the Late Iron Age. Very recently, the Portable Antiquities Scheme recorded a hoard of five spearheads, four swords and at least 13 miniature bronze shields from a probable sanctuary site at Rothwell Top, Lincs. In many cases, these miniatures had been intentionally bent or otherwise damaged. Very few miniature weapons in Britain were found in stratified contexts, though it is significant that they are generally found in sanctuaries, and that the forms of the weapons imitated are usually based on recognisably Iron Age prototypes. To best understand them, we must look to a parallel find of more than 500 miniature iron swords, spears and shields made at the sanctuary site of Mouzon in France. The site included pre-Roman levels in which iron weapons and shield bosses were found (Fig. 2). At some point in the late first century BC, or very early in the first century AD, the miniaturised weapons were placed in a single heap near the front door of one of the sanctuary’s three main temple buildings. Some had been ritually bent, and others have nail holes, suggesting exhibition, perhaps by nailing to the temple wall. The single context of the finds, the early dating, and the ritual mutilation all seem to support an idea of these miniatures as being used as substitutes for actual war booty, but the enormous pile of them seems to comply with the old idea of a communal or elite-level rite. Finds of enormous groups of clay and lead coin-sized tokens at temple sites in Germany and France suggest a similar replacement for the Iron Age tradition of dedicating precious metal coins, but again, the idea of individualised substitution is missing.

Practically all other objects that have been classified as miniaturised votive offerings find quite different explanations, but shared types are sometimes found over very large areas, suggesting a certain element of continuity in religious practice. The best example of this is the miniature bronze axe (Fig. 3), most of which range from 3 to 6 cm in length, though longer examples in iron are known in Switzerland. At least 87 of these miniature axes have been found in Britain, compared to 39 in France, and 79 in Switzerland. The numbers probably reflect reporting and research habits more than actual density, and it is fair to see the dedication of miniature axes as a universal phenomenon in the Roman west, stretching from the Alps to Britain. A few examples come from late pre-Roman contexts, but most axe models come from the first or second centuries AD. Many bear simple decoration, such as X’s or lines, though a few Swiss specimens have been inscribed with the names of individuals, deities, and the votive formula V.S.L.M., clearly placing the models into the realm of personal dedication.

The significance of the miniature axes is less clear, and several hypotheses have been proposed. The idea of them as substitutes for the tools of ancient craftsmen, however, is simply not plausible, for the simple reason that life-sized axe-heads, or indeed other tools, are quite rare finds on sanctuary sites. Miranda Aldhouse-Green saw them as dedications to a Celtic solar deity on the basis of the inscribed markings, while Martin Hennig has argued that they are representations of the axe used in Roman animal sacrifices. Axes were also symbols of divine and human authority, and axes were carried by the lectors who accompanied Roman magistrates. In a number of French sanctuaries where the axe models have been found, Neolithic and Bronze Age axe-heads have also been recovered—in one case grouped with the bronze model in a small pit. These artefacts must have been found in Roman
times and brought to the temple as puzzling antiquities. They are not mere intrusions from earlier strata. The association of the models and the prehistoric artefacts may be mere coincidence, and it seems unlikely that these Stone Age and Bronze Age artefacts were recognised as axe heads in the Roman period. On the other hand, most of the axe models from Switzerland copy an Iron Age socketed-axe form, rather than the Roman style hafted axe.

Other miniature votive offering types require detailed consideration before a convincing argument as to their meaning or function can be proposed. Some seem to represent elements taken from the iconography of particular deities, and have nothing to do with the actual objects they represent. The most important instance of this type was the miniature wheel, which reproduced the chief attribute of a Romano-Celtic solar deity. In the case of votive pottery and containers, it is often unclear whether one is dealing with a miniaturised form or small specimens of functional objects. Small pots might be used to hold small offerings of food or drink, or for drinking sips of holy water from sacred springs. In a similar vein, tiny but functional fibulae are more likely to have worked as fasteners for fine garments for children than to have been produced specifically as dedications. The amount of work required to produce them would have eliminated any saving in material costs. A number of small bronze and iron hammers and tongs have been identified as votives, but finds of these objects in metal workshops suggest that they were actually the functional tools of fine smiths. The old adage that archaeologists always interpret what they cannot explain as ‘religious’ seems to be doubly true for small items.

Often thought of as a single homogeneous group, miniature votive offerings actually form a number of different groups, stemming from different periods, and serving different functions. A few seem to have replaced Iron Age rites of mass dedications of war booty and prestige goods, though the idea of substitution at a personal level seems nonexistent. Other miniatures reproduce divine symbols, and many finds interpreted as votive offerings are more likely to have served purely practical functions. The diversity of miniature votive offering is astounding, and so is the amount of information that they yield about votive activity. It seems likely that other offering types and artefacts, if studied in a similar manner, will reveal an equally varied picture. For the archaeologist, the true value of miniature votive offerings is the new element they add to our understanding of ancient religion.

