

## Conserving Roman artefacts from a settlement in Essex

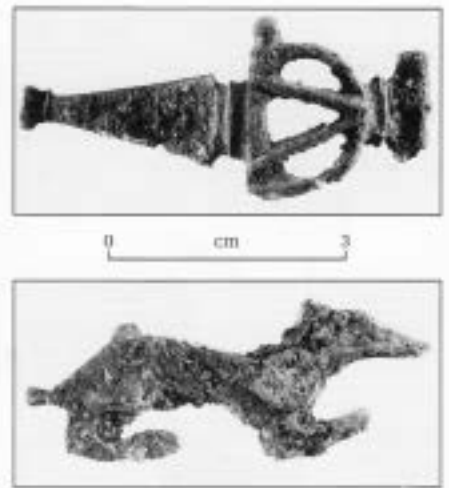
### Amanda Sutherland

*Recent rescue excavation on land scheduled for housing produced an exceptionally large and diverse assemblage of Roman artefacts, including over 3,000 coins and other metal objects. Here one of the Institute's conservators, who is contracted to work for projects funded by English Heritage, describes her approach to conserving the coins, as well as several well-preserved pewter and copper-alloy items of Roman tableware.*

In 1887, E. A. Fitch, a local antiquarian, recorded several archaeological finds during work on a railway line in the vicinity of Heybridge, in Essex.<sup>1</sup> The area now incorporates Elms Farm (Fig. 1), where lies the major part of a settlement that spanned the late Iron Age and most of the Roman occupation. Prior to 1993, the site came up for development by Bovis Homes, permission was granted to excavate, and shortly thereafter a team from the Essex County Council Field Archaeology Unit began to establish and record the extent of the remains. During excavation the site was discovered to be considerably more complex than at first thought, and some of the remains were found to be

extremely well preserved, such as a Roman copper-alloy flagon or ewer recovered during the stripping of the topsoil in preparation for excavation. The first phase of work was funded by the developer, and later seasons of excavation and post-excavation work by English Heritage. As a result, part of the assemblage of artefacts recovered from the site was sent to the Institute of Archaeology for conservation by the author.

The site extended over at least 29ha (71 acres) and the artefact assemblage recovered was large and varied. The settlement was close to the River Chelmer, "at the headwater of the Blackwater Estuary... on river terrace gravels and areas of brick-earth"<sup>2</sup> and the major structural features



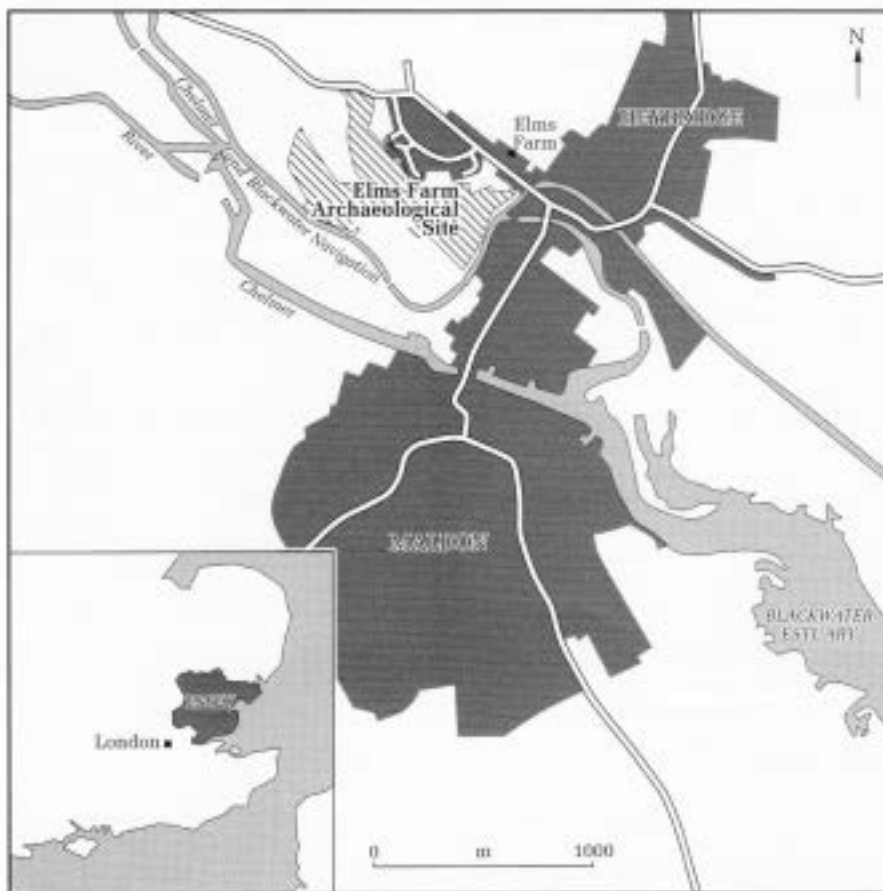
**Figure 2** Copper-alloy brooches from Elms Farm, one in the shape of a hunting dog.

