposition or during its discovery during turf digging.

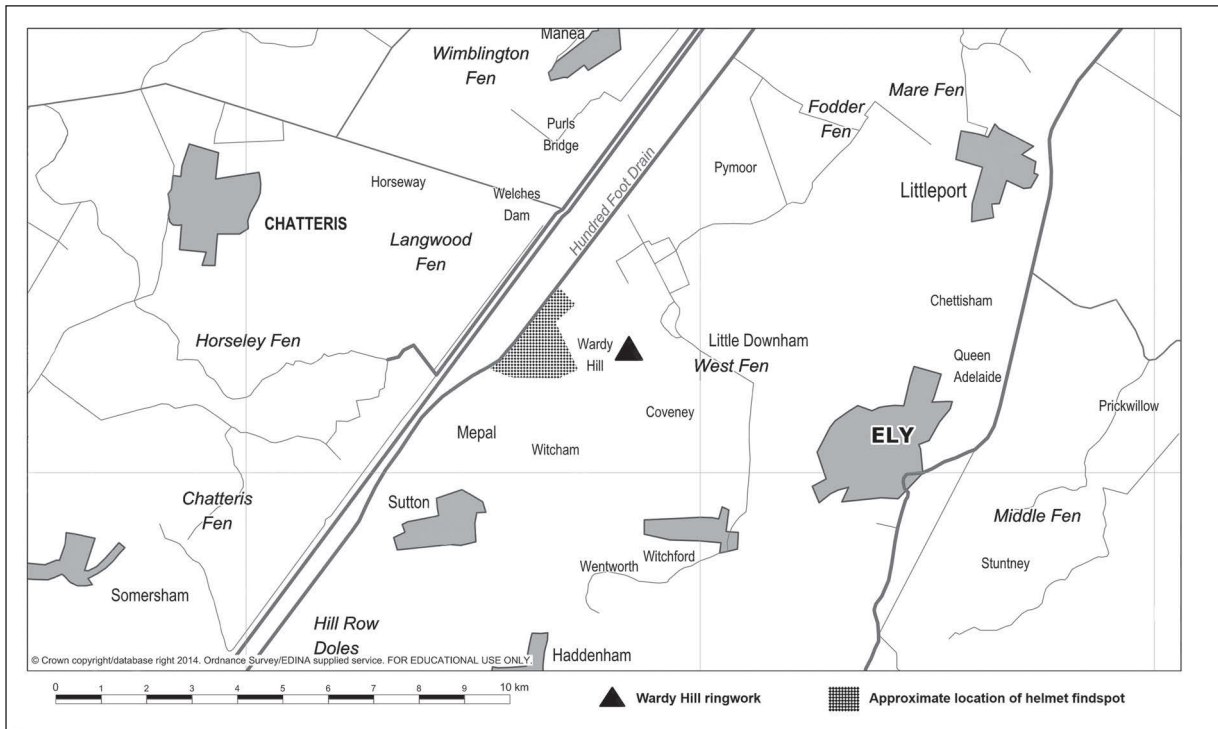


Figure 1. The findspot of the Witcham Gravel helmet. Note that grey lines indicate watercourses; roads are not shown.

The helmet bowl

The iron bowl provided the helmet with its structural strength. Although this iron bowl has now corroded, the 'return' on the neck guard, where the copper alloy has been folded around the edges of the iron core to hold it in position, is at its maximum 1.55mm wide and 4.00mm deep. Originally this return would have folded over the iron bowl and so provides an indication of the maximum thickness of the underlying iron core. However, detailed measurement of the thickness of raised and spun Roman helmets suggests that raised helmets often have a thicker outer rim and the metal thins towards the apex of the helmet (cf. Sim and Kaminski 2011: 85–86). The thick rim (c. 1.55mm), in conjunction with its irregular shape, gives an indication that the helmet bowl was raised rather than spun. Folding the copper alloy over the iron core conferred two advantages, it formed a smooth edge for the neck guard and it allowed the copper alloy casing to be firmly attached to the core.

The copper alloy casing is decorative and imparts almost no structural strength whatsoever, both because of its thinness and because it is composed of different pieces of metal linked only by rivets and solder. The reason for such a thin copper alloy casing is that it is sufficiently pliable to allow the smith to do repoussé work, which would have been considerably more difficult on thicker metal and it provides a rich colour which would have provided a visual contrast to the tinned elements of the helmet.

The design on the helmet consisted of four mir-

rored, double semicircles of repoussé punch marks. This was made using domed punches applied to a double semi-circular fullered groove. Each double semi-circle design consisted of an average of 70 repoussé punch marks – 37 on the outer semicircle and 33 on the inner. A wheel, possibly using a wooden form as a guide, was used to create a channel. Punch marks were made manually in the channel between 3.5mm and 5.0mm apart. A toothed wheel was not used to create the punch marks. This is evident because of the irregularity of the punch marks and the lack of a repeated pattern of depressions that would have been apparent if a wheel had been used.

Two circular features have evidence of solder on their inside edges which was clearly to hold a component in place. The 52mm diameter circular solder marks left where the features were attached suggests that two raised roundels such as those on the neck guard were attached here, although because both features have been lost this is a matter for conjecture. Previous interpretations of these missing features have included horns (Burgess 1880, 463).

The join between the brow section and the rear section of the copper alloy is concealed by the roundel and the ear guards. It is therefore no coincidence that these features are missing because they are located at a point of weakness in the helmet. These features, in conjunction with the ear protectors, helped to connect the front and back copper alloy casing elements. They conceal the join between the front and back casing and so would have been sited at a point that was susceptible to movement.

There is also evidence for a now missing crest box which was 2.3cm wide and 20.5cm long. A scribe was used to mark out the position of the crest box on the copper alloy skull cap and three pairs of rivets at each end and at the crown were used to secure the box in place. The crest box would have been constructed of organic material such as wood and horse-hair and so would have been lost to decay if it was deposited with the helmet.

Neck guard

The neck guard is 74mm wide and projects at approximately 30 degrees below the horizontal. The deco-

orative raised roundels, reminiscent of old-fashioned bicycle bells, are a unique feature of the helmet. Three adorn the upper surface of the neck guard. These roundels are 52mm in diameter and were both riveted in the centre and soft soldered. They were hollow and were produced by raising. The recess for the rivet head appears to have been made with a shaped punch that has left a series of facets in the recess. The rivets for the roundels would also have helped hold the copper alloy casing to the iron core.

Six rivet holes, each 1.7mm in diameter, have been punched along the outer edge of the neck guard. Although the rivets have been lost they would have helped to hold the outer casing of copper alloy to the



Figure 2. The 1st century AD Roman helmet found at Witcham Gravel, near Ely. © Trustees of the British Museum.

iron core. The iron core has corroded away and only a small conglomeration of oxidised material remains adhering to the inside of the neck guard.

The decorative border of punched work at the junction of the neck guard and the rear of the helmet was used to conceal the join between the occiput and the neck guard.

Cheek piece

Only the copper alloy casing of the left cheek piece (Figure 4) was recovered from the peat with the helmet. This has an average thickness of only 0.6mm and has a distinct black patina, characteristic of tannin staining caused by deposition in peat. It also exhibits age cracking on the rear edge.