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THE ROMAN FURNACE PROJECT:
AN ARCHAEOLOGICAL EXPERIMENT IN BUILDING AND FIRING ROMAN GLASSMAKING FURNACES

by Mark Taylor and David Hill

Mark Taylor is a glassmaker and glassblower and David Hill is a graphic artist and sculptor. Together, as Roman Glassmakers, they have devoted the past twenty years to the study of ancient glass techniques and technology. From their project workshops near Andover, Hampshire, they give regular glassblowing demonstrations to groups, including, on two occasions, the ARA. In 2005 and 2006, funded by English Heritage, and with the co-operation of their landlords, they undertook an experiment in reproducing Roman wood-fired glass-working furnaces, based on excavated examples. The following article describes these experiments.

Introduction

An ever-increasing number of Roman glassmaking furnaces are being
excavated throughout what was the Western Empire, which date from the first to the fourth century AD. These may be broadly grouped into two types – those with circular or oval firing-chambers with no visible associated melting-chamber, and those with oblong melting-chambers and a firing-chamber (often D-shaped) adjoining one end. However, survival in situ is usually confined to that portion of the firing-chamber which is below ground (in the case of the first type), or the base of the melting- and firing-chambers (in the case of the second type), which is also often below ground. The other visible feature is the stoke-hole, a rectangular slot leading into the firing-chamber, either horizontal or steeply sloping. Both types of remains are solidly built and have been fired to high temperatures, major factors which have contributed to their survival. Superstructures from circular furnaces rarely survive in situ, and most of our evidence is in the form of broken lumps of fired clay with a blue-green to green glaze on the concave inner surface. Sometimes, parallel grooves made by the fingers of the furnace-maker are preserved on the inner surface.

There are no detailed contemporary written accounts of Roman glassworking, and the only illustration of a Roman glassworking furnace is from a relief of a scene decorating a first-century AD ceramic oil lamp, of which there are three surviving examples (Fig. 1). This shows a glassblower and his assistant seated in front of a wood-fired furnace. The furnace has both a stoke-hole and a gathering-hole, and flames are shown exiting the gathering-hole and other holes.

The Project

In an effort to understand how a Roman furnace may have worked and been used for glassworking, we decided to reproduce a small covered workshop, complete with furnaces and an annealing oven, and to run it continually for three weeks a year over two consecutive years. During the firings, we gathered data on temperature, using a series of thermocouples, and on fuel consumption by weighing each load of wood to the nearest kilogram. We chose to investigate the first type of furnace, which has a circular, flat-bottomed, vertically-walled firing-chamber, is usually lined with tile, brick or stone, and is between 0.5 and 1.5 m in diameter. Many furnaces of this type have been found in Switzerland, Germany and France. Their identification is confirmed by associations found, including glassworking waste and heavily-glazed fragments of superstructure. Furnaces in Britain are rarer, and include one at Mancetter, Leics., (Mandvedesdum) and several in London. In 2005 we built two furnaces with circular firing-chambers of 80 and 50 cm diameter, the larger with a horizontal stoke-hole (as in the furnace at Cesson-Sévigné, France) and the smaller with steeply sloping stoke-hole (after the furnaces at Avenches). The walls of the larger firing-chamber were built-up and corbelled inwards to form a 30 cm-wide circular shelf or siege upon which to stand five pots, with a 40 cm-diameter central hole through which the hot gases could rise to heat the pots (Fig. 2). We used daub made from clay, sand and chopped hay to form the 15 cm-thick dome-shaped superstructures (which became the melting-chambers), letting in gathering-holes for access to the glass, and a hole at the apex of each dome to help in controlling the heat flow (Fig. 3). The smaller furnace incorporated a D-shaped tank to hold the glass, and a rectangular annealing oven was built adjacent to the furnace so that the waste gases could be used to heat it (Fig. 4). The furnaces were heated over two days, eventually reaching 1050°C, at which temperature the pots and tank were filled with glass. Shrinkage of the superstructures (approx. 9% of height and diameter) caused many cracks, but as the inner portions of the domes were fired, they caused no noticeable weaknesses during the firings. The tanks, however, cracked badly, as a result of uneven shrinkage during initial firing, so this furnace only continued in use as a heat source for the oven.