included a multi-phased temple area and several roads. Among the most important finds were approximately 3,200 copper-alloy coins, which would be used to help date the different phases of occupation of the site.<sup>3</sup> There was also a large amount of ironwork, a vast array of pottery, and several tonnes of tile – the purpose of which is not yet clear. More delicate artefacts included the remains of Roman glass vessels, bone objects, and organic materials preserved by waterlogging, such as fragments of leather shoes, wooden timbers and lathe-turned wooden artefacts. There were also over a thousand copper-alloy finds (other than the coins), which included brooches (Fig. 2), hairpins, military fittings, figurine fragments and votive objects, the remains of 12 crucibles, and the flagon previously mentioned.

### Conservation aims and methods

The Elms Farm project was undertaken in accordance with English Heritage guidelines known as MAP2,<sup>4</sup> and involved close collaboration with English Heritage staff at the Ancient Monuments Laboratory in London. It was also necessary to visit the project team in Essex regularly.

Archaeological conservation is a painstaking process that requires much forethought, time and effort to achieve the desired results.<sup>5</sup> The principal aims are to find out as much as possible about an object and to ensure its survival. These aims then need to be reconciled with how the objects are ultimately to be used, for example whether they are simply to be recorded and stored, or displayed, or used for teaching. Conservation also incorporates the ethic of "minimum intervention". This is regarded as the minimum interference necessary to achieve the desired result. The principle of reversibility is also important: the long-term effects of materials used in the conservation of artefacts can rarely be evaluated into the distant future, and it is usual to try to ensure that a treatment can be reversed or removed at a later date.



**Figure 1** The location of the Elms Farm archaeological site.



Figure 3 Five pewter vessels excavated from context 6640 at Elms Farm.

In general it is advisable to involve an archaeological conservator in the assessment of an entire assemblage of finds, so that the retrieval of information from them can be maximized. Just as importantly, certain objects that appear robust may require treatment and it is not always possible to determine their chemical stability by eye. The conservator is able to advise on this and may also be well placed to assist with other aspects of post-excavation work.

The classes of material originally submitted for conservation from Elms Farm were mainly the metals and waterlogged organics, because they were considered to be the most vulnerable to post-excavation deterioration. The conservation of large assemblages, as in this case, can sometimes take years to complete – sufficient time for unstable metalwork to corrode to the point of disintegration and for waterlogged material to rot. Steps were therefore taken to ensure that all the material was suitably stored in “holding” conditions that would impede and minimize further deterioration. Waterlogged finds were stored at approximately 4°C in a refrigerator, and metals were stored desiccated in airtight plastic boxes.

### Conserving the coins

It was important that the coins were cleaned in the early stages of the post-excavation analytical work, and one of the first tasks was to X-ray them.<sup>6</sup> In X-rays of coins, the images of each side are superimposed, so the detail is not always clear, but X-radiography frequently enables coins to be identified, and further work may then be unnecessary. X-rays can also provide a helpful “map” to guide conservation treatment, and they can provide a valuable record. Given the number of coins from the Elms Farm site, the conservation approach needed to be streamlined. The method involved the preparation of specially designed polyethylene sheets suitable for use with archaeological coins (as opposed to modern coins). Each sheet, containing up to 50 coins, was placed on an X-ray plate and an exposure taken. The number of coins was recorded on a tabulated sheet, and each batch was retained in its sheet until after development of the X-rays to ensure that the correct exposure had been used.

Following the X-raying, it was agreed that an extra selection procedure should be

introduced to establish exactly which areas of each coin needed cleaning in order to facilitate full identification. Although this took the numismatist<sup>7</sup> and the conservator one minute per coin, working jointly and using the X-ray plates it saved approximately 15–20 minutes of conservation time per coin. At the same time the conservator was able to advise the numismatist on whether any information was likely to be retrieved, based on the condition of a coin. With the larger Roman coins, many of which had been in circulation for decades or even centuries, it was the profile of the head (or portrait) that was important, because this could help identify the date to within a few years. However, this was rare, as these larger coins were often extremely worn through having been in circulation for such long periods of time.