The edge of the cheek piece was folded over. As with the helmet body this had the dual function of providing a smooth edge to the cheek piece and help-

ing to secure the softer copper alloy to a stronger backing plate probably of iron (cf. Robinson 1973, 292). The width of the fold suggests that this backing plate had a minimum thickness of 0.5mm although this was most probably lined with leather and/or padded.

The cheek piece would have been highly ornate. As with many cavalry cheek pieces a naturalistic representation of the ear has been embossed using repoussé. This is a skilled operation and may indicate the use of specialist craftsmen. Certainly classical sources attest to the presence of specialist cheek-piece makers (*buccularii*). The embossed ear is mirrored in the rounding seen in the edge of the ear protector. Further embossed decoration includes a semi-circular fullered groove that mirrors the semi-circular decoration seen on the helmet body. This was then tinned.

Other decorative features were applied after-



Figure 3. Rear side view of the Witcham Gravel helmet. © Trustees of the British Museum.



Figure 4. The left cheek piece of the Witcham Gravel helmet. © Trustees of the British Museum.

wards. For example five rivet holes indicate where decorative roundels were attached. The impression of the head of the roundels remains on the surface of the cheek piece. These may have been of copper-alloy to contrast with the silver coloured finish of the cheek piece. These decorative roundels may also have had the additional function of helping to tie together the copper alloy casing to the iron core. Four of the rivet holes were punched from the outside surface to the inside, and one was punched from inside to outside.

The heads of two of the roundels concealed two further rivet holes. These concealed rivet holes may have been punched in error; such mistakes were not unknown in Roman helmet manufacturing (Kaminski and Sim 2012, 73). Alternatively the rivet holes may have held rivets that helped tie the copper alloy case to the core of the cheek piece, although this seems unlikely considering the close proximity of the decorative rivets which may have served the same function.

However, while the outer surface was highly decorated the inner elements had less time devoted to them. The hinge on the cheek piece was roughly folded and is at best very crude. The cheek pieces were riveted to the iron helmet bowl core with two rivets for structural strength (if the cheek pieces were attached to the copper alloy casing only then they would cause undue stress on the casing). The two

rivet holes are centred 36mm apart.

The chin tie loops were constructed of copper alloy nails that were passed through the cheek piece from the outside, bent into a ring and soldered into place. The loop is constructed of wire 2.2mm thick.

Ear protectors

The copper-alloy ear protectors were one of the last items to have been attached to the bowl. This is evident because the rivets used to attach the ear protector penetrate all the other components of the helmet bowl. Hence the ear protectors play an important role in linking the disparate elements of the copper alloy casing together. The ear protector was attached with four rivets – one connected to the neck guard, two to the occiput, and one to the brow section. The edge of the protector is rolled which complements aesthetically the raised design of the ear in the cheek piece. Interestingly the ear protector had little practical function because the ears were entirely concealed by the cheek pieces. As with most of the copper alloy casing it played more of an aesthetic role rather than one of protection.

The production of the Helmet

There were at least 30 major metal components to the helmet. These include the iron helmet bowl, onto which was attached the copper alloy casing. This included the tinned skull cap, the frontal brow piece, the occiput, the neck guard, two copper alloy ear protectors and two copper alloy cheek pieces. Other helmet furniture included six raised roundels (three on the neck guard and three on the helmet body), ten decorative rosettes on the cheek pieces (five on each cheek piece). Copper alloy edging strip was required to conceal the join between helmet and neck guard, and for the helmet brow. Attaching the various components of the helmet together required a considerable number of fasteners, including over thirty rivets. These included rivets for attaching: the rosettes to the cheek pieces (10), decorative roundels (six), ear protectors (eight), neck guard (six), crest box (six), cheek piece attachment (four), and rivets to hold the cheek piece ties (two). In addition, there are two split pins for attaching the copper alloy casing to the iron core. Finally, copper alloy wire was needed to connect the cheek pieces to the helmet body

These were complemented by a crest box (now lost), as well as other organic material such as the helmet lining, padding and straps. This is an extremely complicated arrangement for a helmet and yet provided little defensive benefit.

Construction sequence

The basic construction sequence (Figure 5) can be divided into the following stages:

1. The iron helmet core was produced by raising.
2. A copper alloy skull cap was produced to cover the core. The absence of spinning marks in conjunction with the elliptical shape of the skull cap suggests that it was produced by raising.
3. The neck guard and the rear of the helmet bowl were attached to the brow section by three rivets in the ear protector.
4. The copper alloy casing was further attached to the iron core with a split pin at the front and rear.
5. The roundels were then attached to this covering the split pin.

This composite construction method was not unique, as is seen in the discovery of a number of examples of the iron helmet bowls without casings from Newstead and Northwich (Curle 1911, 164). Conversely, isolated finds of copper alloy casings have been made such as the first century AD brow band from Nijmegen, with the left ear protector still attached and associated sheathing for the neck guard (Robinson 1975, 89, plate 112).

As with many Roman helmets, the component parts are well produced but the fitting of the various elements to the bowl has been poorly executed. For example, one of the raised decorative roundels over-