In 2006 we replaced the tank-furnace and oven with a new furnace superstructure, re-using the original firing-chamber, and building a new free-standing oven (Figs. 5 and 6). Both structures were built with a shelf above the firing-chamber made of ceramic tiles, supported on large fragments of re-used Roman roof-tiles.
set into the daub walls (Fig. 7). The furnaces were enclosed in an 8 m by 4 m-roofed structure, which provided necessary protection from the weather. Within this workshop all of the stoking and glassblowing activities took place, with the wood preparation being carried out in a wood-store nearby. We equipped the furnaces with thermocouples, to enable us to keep a record of their hot (inner) and cold (outer) faces. The maximum temperature reached in the melting-chamber of the larger furnace (the pot-furnace) was 1160°C with its firing-chamber above 1200°C. Glassblowing temperatures were between 1030°C and 1160°C, with temperatures up to 1100°C for making mosaic and ribbed bowls. In contrast, the cold faces were recorded as 120-200°C, a measure of the good insulating quality of the daub walls (Fig. 8). Our landords generously donated a woodshed full of well-seasoned timber: mainly beech and ash, but also holly, chestnut and yew. At first we experimented with burning solely beech, then ash for a day or so, with the results reflecting the higher calorific value of ash wood. Stoking the furnaces was a full-time job, with a stoker for each furnace, whose task included weighing all the wood. The pot-furnace burnt between 12 and 15 kg of wood per hour, with the smaller furnaces consuming between 10 and 12 kg per hour. The free-standing oven burnt 10 kg per hour. Altogether, the total amount of wood consumed over both years was 23 tonnes. The glassblower(s) had to work with the stokers to maintain the working temperatures. These were determined by the yellow-orange colour within the pot-chamber and by the viscosity of the glass (Figs. 9 and 10). In front of each gathering-hole we constructed a work-station consisting of a marver, a stool, a low table for tools and a support for warming the blowing- and gathering-irons. The glassblower, sitting on the stool, had all his tools within reach and was able to use the gathering-hole to reheat his work. This arrangement is shown in the lamp relief (Fig. 1) and is illustrated in later medieval and Renaissance engravings (Fig. 11). It is used today in small glassblowing workshops in the Near East and affords a convenient and economic way of working. Using wooden boards laced to his thighs to rest and roll the irons upon, a glassblower is able to make a wide range of vessels (Fig. 12). One workstation was adapted for making mosaic and ribbed bowls by building a stone table directly in front of the gathering-hole, which allowed the bowls to be worked on near to the source of heat. A team of two people could work at this station: one to slide the bowl in and out of the furnace and the other to manipulate the hot vessel (Fig. 13). The attached annealing oven of 2005 was based on an example from France. The original was raised above ground by about a metre so that the hot gases from the furnace would have entered at floor level. Our example was not raised as high; consequently the hot gases entered at ceiling level, making the oven more difficult to heat through. The free-standing oven of 2006, although using fuel of its own (about 80 to 100 kg per day), was very easy to heat, reaching the annealing temperature of c. 350°C in 45 minutes. Ash from the fire settled on the surface of the vessels in the ovens. This phenomenon is not seen on original Roman glass, so it may be that a way was devised to avoid this problem, such as shielding the glass (Fig. 14).

The distribution of waste glass was noted. Debris from glassworking
(often very thin lengths and small blobs of glass, sometimes with pincer marks, resulting from adding handles and trails to vessels) inevitably collected near to the furnace walls, with other fragments and small broken lumps of glass (mainly from the ends of the irons) accruing near the storage areas for the irons (in our case, farther from the furnace, but near to the stool). Recycling the waste glass kept this debris to a minimum, as would have occurred in Roman glassmaking.

A large amount of waste glass came from the ashes raked from the pot-furnace. It was then collected by sieving the ashes when cold. It divided into several types, all in shades of blue-green to brown, and all mixed chemically with ash:

a. small pea-sized globules resulting from the breaking up and spitting of cullet loaded into the pots for re-melting. Thermal shock causes violent spitting of this glass, which drops into the firing-chamber.

b. long rivulets resulting from inevitable overflow of glass from the pots onto the siege, then dripping down into the firing-chamber.

c. large lumps of glass, the main source of which is from glass flowing from broken pots. One of the pots split completely, resulting in a spillage weighing over 12 kg, which collected at the sides and near the bottom of the firing-chamber. A feature of these large lumps is the flattened top surface and the multiple finger-like projections on the underside, resulting from the molten glass flowing slowly around small lumps of charcoal, many of which are trapped by the glass 'fingers' (Fig. 15).

These three types of waste glass appeared in the other two furnaces, but to a lesser extent, as these were not used for glassblowing as much as the pot-furnace was. Ash pits or dumps would have been situated some distance from the furnaces, as ours were. We separated the ash from each furnace, but it is unlikely that this would have happened in antiquity. The final category of waste glass includes vessels broken during manufacture (or collected and brought to the site for remelting). Most fragments would have been recycled, but occasionally small fragments would have been left where they fell, adding to the archaeological record.