Large numbers of coins are not always handled in this way; cleaning of large hoards, for example, is often undertaken using chemical treatment, as this can be swifter. However, such methods have to be considered in relation to the condition of the coins and weighed against the potential loss of information that may result from reduced control over the cleaning procedure. The coins from Elms Farm were archaeologically stratified and therefore crucial to dating different layers and features of the site, whereas coins from a hoard are likely to have come from the same archaeological context and to be all of similar type. Also, the copper-alloy coins from Elms Farm were generally in too poor a condition to withstand chemical treatment. All the coins have since been cleaned and are now with the numismatist, who is working on their full identification in order to date them as accurately as possible.

### The pewter vessels

One of the more unusual finds was an assemblage of five pieces of pewter tableware: two dishes and three pedestalled vessels (Fig. 3). They varied slightly in size and symmetry, were dated to the late third or fourth century AD, and were excavated from part of the site known as area H, a key feature of which was a timber-lined well. In commenting on the well, the Project Director stated that “It has been suggested that this was the location of a marketplace alongside the temple precinct. However, all [the] evidence seems contrary to the

idea of the area being open and used as a marketplace, though the well itself could have been for communal use and so still a focus of activity during its lifetime”.<sup>8</sup>

When excavated, the five pieces of tableware appeared both physically and chemically stable, although all had suffered some physical damage, being bent in some areas and with deep scratches and scores under the flanges. They were all dirty and were covered in some areas by dense crystalline corrosion products that masked the vessels’ profiles. Both mechanical and solvent cleaning methods proved ineffective and were potentially damaging, so compressed air was used instead.<sup>9</sup> This treatment was both gentle and effective. The objects were then coated with two layers of an inert wax for protection from dust and handling.<sup>10</sup>

All five vessels appeared to have been cast and were referred to in the fieldnotes as being made of silver. However, their relative density, general appearance and the nature of the corrosion products all indicated a leaded alloy, a supposition that was confirmed by quantitative analysis using X-ray fluorescence spectrometry (XRF).<sup>11</sup> This showed that the two flat dishes and the pedestals or stands of the pedestalled vessels were of similar composition: a 50:50 ratio of tin to lead. However, the bowls of the three pedestalled vessels had been manufactured from an alloy with a tin:lead content closer to 75:25, which places them in one of three compositional groups defined by Beagrie.<sup>12</sup> Analysis lends weight to the probability that all three were manufactured from the same alloy batch and were quite possibly made by the same craftsman or workshop. They were probably finished on a lathe, as is suggested by grooves present on the undersides.

The earliest date for the manufacture of pewter found on Roman sites in Britain was said by Wedlake<sup>13</sup> to be *c.* AD 250 and it is widely believed that pewter manufacture continued well into the fifth century.<sup>14</sup> There was little contextual evidence from which to infer the original purpose or function of the pewter vessels from Elms Farm, except for their obvious use as tableware. Nevertheless, the project team had raised the question of whether they may have been buried for ritual purposes rather than deliberately hoarded or simply discarded. Certainly there is some evidence for ritual offerings being buried in this way, in shafts dug for this purpose. One example is a dish discovered at St Erth that is similar to the two from Elms Farm and had an inscription on the inside of the base dedicating it to the god Mars.<sup>14</sup> Unfortunately there was no evidence of any makers’ marks or inscriptions on any of the objects from Elms Farm.

### The copper-alloy flagon

Another of the interesting metal artefacts from Elms Farm was the copper-alloy flagon previously mentioned (Fig. 4), which



**Figure 4** The late second-century AD copper-alloy flagon excavated from context 15368 at Elms Farm. The body of main vessel is on the left, flanked on the upper right by the handle, made in the form of a leg, and on the lower right by the base.

appears to date to the late second century AD. It was excavated from context 15368, which was described as a “distinctive . . . pit of ritual significance, [a] small shallow feature [that] contained no other finds”.<sup>15</sup> Similar flagons have been found in association with rich burials in Essex, for example at Stansted.<sup>16</sup>

The flagon was approximately 25 cm high and was made in three pieces: the body of the main vessel, part of which was missing, the base and the handle. The neck was narrow and opened out to what would have been a circular lip, now crushed and damaged. The component parts of these flagons or ewers were frequently stylized and, in this case, the handle took the form of a lower leg—probably female—which hooked above the rim and tapered to a delicate foot that would have been attached to the side of the vessel (Fig. 5).