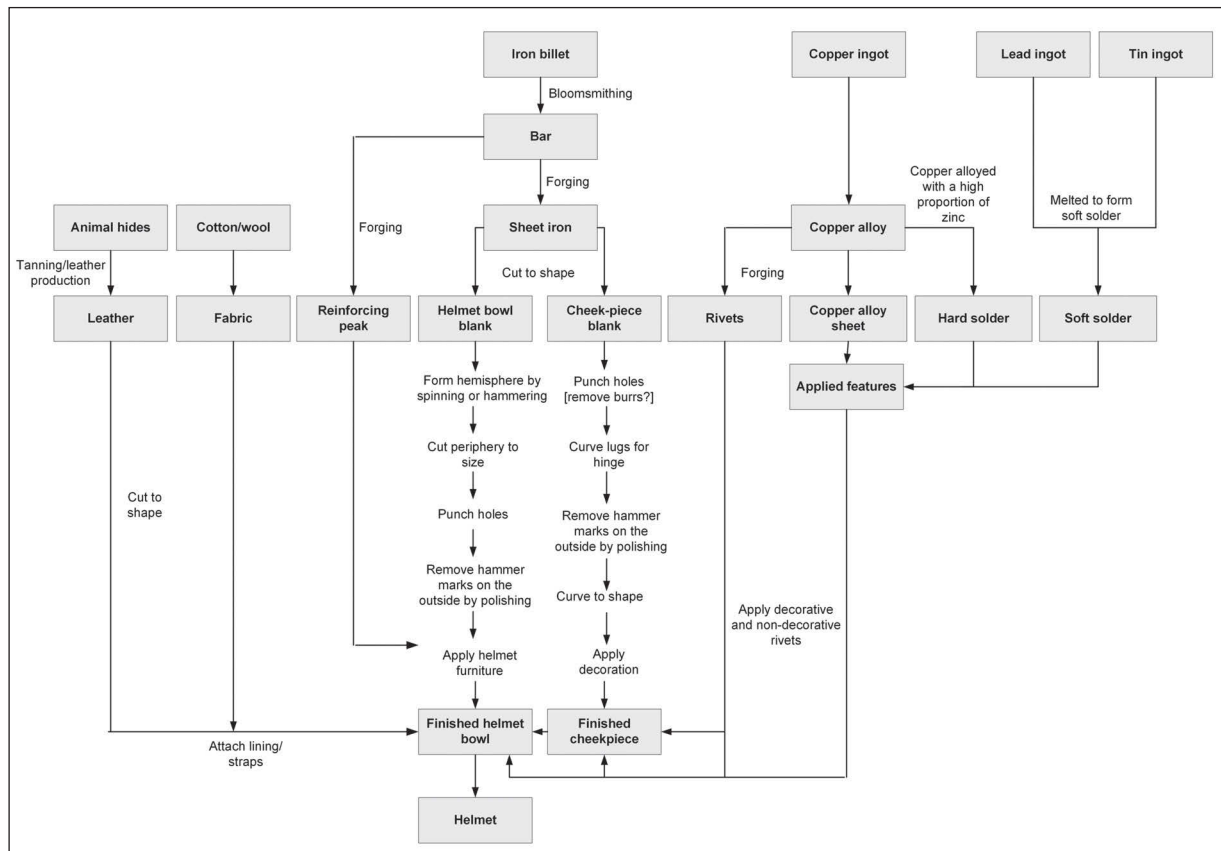


Figure 5. A hypothetical construction sequence for the Witcham Gravel helmet.

hangs the edge of the neck guard and the repoussé punch marks are uneven. It seems possible that the components of the helmet could have been mass or batch-produced, or individually produced by craftsmen while the fitting of the components appears to have been undertaken by less-skilled workers. This phenomenon has been noted on other helmets such as the first century AD Coolus helmet recovered from the Thames circa 1934 (Kaminski and Sim 2012), and is seen on some body armour (Bishop and Coulston 2010). Whether a function of the use of semi-skilled labour or hurried production this amateurish composition is not a feature of cavalry sports helmets such as the Ribchester and Newstead helmets. These higher status, often bespoke, helmets are evidently produced in their entirety by skilled craftsmen.

Appearance

When the Witcham helmet was displayed to the Royal Archaeological Institute in June 1880 one observer recorded that: "This must have been a very splendid affair when perfect, as the major part of it is composed of gilt bronze. It is built up of several pieces riveted together upon an iron skull cap" (Burgess 1880, 463).

When new the helmet would indeed have made a colourful spectacle. The silver-coloured tinned skull cap, neck guard and cheek pieces would have contrasted with the yellow copper-alloy of the brow, ear protectors, occiput and neck guard. The effect would have been of a gold-coloured band encircling the 'silver' helmet bowl. This would have been further complemented by the raised copper alloy roundels on the neck guard and above the ears and brow. It is also probable that the decorative roundels attached to the cheek piece would have been of copper alloy to contrast with the tinned background however, this cannot be confirmed as only the rivet holes remain.

The most distinctive features of the helmet are the raised roundels reminiscent of a traditional bicycle bell. These are as yet unique among the currently known corpus of Roman helmets. However, a clue as to their origin can be seen in the sixth century BC bronze Etruscan 'bell' helmets from Picenum, Umbria and Etruria. These helmets have two raised roundels, of the same construction as those on the Witcham Gravel find, above the ears. Examples can be seen in the University of Pennsylvania Museum (Accession number: MS 1607), the Metropolitan Museum of Art, New York (Accession Number: 08.2.2), and the British Museum (Accession Number: 1772,0303.4). However, the roundels on these early helmets were often filled with lead thereby conferring some defensive advantage, the bosses that remain on the Witcham helmet are hollow and have no defensive benefit (Cowan 2007).

Dating

Robinson's typology of Roman cavalry helmets (1975, 89–106) highlights how Roman helmets gradually offered increased protection over time. Early examples were based around a simple iron bowl, cheek pieces and a narrow neck guard, but no reinforcing peak, such as the Newstead helmet (Curle 1911, 164, plate xxvi). Later in the second century AD the cheek pieces for cavalry helmets became larger protecting more of the face and leaving only the eyes, nose and mouth exposed (Robinson 1975, 89). The steep angle and size of the neck guard is suggestive of a date in the third quarter of the first century AD. This is however the date of production rather than the date of deposition, in the absence of associated finds from the peat it is difficult to ascertain how long the helmet was in circulation prior to deposition.

It may be that the helmet was accompanied by other finds that were not noticed by the peat cutters in the nineteenth century. For example, a similar high status helmet find was made in 1910 by a peat cutter at Deurne near Helenaveen in the Peel region of the southern Netherlands. Here a gilded Roman helmet was found together with coins (dating to AD 315–319), a fibula, a spur, some unmatched pairs of shoes, a sword sheath, fragments of leather, and other items (cf. Van Driel-Murray 2000; Pouls and Cromptvoets 2006).

The depositional environment

The exact find spot of the helmet remains elusive. Contemporary accounts of the helmet's discovery refer to it as having come from "Witcham Gravel" (Burgess 1877, 230–1; 1880, 464). The former parish of Witcham Gravel was located in the south of the Fenland Basin, on low-lying ground to the northwest of the former Isle of Ely. It was surrounded by the villages of Witcham, Wardy Hill, Mepal, Coveney, Pymore, Manea, and Chatteris all of which are sited on higher ground above the surrounding fenland which is now predominantly agricultural land. Unfortunately, in the late nineteenth century the parish of Witcham Gravel covered 157 hectares (389 acres) making it difficult for contemporary scholars to use the parish alone to narrow down the find spot. The other evidence for the broad location of the find spot can be gleaned from the reference to the helmet having been found at a depth of four feet (c. 1.2m) "in peat". The surface geology of the area is predominantly (Nordelph) peat (BGS sheet 173), although alluvium is present in the Washes to the north, while the stiff greenish grey Jurassic Amphill Clay forms the skirtland to the south (see Figure 6). Peat was extensively worked in the Ely region during the Victorian era with the area between Coveney and Manea witnessing the heaviest extraction (Skertchly 1877). It seems unlikely that the exact find spot will now be located because drainage of the fens has led to considerable peat wastage which, coupled with ex-

tensive peat working and agricultural exploitation, has fundamentally changed the character of the fenland around Witcham Gravel. However, the broad area of the find spot can be refined by excluding the parts of Witcham Gravel that did not support peat fen (see Figure 6). Using these parameters it is clear that the helmet was found in either Byall Fen or Great Dams Fen.

In the 1920s Christopher Hawkes of the British Museum's Department of British and Medieval Antiquities expressed the hope that if the site of the helmet find could be located then perhaps the then new technique of pollen analysis could be used to ascertain the nature of the natural environment at the time of deposition (Hawkes 1927). Although the find spot has not subsequently been located the Holocene geology and environment of the Witcham/Mepal area has been extensively studied (e.g. Burton and West 1991, West *et al.* 2002, Heistermann 2010, Oxford Archaeology 2012).