At the end of the 2005 firing, the tank-furnace was cut open and left to weather for almost a year before being demolished. The unfired portions of the superstructure on the outer surfaces were attacked and easily dissolved by rain and frost. Frost also attacked the partially fired portions sandwiched between the outer area and the fully-fired inner area. The inner area was the most resistant to weathering, and was not attacked.
and the other, discussing the waste glass and its relevance to archaeology (by Sarah Paynter, English Heritage) are published in the 2008 volume of the Journal of Glass Studies, published by the Corning Museum of Glass, USA. Both firings were filmed extensively, and we plan to edit the sequences into a series of films covering many aspects of the project.

Acknowledgements

The 2005 firing and the publications were funded by English Heritage. Both the 2005 and 2006 firings were also sponsored by Antante Travel, the Association for the History of Glass, and SE Validation. Original Roman tile fragments were donated by The Association for Roman Archaeology, Wessex Archaeology and François van den Dries. Land and wood for the project was generously provided by our landlords, Richard and Mandy Atkinson-Willes.

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If you would like to learn how to blow glass, then please visit their website or contact them.

Notes

1. The authors have examined excavated furnace superstructure material in Switzerland, from the glassworking sites at Augst and Avenches.
2. The depth of colour of the glaze depends upon the amount of iron oxide present in the clay. Potash from the fire fluxes the silica at the surface of the inner wall of the melting-chamber, and the resulting glaze is coloured by the iron.
3. As on fragments at Augst.
4. A lamp from Asseria, in the Museum of Archaeology, Split, Croatia (1084-30); a lamp from Voghzena, in the National Museum of Archaeology, Ferrara, Italy (52196); and the recent find from Spodnje Škočje, in the Piran Archaeological Museum, Slovenia (PN A 270), which shows the clearest detail.
5. This opening provides access to the molten glass; it is also used for reheating the vessel currently being worked.
10. See note 9.
11. Cesson-Sévigné, France. See note 8.
12. See note 6.
13. Finished glass objects are placed in an annealing oven to dissipate stresses built up in the glass during manufacture and to cool the object slowly.
14. A smooth, flat slab of stone or metal on which to roll and shape the gather of glass.
15. Such as in Cairo and Damascus. See e.g. the film: The Glassmakers of Herat.
16. La Manutention 3 (site name), Lyons. See note 8.
18. Broken glass.
19. A full analysis of the glazed inner walls and other deposits from the furnaces has been undertaken by Sarah Paynter. See note 17.
20. Such as at Augst, Switzerland. See note 6.
21. Chemical reduction (removal of oxygen) of iron oxide in fired ceramics changes their colour from red to grey.
23. See note 17.
Dave Went and Stewart Ainsworth, from English Heritage’s York-based Archaeological Survey and Investigation Team, are reaching the final stages of a detailed landscape study at the Roman fort of Whitley Castle, situated in the South Tyne Valley just north of Alston Moor in the North Pennines. This was the spectacular site visited by the ARA in the summer of 2007 (see Editorial in the last issue of ARA and the review of ARA events in this issue). The study has two main components: a detailed earthwork survey undertaken in the winter of 2007/8 and extensive geophysics begun by Durham University in January 2009.

The fort could be described as the North of England’s best-kept Roman secret. It is a bit off the beaten track – the sole outpost on the high and lonely Maiden Way between Stainmore and the Tyne Gap – and this relative isolation may explain why the fort has received scant attention from antiquaries and archaeologists over the years. It is, however, one of the country’s most remarkable military sites: notable for an exceptional degree of preservation, for a multiplicity of ramparts (unparalleled anywhere except at Ardoch fort in Scotland) and a unique lozenge-shaped layout.

The new work has considerably advanced our understanding of the fort. We have increased confidence that the location was chosen primarily to control production and shipment of lead from the Alston ore-fields, evidence for which has been assembled from a number of sources. It is entirely clear that the fort’s curious adaptation of the standard plan extracted maximum advantage from the natural knoll on which it was placed; and we now have an excellent picture of the manner in which it was able to accommodate, in a rather slanted fashion, a maximum of six barracks (or similar ranges of buildings) to the rear of the principia and four to the front. An earlier timber-built phase to the fort could not be identified, but there are some suggestions of activity in the late first century AD as well as indications that the early second-century stone-built fort supplanted a prehistoric cross-ridge dyke. Extramural settlement has been recorded to the north of the fort, and an absence of features over a swathe of level ground to the south has been tentatively interpreted as a parade ground – further geophysics may tell us more.

Suggestions have also been made concerning the location of a mithraeum and other temples, the existence of which could previously be only inferred from the historic collections of altars and statuary taken from the site.