One of the main tasks of conservation in this case was to ascertain the composition of the component parts of the flagon, to reveal information about how it was manufactured, and to ensure that it could be handled safely, drawn and photographed. The metal, although strong, was particularly thin and brittle, and was covered in some areas by a fine smooth dark-green patina. The whole object was also masked by thick dirt, mixed in some areas with crystalline corrosion products. The joins on the ends of the handle and base rim, together with the various points of contact on the vessel body, were covered by corrosion products typical of lead. This suggested that the various parts had been soldered together, which was indeed

confirmed by analysis using XRF spectrometry. Mechanical cleaning of the profiles was undertaken to reveal sufficient detail for illustration.

### Conclusion

Analysis of the data available from the Elms Farm excavations has led to the conclusion that the site of Heybridge is likely to have been a “market village” rather than a “small town”.<sup>17</sup> Considered to be a “lower-order” settlement, it lay outside the major Roman road network and this may have led to its eventual decline. However, the artefacts recovered and the features revealed indicate that it was probably a local centre of some importance that survived for several hundred years. Conservation of the Roman artefacts from Elms Farm continues and will make an important contribution to the final analyses of the finds and interpretation of the site. All the finds will eventually be returned to the Essex County Council Field Archaeology Unit, from where they will in due course be taken for deposition with the main site archive, in Essex.

### Notes

1. M. Atkinson & S. J. Preston, “The late Iron Age and Roman settlement at Elms Farm, Heybridge, Essex, excavations 1993–5: an interim report”, *Britannia* 29, 85–110, 1998.
2. See p. 1 in *Elms Farm Soil assessment report*, R. I. Macphail (Chelmsford: Essex County Council, 1996, unpublished).
3. Phasing involves the chronological correlation of different features, levels and contexts across an archaeological site by dating them relative to one another.
4. *Management of archaeological projects* (2nd edn), English Heritage (London: Historic Buildings and Monuments Commission for England, 1991).
5. Conservation work is usually undertaken using a stereo-binocular microscope at high magnification of 10x to 25x in order to ensure greater visibility and therefore greater control over the process.
6. X-radiography was carried out using a Todd-research X-ray cabinet at the Institute of Archaeology.
7. A numismatist is a specialist who identifies and studies coins.
8. See p. 12 in *Elms Farm, Heybridge: internal site report, summaries of excavated areas*, Essex County Council (Chelmsford: Essex County Council, 1995, unpublished).
9. The compressed-air treatment was carried out in a glove box, using an air-abrasive unit with an extraction unit to remove the resulting dust.
10. Lead is susceptible to corrosion from organic acids such as those found in modern packing materials, woods and glues, and, notably, from acid present on the hands. Like silver, lead artefacts should always be handled wearing gloves. Additionally, this affords the wearer greater protection from certain lead compounds that can be cumulatively toxic. When dealing with large quantities of corroded lead, face masks should be worn.



**Figure 5** The foot that forms the lower end of the flagon handle, after conservation treatment.

11. This was carried out at the English Heritage Ancient Monuments Laboratory. X-ray fluorescence spectrometry (XRF) is a popular non-destructive technique for surface analysis. The surfaces to be analyzed are usually cleaned before the XRF procedure. For the quantitative analysis, a calibration curve was used that is based on pewter standards of known composition.
12. The three groups are defined as containing 50 per cent, 75 per cent and >90 per cent of tin; see N. Beagrie, “The Romano-British pewter industry”, *Britannia* 20, 169–91, 1989.
13. W. J. Wedlake, *Excavations at Camerton, Somerset* (Bath: Camerton Excavation Club, 1958); he based his supposition on pewter from the site of Camerton.
14. C. A. Peal, “Romano-British pewter plates and dishes”, *Proceedings of the Cambridge Antiquaries Society* 60, 19–37, 1967.
15. See p. 25 in the reference cited in n. 8 above.
16. English Heritage and Essex County Council, *Archaeology at the airport: the Stansted archaeological project, 1985–8* (London: English Heritage, 1991).
17. See p. 109 in the reference cited in n. 1 above.