This has generated a broad picture of the environ-

mental history of the locality (Wheeler and Waller 1995). The formation of the fenland environment started at the beginning of the middle Bronze Age (c. 1500 BC). At this time marine incursion from the north backed up the freshwater systems which led to a rise in the level of groundwater and which encouraged the expansion of the Upper (Nordelph) Peat (Gallois 1988, fig. 35, Evans 2003a). As the fen and marsh expanded the higher ground became isolated as islands. Before the formation of the peat it is likely that the area was relatively dry, although dissected by channels. Peat formation would have continued in the area up until the drainage works of the seventeenth century.

Scholars wishing to understand the nature of the local environment at the time of the helmet's deposition are fortunate that the Wardy Hill ringwork excavations had a considerable environmental focus. Moreover, the final phase of occupation of the ringwork in the late first century may have overlapped with the deposition of the helmet. Interpretation of

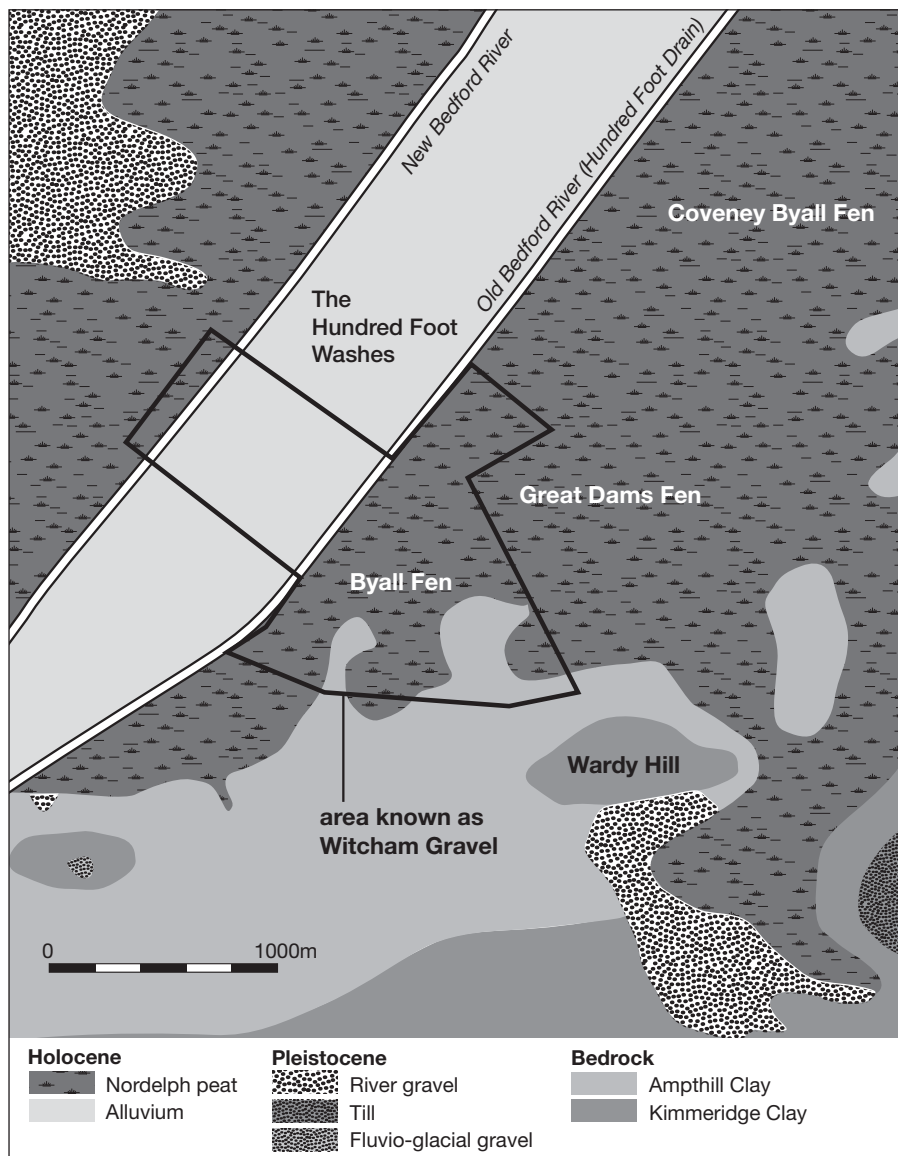


Figure 6. The surface geology of the Witcham Gravel area.

the pollen profiles from Wardy Hill indicate that the broader environment of the ringwork during the late Iron Age and early Romano-British periods was extremely open and supported relatively few trees of which oak (*Quercus*), alder (*Alnus*), birch (*Betula*) were the most common. The relative scarcity of tree pollen could be a reflection of few trees in the environment, their distance from the site or that they were so heavily managed that pollen production was suppressed. Analysis suggests that local stands of woodland may have existed on higher ground to the east near the current site of Coveney (Wiltshire 2002, 83). Hedging of hawthorn, rose and bramble (*Crataegus*-type), elder (*Sambucus*) and sloe (*Prunus*) may have been used to augment the defences of the ringwork.

The reed fen where the helmet was deposited supported extensive willow carr. Saw-sedge (*Cladium mariscus*) from the fen was found on the Wardy Hill site where it was probably used for thatching and fire kindling. Other wetland taxa growing in the fen included sedges (*Cyperaceae*), greater reedmace (*Typha latifolia*), bur-reed and associated plants (*Sparganium*-type) (Wiltshire 2002, 83).

Pollen analysis at West Fen Road c. 5 km to the east reveals that the greatest abundance of trees and shrubs (predominantly oak and ash) was evident during the later Iron Age, but this period also saw the start of a progressive reduction in woody vegetation.

Based on the evidence available in the 1920s Hawkes could assert that Witcham Gravel was remote from Romano-British occupation sites (Hawkes 1927) However, recent archaeological research conducted during the Fenland Survey (Hall 1996), the Wardy Hill ringwork excavations (Evans 2003a), and subsequent development-led studies have updated this perspective. It is becoming apparent that the later Iron Age and Romano-British periods witnessed increasing activity in the locality (Evans 2003a, figure 141). Just as with the contemporary settlement distribution, the Iron Age and Roman settlement clung to the higher ground on the edges of the fen. Both Iron Age and Romano-British activity were recovered in the region of Witcham and Coveney, and particularly on the higher ground in the Wardy Hill environs (Hall 1996, fig. 88). This includes the Iron Age ringwork at Wardy Hill, as well as a number of Iron Age and/or Romano-British crop mark sites in the vicinity.

These include Hall's Coveney 6 site (TL 487806) which is a square cropmark enclosure with c. 50m sides which has yielded both Iron Age and Romano-British material. At Witcham 4 (TL 462814) a scatter of late Roman occupation debris is possibly associated with a cropmark of a sub-rectangular enclosure. Witcham 5 (TL 478806) is another square cropmark enclosure which has yielded Iron Age material. Nearby Witcham 6 (TL 469807) is a double ditched square-sided cropmark enclosure with sides of c100m with internal subdivisions yielded a few abraded Roman sherds (Evans 2003a, 8).