The details of these investigations, intended to underpin developing management plans for the fort, will be published in a forthcoming (2009) English Heritage report. This will also shed new light on the subsequent history of the fort and its surroundings, including the evolution of medieval and later fields, and the existence of at least one hitherto-unknown bastle located within the ramparts.
Ritual Landscapes of Roman South-East Britain

Edited by David Rudling
ISBN 978 1 905223 183
225 pp., 87 illustrations in colour and black & white.
Paperback £24.95.

Review by Rosalind Niblett

This book is based on a collection of papers given at a conference on the current state of knowledge on Romano-British religious practices held in 2002. Publication has been delayed through no fault of the contributors, but the book has been well worth waiting for. The papers focus on Kent, Sussex, Surrey and Greater London, which is the area covered by the Council for British Archaeology South-East Region Group, and also Hampshire. The scope of the book was also slightly expanded to include the later Roman period, especially in Essex, but it remains a study of religious practices in a relatively prosperous and peaceful area of Roman Britain. All the contributors emphasise the blending of native and foreign cults, and various local variations in cult and ritual. Some contributors take the view that as all ritual practices occurred in some location or other, anywhere that has evidence of a ritual act having taken place, whether it is simply represented by a ritual pit or a household shrine, is therefore a ritual landscape. Other writers take a wider view by considering the way in which a community’s religious understanding was reflected in the organisation of the landscape and the ways in which ritual related to it, as, for example through sitting on boundaries, springs or in relation to local landmarks, or the establishment of processional ways.

The book opens with a detailed survey by Ernest Black of pagan religious practices in the region, in which he discusses structured deposits in pits as well as ‘foundation’ deposits, household shrines, watery sites and temples. Links are discussed with the god Sucellos and his consort Nantosueltla, and the section concludes with a short survey of rural temples and estate shrines. Jenny Hall and John Shepherd provide an up-to-date summary of temple sites in Greater London and Phil Andrews provides an interim report on the remarkable site at Springhead and makes the useful distinction between the sanctuary complex focussed on the spring head and the temples associated with the small town.

David Bird gives an up-to-date round-up of religion in Surrey, including much new information, and David Williams gives a good summary of the Wanborough temple. Sussex is covered by David Rudling’s review of the evidence currently available, including the results of recent work. There is also a short account by Anthony King and Grahame Soffe of the Hayling Island temple, just over the border in Hampshire, including the results of a new magnetometer survey and stressing the temple’s Gallic links. Appended to this paper is a comprehensive bibliography of interim reports on the site and a useful list of publications in which it is discussed. Jean Bagnall-Smith discusses votive offerings and Alex Smith looks at later Roman temples in Essex, arguing that their decline was due more to economic considerations than the rise of Christianity. In the following section Martin Henig argues for the continued use of late Roman shrines as Christian sites, particularly the rise of cemetery churches.

The book is well produced, and will provide a useful and wide ranging account of the current knowledge of religious sites in the south-east. It will be of interest to specialists, local archaeologists and to the general reader.

ARA EVENTS IN 2007 – 2008

by Grahame Soffe

ROMAN SOMERSET

The year’s programme started on 8th July 2007 with a visit to the last season of the current excavations carried out on the site of the Roman villa at Dinnington, near Ilminster, Somerset. The excavation forms part of a wider survey of the area during the Roman period being co-ordinated by the Department of Archaeology at Winchester University in conjunction with the Somerset County Council. TV’s Time Team and students from Richard Huish College, Taunton, had also been invited to dig at the site. The project is being directed by Professor Tony King of Winchester University assisted by colleagues including Dr. Keith Wilkinson. Tony King escorted some 60 ARA members around the excavation, reviewing the long period of change and decay in a complicated series of well-constructed stone buildings surrounding a huge courtyard area. Rooms in the west range contained mosaic and tesselated floors and extensive remains of carbonised timbers (Fig. 1). At the temporary
site display, members were shown artefacts and plans and photographs of previous work, including high quality painted wall plaster and fragments of a fine figured mosaic pavement, with very small tesserae, which had collapsed into a hypocaust. Part of this was first identified by Christina Grande of Winchester University, as depicting the story of Apollo and Daphne from Ovid’s Metamorphoses. This mosaic and others from the site had undergone on-site reconstruction by Dr. David Neal in readiness for their inclusion in the National Corpus of silver pendant cross (first recognised and published as a fake by Professor Martin Henig in 1997) and the famous frigidarium mosaic from the Roman villa at Low Ham, depicting scenes from the story of Dido and Aeneas based on Books I and IV of Virgil’s Aeneid. This remarkable mosaic, dating after AD 340, depicts figured scenes of Venus and winged cupids, Dido, Queen of Carthage, and her lover Aeneas with Cupid disguised as his son Ascarius (Fig. 2), and Achates and other companions in three (oared) sailing galleys arriving in Carthage from Troy. Dido and Aeneas are also shown galloping off on horseback to the hunt with Cupid/Ascanius leading the way, and then they shelter from a storm in a cavern surrounded by a grove of trees and engage in their love-tryst (Fig. 3). The imagery of this mosaic may well be derived from an illuminated manuscript of the Aeneid similar to the Codex Vat. Lat. 3867 (Vergilius Romanus). The visit was planned to allow members to see the gallery before it closed for redevelopment. The work involves taking the Low Ham mosaic down from the end wall, where it has been displayed for many years, and placing it in a more appropriate setting on the floor of the new gallery which is planned to open in 2010. Both the excavations at Dinnington and the redevelopment at the County Museum were supported by grants from the ARA.