Further to the east of Wardy Hill and west of Ely a dense swathe of late Iron Age and Early Romano-British settlement is evident. At West Fen Road, Ely

(TL 530808) a substantial Late Iron Age settlement was recovered with multi-period activity extending to the Saxon period (Regan 2001). At Hurst Lane, Ely (TL524814) a major settlement comprising Iron Age round houses set in a series of compounds were overlain by a Romano-British field system with associated structures. The layout of the Romano-British field systems followed Late Iron Age alignments indicating settlement continuity on the site (Evans 2003a, 9–10). Further evidence for Late Iron Age and Early Roman settlement extending over 1 hectare was recovered at the 'Trinity Lands' (TL 526804) south of West Fen Road (Masser and Evans 1999). Evidence for Iron Age activity has also been recovered from the cathedral and market precincts of Ely itself (Hunter 1992a and b). Further afield to the southwest fieldwork along the Colne Fen/Earith Fen edge has revealed Romano-British activity at Langdale Hale thought to have been a major farming estate, while at the Camp Ground a huge inland barge port settlement was linked to the Car Dyke canal. At Fen Drove an enormous settlement complex extended over 20 hectares (Evans *et al.* 2013). Numerous other smaller settlements are sited around the main inlets of the terraces of the Colne/Earith Fen edge. At Haddenham a Romano-Celtic shrine was constructed on top of a Bronze Age barrow in the first century AD. This was surrounded by a ditch in the second century before it was dismantled in the third and re-established in the fourth century (Evans and Hodder 2006, 327–46). To the north at Stonea a Romano-British settlement was founded circa AD 130–150 although there was evidence for Late Iron Age/early Roman activity on the site. The western half of the settlement was dominated by a substantial rectangular building with a hypocaust and decorated walls, the deep foundations of which are suggestive of a multi-storey structure. This part of the settlement declined in the early third century AD. The eastern half of the settlement comprised timber buildings arranged on a gridded street pattern.

Numerous crop mark sites and ceramic scatters attest to the presence of Iron Age and Romano-British settlement in the vicinity of the helmet find spot (Phillips 1970). Far from being a backwater this region of the fens was well populated and heavily exploited for resources during the Romano-British period.

However, the nearest and most prominent of the sites in the vicinity of the helmet's site of deposition was the Iron Age ringwork at Wardy Hill (Evans 2003a, Coveney Site 1 in Hall 1996, 50–1). This site was located on high point in the skirtland where a cap of Kimmeridge Clay emerges above the surrounding Ampthill Clay. About 1 hectare of the ringwork was excavated which was part of a much more extensive quasi-linear settlement (Evans 2002, 2003a). The ringwork showed continuity into the Romano-British period before its decline in the late first century. The site continued to function for two to three decades after the Boudiccan insurrection. Hence it may have still been occupied when the helmet was deposited.

It is of course unclear if there was a relationship between the Wardy Hill ringwork and the helmet depo-

sition, however evidence from the site may provide an indication of the local community's relationship with the fen and the nature of ritual activity in the locality around the time of deposition.

It has been proposed that the Wardy Hill ring-work may have controlled access to the causeways that crossed the fenland. Such causeways have been linked to votive practices (Evans 2003a, 266). Similar causeways, such as the one excavated at Fiskerton in Lincolnshire, have been associated with the deposition of votive objects during both the Iron Age and Romano-British periods (Field 1986; Field and Parker Pearson 2003).

Moreover, in common with many fenland communities the inhabitants of Wardy Hill did not make extensive use of the wild animals of the marsh (Evans 2003a, 136–7). This may suggest that the fen was considered as the 'other', a place outside the realm of the ordered world of settlement. The relationship between the indigenous community and the fen would have been instrumental in ritual activity. Whatever, the ritual beliefs of the local communities of the locality there is evidence for a cessation of activity at Wardy Hill at the close of the first century AD (Evans 2003a, 271).

It was not only the indigenous communities who inhabited the area, there is increasing evidence for a broader military presence in the wider area during the middle decades of the first century AD. Evans (2003b, 251) suggests that a backfilled early military camp could exist in the Langwood environs only 5 km to the north of the find spot. Here a military cuirass fitting was found in addition to a probable helmet handle, a Type 1 stud, and a lead chape/strap-end. The site also yielded first-century coinage which was interpreted as the product of trade with the military. Further north an early fort has been discovered at Grandford (20 km to the north of the findspot) and possible traces of military occupation at Stonea Camp (11 km north) have been linked to the Icenian revolt of AD 47. The fort at Longthorpe (34 km NNW) has been associated with the Boudiccan rebellion. An alleged 'Roman camp' was apparently destroyed during the construction of Ely airfield (Phillips 1970, 227).

Roman helmets finds in watery contexts

It is evident that the helmet was originally deposited in marshy conditions. The helmet is not unique in being found in a watery context in the East Anglian region (see Table 1). Aside from the Witcham Gravel peat bed find the East Anglian fens have yielded a small number of helmets and helmet parts. These include a type H cavalry sports helmet that was recovered from a bed of peat exposed during dredging of the River Wensum in Norfolk in August 1947. The following year a face guard from a different cavalry sports helmet, probably also type H, was found in the same deposit of dredged material where the previous helmet had been recovered indicating that at least two cavalry helmets were deposited in the

marsh near this location (Toynbee and Clarke 1948; Wright 1951, 131–2). It seems unlikely that this was anything other than deliberate deposition. All three East Anglian finds were recovered from peat indicating deposition in still water. The presence of still water further reinforces the idea of deliberate deposition because there is far less potential for the erosion of archaeological contexts.

Other water finds of helmets from the eastern part of the country include a mid-first century AD Coolus infantry helmet dredged from the River Thames or Walbrook around 1934 (Kaminski and Sim 2012). Moreover, a cheek piece belonging to a different helmet was also dredged from the Thames at Kew some time before 1910 (British Museum Accession Number: 1910.107.1). Both these finds appear to indicate that the Thames was another favoured site for deposition of helmets, exploiting a river with strong associations with votive deposition since at least the Bronze Age.

Further south another mid-first century AD Coolus helmet was dredged from the estuarine waters of Bosham or Chichester Harbour in the nineteenth century although this is more likely to be a helmet that was simply lost overboard (Kaminski and Sim 2007).

Only two helmet finds from the East Anglian region have been recovered from dry land contexts. These are the helmet fragments from Sheepen, near Colchester, which came from sealed stratigraphic contexts assignable to the clean-up operations after the Boudiccan rebellion and as such do not represent a deliberate deposition (Hawkes and Hull 1947, 336). These iron fragments represent a number of different helmets including Type G and Type H Imperial Gallic forms.

The remaining helmet find is the copper alloy Hawkedon gladiatorial helmet discovered to the south west of Bury St Edmunds in 1965 (Painter 1969). This, however, is not a military helmet and so is not directly comparable. It is apparent that if these examples are excluded from the analysis all the remaining helmet finds from East Anglia derive from watery places.