TOUR OF HADRIANIC FRONTIER – CUMBRIAN COAST AND INLAND FORTS OF HARDKNOTT CASTLE, AMBLESIDE, WHITLEY CASTLE AND BEWCASTLE

The fourth and last of the planned
series of tours of the Hadrianic frontier took place over the long weekend of July 13th to 16th. The previous tours of sections of Hadrian’s Wall between the east and west coasts had taken place in 2003, 2004 and 2005. As in 2004 and 2005, the Gilslands Spa Hotel near Brampton, provided accommodation for the 85 members attending and was also the venue for lectures and discussions. Due to the indisposition of the intended tour leader, Tony Wilmott (English Heritage), the ARA is extremely grateful to Percival Turnbull (Director, Brigantia Archaeological Practice, and former Assistant County Archaeologist for Cumbria), an authority on the archaeology of the area, for taking over at short notice. Percival Turnbull, together with Deborah Walsh, had also led the ARA tour of Cumbria in 1999 (see ARA 8, 15-16 [1999]). The ARA guidebook was prepared by Bryn Walters and Grahame Soffe.

The itinerary initially took in the defences running south-westwards along the Cumbrian coast from the fort at Bowness-on-Solway, the westernmost fort on Hadrian’s Wall. The first site visited was Milefortlet 21 on the cliff-top at Swarthby Hill, discovered by aerial reconnaissance in 1968, and excavated by Percival Turnbull. Although on the previous ARA visit the site had been successfully consolidated as a public monument for visitors, it had recently been neglected and access had been closed. Special arrangements therefore had to be made with the Allerdale Borough Council to restore the site and provide access for the group. The ARA trusts that public access to this important site will be maintained in future. The group then visited the impressive earthworks of the cliff-top fort of Alaunum at Maryport, and although the fort itself is closed to visitors, members were able to observe the complete layout of the square plan of its defences from the vantage of the modern reconstruction of a Roman watch-tower adjacent to it (Fig. 4). Also adjacent to the site, the Senhouse Roman Museum (Fig. 4) with its extensive and important Netherhall Collection of Roman sculpture, military altars and other inscriptions, was another high point in the tour. Percival Turnbull reminded members of the long period of excavation and fieldwork which continued to add new evidence of the topography and history of the fort and its extensive vicus laid out on either side of the road running north-east out of the fort’s porta principalis decumana. Also highlighted were the efforts of Richard Bellhouse and the late Professor Barrt Jones in discovering the individual components of the defensive system, particularly the milefortlets, along the Cumbrian coast of the Solway Firth. The recent work had been summarised in two publications, Festskrifts for Professor Michael Jarrett (Wilson, 1997) and Richard Bellhouse (Wilson and Caruana, 2004). At Maryport, the interpretation of cropmarks recorded from the air and a geophysical survey had produced a plan of the vicus, little less than a revelation (Fig. 5 — page 35), where all that was known before had been the site of a sacred precinct of temples, burials and a deposit of altars, on the hill to the north-east of the fort (19 on Fig. 5). The survey was carried out by Alan Biggins and ARA member Dr. David Taylor of TimeScape Surveys from 2000 to 2004, and commissioned by the Trustees of the Senhouse Roman Museum and supported by a grant from the Maryport Heritage Trust. It reveals what appears to be the largest, most complete and best-preserved civil settlement along the Roman frontier. Now, Hadrian’s Wall Heritage Ltd has begun to acquire land as the first step towards excavating the fort and vicus and the setting up of a new museum with viewing galleries to enable visitors to view the excavations. The ARA is very grateful to the Senhouse Museum Trust and the staff of the museum, particularly Jane Laskey, for their help, hospitality, and for providing such a large quarry of publications for sale to members. The ARA has given a grant to the Senhouse Roman Museum.

Further along the coast to the south, the next fort to be visited, at Moresby, is again in a spectacular location with well preserved earthworks on two sides, although much of the defended area lies under the present church and its large grave-

continued on page 36

Fig. 4. Senhouse Roman Museum (a former coastal battery), Maryport, and the modern reconstruction of a Roman watch-tower, to the right. Viewed from the east with the Solway Firth in the background. Photo: Steve Barber, © Hadrian’s Wall Heritage Ltd.