Aside from complete helmets East Anglia has yielded a number of finds of helmet parts (see Table 2). Unfortunately these isolated finds of helmet furniture can tell us little about depositional practices because all could have been easily lost from a helmet (the crest-holders are soldered on, while handles are vulnerable to breakage because they are cast).

At Hallaton in Leicestershire, an ornate Roman helmet bowl of first century AD date was found 6 m to the east of the entrance of a Late Pre-Roman Iron Age–early conquest period ritual enclosure. The helmet was made of iron but plated in silver and possibly gold, it was found in association with seven cheek pieces, packets of silver foil, animal bones, and 1162 coins suggestive of a date of deposition of c. AD 43–50 (Score 2011a: 30–1; Leins 2011, 41). The helmet had been inverted in the ground with the assemblage of coins and animal bones placed to one side of it (Hockey and James 2011, 61). A fragment of

Name	Region	County	Find location	Date found	Form	Date of helmet (AD)	Parts missing	Material	References
Worthing helmet	East Anglia	Norfolk	Bed of peat exposed during dredging of River Wensum	1947	Cavalry sports Type H	Mid-second to third century	Face guard	Copper alloy – iron core removed	Toynbee and Clarke 1948
Worthing face guard	East Anglia	Norfolk	Dredging of River Wensum	1948	Cavalry sports probably of Type H	Possibly third century	Helmet bowl	Copper alloy	Wright 1951, 131–2
Witcham Gravel helmet	East Anglia	Cambridgeshire	Peat deposits at Witcham Gravel	Possibly 1870s	Auxiliary cavalry Type B	First century	Right cheek piece	Copper alloy (some tinned), with an iron core	Robinson 1975, 94–5
Thames Coolus	Thames	County of London	Walbrook or River Thames	1934	Coolus Type E	First century	Cheek pieces	Copper alloy	Kaminski and Sim 2012
Thames cheek piece	Thames	Middlesex	River Thames at Kew	Before 1910	Unknown	First to third century	Helmet bowl	Copper alloy	Unpublished: British Museum Accession No: 1910,107.1

Table 1. Roman helmets and helmet parts from watery contexts in eastern Britain.

PAS ID	County	Find location	Part	Material	Description
SF-D21822	Suffolk	Combs	Crest holder	Copper-alloy	Crest-holder from a 'Coolus' type helmet of the 1st century AD
SF-170D83	Suffolk	Wenhaston	Crest holder	Copper-alloy	An incomplete crest-holder from a 'Coolus' type helmet of the 1st century AD
NMS1904	Norfolk	Colkirk	Possible helmet handle	Copper-alloy	Curved oval section (7 x 5.5mm) rod with both ends missing, length 49 mm, probably part of a drop handle, from a vessel or helmet
NMS1903	Norfolk	Colkirk	Possible helmet handle	Copper-alloy	Fragment of a cast handle with circular perforation at one intact end. The reverse is flat and plain, the front convex and moulded in the form of a fish, with the head missing

Table 2. Roman helmet parts from non-watery contexts in East Anglia from the Portable Antiquities Scheme (PAS) database.

human distal humerus was also found in association with the helmet, which contrasted with the dearth of human bone in the rest of the ritual enclosure (Browning 2011, 125). The combination of different helmet components and packets of silver foil, in conjunction with coins and human and animal bones are difficult to explain, however they do appear to have been deliberately deposited as part of a ritual act. The helmet parts may have been a high-status gift or the equipment of a Briton who belonged to the auxiliary cavalry, plunder or part of cross-cultural trade (Score 2011b, 161).

The Hallaton Helmet provides an indication that helmets were a potential ritual object that may have

been treated in different ways, possibly according to tribal/cultural customs. In a study of military equipment and horse gear in non-military contexts in the upper Rhine Nicolay (2007, 87) noted that there were spatial and temporal differences in the types of objects deposited. The types of objects deposited changed over time moreover, there were differences in the types of objects deposited in different areas. In what is interpreted as the territory of the Treveri the deposition of swords and shields in graves was commonplace, which contrasts to the territory of the Batavi where weapons and equipment have mainly been recovered from rivers. It appears that different tribal/cultural groups preferred to deposit different

items of equipment in different environments.

The depositional context

The deposition of metalwork in the fens of East Anglia has its origins long before the Roman occupation. The southern fenland is second only to the Thames Valley in terms of the quality and quantity of later Bronze Age metalwork (cf. Bradley 1990). Such depositional practices continued into the Iron Age as evidenced by finds such as the sword and scabbard from Isleham south east of Ely (Stead *et al.* 1980). Although the deposition of objects in watery places began in the Early Bronze Age the types of objects deposited changed considerably over time. During the Bronze Age weapons dominated votive offerings, while armour (such as shields and helmets) was poorly represented, but by the Iron Age increasing evidence is found for the deposition of apparently ceremonial armour as well as other weapons (the Battersea Shield and Waterloo Helmet being obvious examples). By the Roman period helmets are an important votive offering while weaponry decreases in relative importance.

It is evident that a disproportionate number of Roman military helmets have been recovered from watery contexts in East Anglia considering the apparent lack of military activity (see Table 1). Brown (1977, 7) interpreted the helmet in the context of other military finds such as the sword from Whittlesey and a ballista bolt from Cottenham as signifying the presence of a small police force that was spread through the fenlands. Other military equipment includes the helmet furniture seen in Table 1, and the mouth of a bronze trumpet found at Chesterford and thought to be of military origin (Fox 1923, 215). Although no explanation was proposed for why such a valuable item as the Witcham Gravel helmet ended up in a marsh.

The early date of the helmet and its location apparently away from any areas of Roman military activity has made it tempting to hypothesise the votive deposition or discard of war booty during the Boudiccan revolt (cf. Robinson 1975, 95). The possibility that the helmet could represent war booty was proposed as early as 1927 by Christopher Hawkes. He felt that it could have been “a relic of Boudicca’s defeat of the IXth legion”. He went on to say that “the absence of Romano-British occupation in the immediate neighbourhood seems to distinguish this find from the majority of Fenland discoveries of that period, which are of course agricultural in character and it seems most probable the helmet was thrown away (whether as jetsam or votive offering) into marsh or standing water” (Hawkes 1927). The possibility that the helmet could be war booty has been reiterated (cf. Hingley and Unwin 2006, 101). Although there is simply insufficient evidence to substantiate these hypotheses.

While accidental or traumatic loss cannot be ruled out the presence of three helmets from watery contexts in a region with a long association with votive deposition in watery places is suggestive of deliberate deposition.

If the helmet was a votive offering the specific driver for the deposition can only be speculated on. Of course, it could have been a war trophy captured during the Boudiccan revolt and deliberately deposited as a votive offering in the same way that other valued objects were deposited in watery places by indigenous communities. However, the helmet also ties in with a widespread Roman practice of helmet deposition in watery places. Roman troops stationed in or passing through the region may have wished to supplicate local deities. Certainly, the Roman army would have had troops who came from regions in northern Europe where votive deposition in watery places was also practiced (Bonnamour and Dumont 1994; Schalles 1994). Alternatively, retired soldiers who settled in the region, or indigenous troops in the Roman army who had returned home may have deposited the helmet as a votive offering or as part of a funerary rite. It has long been apparent that military equipment can have a lifecycle outside of the military context (cf. Roymans 1996; Nicolay 2008). It is certainly intriguing that the small finds recorded by the Portable Antiquities Scheme between 1997 and 2011 reveal high numbers of objects with apparent military associations in East Anglia including 215 examples in Norfolk, 260 in Suffolk, and 48 in Cambridgeshire (Worrell and Pearce 2012, table 2). It may be that the region was a favoured area for the retirement of veterans (cf. Tacitus *Annals* 14:31, trans. Jackson 1989).

The deposition of helmets in watery places may have parallels with the veneration of the head by both Iron Age and Roman communities (cf. Kaminski and Sim 2012, 81–82). There are intriguing parallels for the ritual use of the head in the locality in the later Iron Age. The Wardy Hill enclosure produced evidence of bodily dismemberment, and both it and the nearby compound at Hurst Lane had polished crania associated with their principal roundhouses (Dodwell 2003, 232; Dodwell 2007, 66). Slightly further afield the Godwin Ridge was a major site for mortuary rites involving riverine interment. Radiocarbon dating of the assemblage has yielded dates from the Middle Iron Age to the early second century AD (Evans 2013, 67). Moreover, in Norfolk the Worthing Helmet and face guard were dredged from the River Wensum with a fragment of human parietal bone (Toynbee and Clarke 1948, 27).

This association between Roman military helmets and watery places is not restricted to Britain. Across Europe disproportionately high numbers of other Roman helmets have been found in watery places. For example, a minimum of 51% of the known corpus of first century AD Roman *Coolus* infantry helmets in Europe have been recovered from watery contexts (Kaminski and Sim 2012, table 1).

Conclusions

The Witcham Gravel helmet was discovered during turf digging in either Byall Fen or Great Dams Fen

during the 1870s. It has been categorised by Robinson as a cavalry helmet of Auxiliary Cavalry type B and is considered to have been produced in the later first century AD. The helmet was constructed of a structural iron core to which a multi-part decorative copper alloy casing was attached. Some components of the casing were left in their natural state (the brow and occiput sections, the neck guard and raised roundels), while the skull cap was tinned. The component parts of the helmet were well constructed however, they were crudely assembled suggesting that skilled labour was used to produce the components but semi-skilled labour was employed for assembly. The copper alloy provided a contrasting colour to the tinned elements of the helmet, and was also thin enough to allow repoussé work to be undertaken. The end result was a highly decorated helmet that would have been further enhanced by a crest running front to back.

The most characteristic features of the helmet are the raised roundels, of which three remain on the neck guard while three are hypothesised on the helmet brow and over the ears. Such roundels are currently unknown on Roman helmets but do have a precedent in the sixth century BC bronze Etruscan 'bell' helmets from the Picenum region of the Adriatic coast. Despite the apparent date of the helmet in the third quarter of the first century AD it is unclear how long the helmet was in circulation prior to deposition in the marsh, but it appears likely that the helmet was deliberately deposited in the marsh. The last Roman helmets known to have been deposited in watery places in East Anglia were produced in the third century AD.

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Authors

Jaime Kaminski, University of Brighton, Cavendish House, 6 Dorset Place, Brighton, East Sussex, BN2 1ST.
David N. Sim, 1 Melrose Avenue, Reading, Berkshire, RG6 7BN

Bibliography

Anon 1877. Exhibitions, *Athenaeum* 1, London: Lecture, 673.
Anon 1880. Exhibitions, *The Academy: A weekly review of literature, science, and art*, Saturday June 4, Issue 423 (New Issue), 444.

- Bishop, MC and Coulston, JCN 2010. *Roman military equipment from the Punic Wars to the Fall of Rome*, Oxford: Oxbow.
- Bonnamour, L and Dumont, A 1994. Les armes romaines de la Saône: état des découvertes et données récentes de fouilles, *Journal of Roman Military Equipment Studies* 5, 141–154.
- Bradley, R 1990. *The passage of arms: An archaeological analysis of prehistoric hoards and votive deposits*. Cambridge: Cambridge University Press.
- Brown, DM 1977. *Roman Cambridgeshire*, Cambridge: Oleander Press.
- Browning, J 2011. The animal bones, in V Score (ed.) *Hoards, hounds and helmets: A conquest-period ritual site at Hallaton, Leicestershire*, Leicester: University of Leicester Archaeological Services, 103–135.
- Burges, W 1877. Thursday, May 17th, 1877, *Proceedings of the Society of Antiquaries* (second series) 7, 225–235.
- Burges, W 1880. Antique helmets, *Archaeological Journal* 37, 457–464.
- Burton, RGO and West, RG 1991. Mepal Fen, Cambridgeshire. In SG Lewis, CA Whiteman and DR Bridgland (ed.) *Central East Anglia and the Fen Basin, field guide*, London: Quaternary Research Association, 123–126.
- Cook, ET 1903. *A popular handbook to the Greek and Roman antiquities in the British Museum*, London: Macmillan.
- Cowan, R 2007. An important Italic helmet rediscovered, *Archäologisches Korrespondenzblatt* 37, 379–387.
- Curle, J 1911. *A Roman frontier post and its people: The fort of Newstead in the parish of Melrose*, Glasgow: Society of Antiquaries for Scotland.
- Demmin, A 1911. *An illustrated history of arms and armour from the earliest period to the present time*. London: Bell & Sons.
- Dodwell, N 2003. Human bone, in C Evans (ed.) *Power and island communities: Excavations at the Wardy Hill ringwork, Coveney, Ely*, East Anglian Archaeology 103, Cambridge: Cambridge Archaeological Unit, 230–2.
- Dodwell, N 2007. Human remains, in C Evans, M Knight, M and L Webley (ed.) *Iron Age settlement and Romanization on the Isle of Ely: the Hurst Lane Reservoir site*, *Proceedings of the Cambridge Antiquarian Society*, 96, 66–8.
- Evans, C 2002. Metalwork and 'cold claylands': Pre-Iron Age occupation of the Isle of Ely, in T Lane and J Coles (ed.) *Through wet and dry: Proceedings of a conference in honour of David Hall*, Lincolnshire Archaeological and Heritage Reports 5, Sleaford: Heritage Lincolnshire, 33–53.
- Evans, C 2003a. *Power and island communities: Excavations at the Wardy Hill ringwork, Coveney, Ely*, East Anglian Archaeology 103, Cambridge: Cambridge Archaeological Unit.
- Evans, C 2003b. Britons and Romans at Chatteris: Investigations at Langwood Farm, Cambridgeshire, *Britannia* 34, 175–264.
- Evans, C 2013. Delivering bodies unto waters: A Late Bronze Age mid-stream midden settlement and Iron Age ritual complex in the fens, *The Antiquaries Journal*, 93, 55–79.
- Evans, C, Appleby, G, Lucy, S, and Regan, R 2013. Process and history: Romano-British communities at Colne Fen, Earith, Cambridge: Cambridge Archaeological Unit.
- Evans, C and Hodder, I 2006. Marshland communities and cultural landscapes, The Haddenham Project 2, Cambridge: McDonald Institute for Archaeological