Fig. 6. Hardknott Roman fort: view east from the principia courtyard, towards Hardknott Pass, July 2007. Photo: © Grahame Soffe.
Fig. 5. Maryport Roman fort: plan of the geophysical survey anomalies, showing the extensive layout of the vicus along the road leading north-east from the fort. The numbers on the plan refer to points of interest referred to in its original publication (Biggins and Taylor in Wilson and Caruana, 2004, 102-133).
Plan reproduced courtesy of Alan Biggens and David Taylor, Timescape Surveys.
yard. Further south again the group visited the important coastal fort at Ravenglass and concentrated on the impressive upstanding remains of the extra-mural military bath-house (Walls Castle), which have been conserved and placed in the care of English Heritage.

The second day of the tour involved the ARA’s first visit to the spectacular well-preserved remains of the Roman fort of Hardknott Castle, situated in the upper reaches of Hardknott Pass in the Cumbrian Mountains (Fig. 6). Due to the long distances involved, steep gradients and narrow roads, this was a difficult undertaking but was achieved with a fleet of minibuses, some hiking, fine weather and good visibility. The group also visited the external bathhouse and parade ground. The site is reviewed by Don Greenwood in ARA News 18, 12-17 (2005), an article which also provides a good air photograph of the fort and its environs. The group then travelled to the fort at Ambleside, possibly the Roman Galava. Some of the remains excavated by Professor Collingwood at the beginning of the last century have been laid out by the National Trust in a public park beside the town of Ambleside on the shore of Lake Windermere. Unfortunately, the site’s current condition was found to be overgrown and untidy compared with Hardknott.

The third morning was devoted to visiting two further hill-top forts in the region, but still part of the Roman military network: Whitley Castle (Northumberland), well south of the Hadrian’s Wall, and Bewcastle (Cumbria), to the north of the Wall. After a steep climb the group explored the multiple banks and ditches (seven on the south-west side) and internal features of Whitley Castle, situated at 1,050 ft above sea level, and higher than Hardknott. The visit was timely in that it coincided with the start of an extensive survey by English Heritage in advance of a new presentation strategy for the fort, which will include a management plan to maintain the site and improve access for visitors to what is unquestionably one of the most impressive, but least known, Roman sites in Britain. Its multiple defensive ramparts and ditches survive as particularly well preserved earthworks and the ARA group were able to detect fragmentary walls of several internal buildings protruding through the moorland turf. This survey was highlighted by the writer in the last issue of this Bulletin (ARA 18, Editorial, p. 2 and air photograph on the front cover), and now Dave Went of English Heritage is able to report on some of the results (see his article in this issue). The fort site at Bewcastle (Fanum Coedicii) is also that of a temple, as the Roman name indicates. The unusual hexagonal plan of its defences was examined together with the medieval castle and church lying within it. Some time was also spent examining the sculpture on the famous Anglo-Saxon Bewcastle Cross which stands in the churchyard. After five years, the visit to Bewcastle brought this series of Hadrianic Frontier tours to a close.

Three lectures were given at Gilsland Spa. Percival Turnbull gave an introduction to the tour, Yvonne Boutwood (Senior Investigator, Aerial Survey and Investigation, English Heritage) gave an illustrated review of English Heritage’s continuing aerial survey and detailed mapping of Hadrian’s Wall and its hinterland, and Tim Padley (Keeper of Archaeology, Tulie House Museum and Art Gallery, Carlisle), gave an illustrated discussion of the interpretation of the Staffordshire Moorlands Pan and its inscription recording forts at the western end of Hadrian’s Wall, compared with other related vessels such as the Rudge Cup (see also the Editorial in ARA 17, 2 [2006]). The ARA is grateful to these speakers for their presentations.