- Research.
- Field, N 1986. An Iron Age timber causeway at Fiskerton, Lincolnshire. *Fenland research* 3, 49–53.
- Field, N and Parker Pearson, M 2003. *Fiskerton: An Iron Age timber causeway with Iron Age and Roman votive offerings, the 1981 excavations*, Oxford: Oxbow.
- Fox, C 1923. *Archaeology of the Cambridge region*, Cambridge: Cambridge University Press.
- Gallois, RW 1988. *The geology of the country around Ely* London: Her Majesty's Stationery Office (HMSO).
- Hall, D 1996. *The Fenland Project Number 10: Cambridgeshire Survey, Isle of Ely and Wisbech*. East Anglian Archaeology Report No. 79, Fenland Project Committee, Cambridge: Cambridge County Council.
- Hawkes, CFC 1927. *British museum unpublished MS notes, February 18, 1927*, London: British Museum.
- Hawkes, CFC and Hull, MR 1947. *Camulodunum, First report on the excavations at Colchester 1930–1939*, London: Society of Antiquaries.
- Heistermann, C 2010. *Archaeological watching brief report: Ouse Washes, habitat creation scheme, Coveney, Cambridgeshire*, Bar Hill: Oxford Archaeology East report number 1236: Unpublished.
- Hingley, R and Unwin, C 2006. *Boudicca: Iron Age warrior queen*. London: Hambledon and London.
- Hockey, M and James, S 2011. The Roman helmet components, in V Score (ed.) *Hoards, hounds and helmets: A conquest-period ritual site at Hallaton, Leicestershire*, Leicester: University of Leicester Archaeological Services, 61–66.
- Hunter, J 1992a. Archaeological investigations at Brays Lane, Ely, 1991, Cambridge: Cambridge Archaeological Unit.
- Hunter, J 1992b. Archaeological investigations at Walsingham House, Ely, 1991, Cambridge: Cambridge Archaeological Unit.
- Jackson, J (trans) 1989. *Tacitus: The Annals, Books 13–16* (Loeb Classical Library), Harvard: Harvard University Press.
- Kaminski, J and Sim, DN 2007. The production of the Chichester helmet, *Sussex Archaeological Collections* 145, 217–221.
- Kaminski, J and Sim, DN 2012. The production and deposition of the Thames Coolus helmet, *Transactions of the London and Middlesex Archaeological Society* 62, 69–87.
- Leins, I. 2011. The coins, in V Score. (ed.) *Hoards, hounds and helmets: A conquest-period ritual site at Hallaton, Leicestershire*, Leicester: University of Leicester Archaeological Services, 39–60.
- Masser, P and Evans, C 1999. *West Fen and St. John's Roads, Ely, Cambridgeshire: An archaeological evaluation*. Cambridge: Cambridge Archaeological Unit.
- Nicolay, J 2008. *Armed Batavians: Use and significance of weaponry and horse gear from non-military contexts in the Rhine Delta (50 BC to AD 450)*. Amsterdam: Amsterdam University Press.
- Oxford Archaeology 2012. Ouse Washes, habitat creation scheme, Coveney, Cambridgeshire: Geoarchaeological Field Survey – Geophysical mapping and auger sampling, Oxford: Oxford Archaeology. Unpublished.
- Painter, KS 1969. A Roman bronze helmet from Hawkedon, Suffolk, *The British Museum Quarterly* 33 (3/4), 121–130.
- Phillips, CW 1970. *The Fenland in Roman times: Studies of a major area of peasant colonization with a gazetteer covering all known sites and finds*, London: Royal Geographical Society.
- Regan, R 2001. *West Fen Road, Ely. Cornwell Field: Assessment report*. Cambridge: Cambridge Archaeological Unit.
- Unpublished.
- Pouls, JH and Cromptvoets, HJG (ed.) 2006. *De gouden helm uit de Peel: Feiten en visies*, Meijel: Heemkundevereniging Medelo.
- Robinson, HR 1973. Fragments of a Roman cavalry cheek-piece from the fort at Newstead (Roxburghshire), *Proceedings of the Society of Antiquaries of Scotland* 120, 290–2.
- Robinson, HR 1975. *The armour of imperial Rome*. London: The Arms and Armour Press.
- Roymans, N 1996. The sword or the plough: Regional dynamics in the Romanisation of Belgic Gaul and the Rhineland area, in N Roymans (ed.) *From the sword to the plough: Three studies on the earliest Romanisation of Northern Gaul*. Amsterdam: University of Amsterdam Press, 9–126.
- Schalles, H 1994. Frühkaiserzeitliche militaria aus einem Altrheinarm bei Xanten-Wardt, *Journal of Roman Military Equipment Studies* 5, 155–168.
- Score, V 2011a. The excavations, in V Score (ed.) *Hoards, hounds and helmets: A conquest-period ritual site at Hallaton, Leicestershire*, University of Leicester Archaeological Services: Leicester, 13–38.
- Score, V 2011b. Hallaton: Sacred space in context, in V Score (ed.) *Hoards, hounds and helmets: A conquest-period ritual site at Hallaton, Leicestershire*, University of Leicester Archaeological Services: Leicester, 152–164.
- Sim, DN and Kaminski, J 2011. *Roman imperial armour*, Oxford: Oxbow.
- Skertchly, SBJ 1877. *The geology of the fenland*, Memoirs of the geological survey, England and Wales. HMSO: London.
- Stead, IM, Hartwell, AP, Lang, JRS 1980. An Iron Age sword and scabbard from Isleham, *Proceedings of the Cambridge Antiquarian Society* 70, 61–74.
- Toynbee, JMC and Clarke, RR 1948. A Roman decorated helmet from Norfolk, *The Journal of Roman studies*, 38, 20–27.
- Van Driel-Murray, C 2000. A late Roman assemblage from Deurne (Netherlands). *Bonner Jahrbücher* 200, 293–308.
- Walford, E 1880. Antiquarian news, *The Antiquary*, Volume 2, July – December, London: Elliot Stock, 77–84.
- West, RG, Burton, TGO, Andrew, R and Pettit, ME 2002. Evolution of a periglacial landscape in the Late Devensian: Environments and palaeobotany of the Mepal area, Cambridgeshire, England. *Journal of Quaternary Science* 17(1), 31–50.
- Wheeler, AJ and Waller, MP 1995. The Holocene lithostratigraphy of Fenland, eastern England: A review and suggestions for redefinition. *Geological Magazine* 132, 223–233.
- Wiltshire, P 2002. Palynology, in C, Evans (ed.) *Power and island communities: Excavations at the Wardy Hill ringwork, Coveney, Ely*, East Anglian Archaeology 103, Cambridge: Cambridge Archaeological Unit, 71–84.
- Wilson, DM 2001. *The collections of the British Museum*, London: British Museum Press.
- Worrell, S and Pearce, J 2012. II. Finds Reported under the Portable Antiquities Scheme. *Britannia*, 43, 355–393.
- Wright, RP 1951. Roman Britain in 1950. *The Journal of Roman Studies*, 41, 120–145.