ANNUAL DINNER AND TOUR OF ROMAN COLCHESTER

Sixty members attended the Annual Dinner Weekend on 18th and 19th August at the University of Essex, Colchester. The dinner took place at Wivenhoe Hall, the neo-Tudor style (1846) mansion still situated in parkland, and now part of the university campus. The after-dinner illustrated lecture was given by Philip Crummy, Director of the Colchester Archaeological Trust, on the newly discovered Roman circus at Colchester (see article by Bryn Walters in ARA 17, 11-13 [2006]). The ARA has subsequently submitted suggested proposals for the public presentation of this unique monument. The following day Philip Crummy and his colleague Howard Brooks took the party in two groups on a tour of Roman Colchester (Camulodunum). The tour included the defensive walls, the Balkerne Gate, the Theatre, and ended in a study of the remains of the Temple of Claudius, and its vaulted podium beneath the later massive keep of the Norman castle. Philip Crummy pointed out how the castle keep incorporated massive amounts of reused Roman masonry, including complete stacks of hypocaust pilae from a substantial public building. The group then went on to view the large and important collections of Roman material on display in the Castle Museum (now the Colchester and Ipswich Museum) within the walls of the vast Norman keep. Finally members were privileged to be able to visit the Lexden Tumulus, one of two great barrows standing in a cemetery south-west of the Roman walled area but within the late Iron Age oppidum of Camulodunum. The cemetery area has also revealed monumental tombstones, pyre sites and in 2005 a square stone Roman temple-tomb or mausoleum was recorded, containing a hexagonal inner structure and six cremations. The tumulus, of continental type, covered what was clearly the tomb of a British king or at very least a member of the Catuvellaunian / Trinovantian aristocracy thoroughly conversant with Roman taste, dated to c. 10 BC. After lying in state the body had been cremated and placed in an enormous oval burial pit which was excavated in 1924 by Philip Laver. An astonishing array of damaged grave goods accompanied the cremation (Foster 1986), including bronze figurines such as a cupid, a boar (Fig. 7), and a bull. There was also a four-footed stand, a
wooden object, probably a casket, covered with bronze sheets with repoussé and red glass decoration, a bronze griffin attachment, a statuette pedestal and an iron chain-mail tunic with bronze buckles and hinges and silver studs. Also found were plant-stem silver mounts, silver trefoil attachments and a cast silver medallion with a head of Augustus moulded from a coin type minted between 19 and 15 BC, presumably a diplomatic gift (Fig. 8). There was also a large piece of gold fabric, parts of a leather tunic, a bronze fitting from a piece of furniture in the form of a human foot, a folding iron stool (sella curulis – used in the Roman world as a ceremonial seat for persons of authority), a set of pottery and Italian wine amphorae. Most of these objects were viewed in the museum. The remains of the tumulus, 30 m in diameter, previously divided between two large gardens, has now been enclosed within the boundary of one garden through the foresight of one of the owners, Diane Tinson, who has purchased the adjacent land to enable the huge grassy mound to be maintained in its entirety. The ARA is grateful to Diane Tinson for showing the site, and to Philip Crummy for arranging such an informative day (Figs. 9 and 10).

ROMAN GLASSMAKING AND TOUR OF ROMAN WINCHESTER

On 9th September the ARA made a return visit to Mark Taylor and David Hill’s Roman glass workshops.

'Roman Glassmakers' at Quarley, near Andover, Hampshire. The previous visit had been in 2001 (see ARA 12, 18 [2002]). Forty members attended and watched as Mark Taylor and David Hill demonstrated techniques in making an impressive variety of replica vessels, some of which were available for purchase. However, the main purpose of this visit was to see the recently reconstructed experimental glass-furnaces located outside the workshops. Mark Taylor gave a detailed account of the technology and the successes and failures experienced. A full account of this work appears in this issue of ARA. The afternoon was taken up with a visit to Roman Winchester (Venta Belgarum), again a repeat of the visit in 2001. The group was met by Graham Scobie (Historic Information Officer, Winchester City Council Cultural Services) at the Hyde Historic Resources Centre and given an illustrated review of recent advances in knowledge of the plan of the Roman city. He then conducted a guided tour of the walled area describing the recent work in attempting to establish the topography of the city in the early Roman period, particularly how the River Itchen occupied a broad flood plain, west of its present course, flowing in channels around elongated islands, on which the eastern area of the town was laid out. The tour included key locations such as the mosaic in the porch of the Cathedral Deanery and a fragment of the defensive wall on east side near the City Mill. The group were also guests of Dr. Geoffrey Denford (Principal Curator) at Winchester City Museum’s Roman gallery to view the impressive displays from Winchester itself and other local sites such as the mosaic and wall.
and see part 2 of Martin Henig's article about religious objects in ARA 14, 14-17]. Of course, the group paid special attention to examples of Roman glass, particularly the fine dark-blue jug from the cremation burial of a young aristocratic Romano-British woman of the Flavian period (Figs. 11 and 12, and Grave II in Biddle 1967).

**TOUR OF DYNASTIC AND ROMAN EGYPT**

Between 15th and 24th September the ARA embarked on an ambitious tour of Ancient Egypt, to include both Roman-period and ancient Dynastic sites and monuments between the Nile Delta and the First Cataract. The tour was co-ordinated by Bryn Walters and Mike Stone who also acted as guides and the official Egyptian guide was Salah Tawfiq. Kuoni Travel and Ancient World Tours assisted in arrangements, including provision of armed guards and police on convoy journeys and at certain locations. The ARA guidebook was prepared by Bryn Walters and Grahame Soffe. Thirty-six members attended. Our base at Giza was the Hotel Sofitel Le Sphinx adjacent to the Pyramids of Giza, a late change from the planned venue of the Maadi Towers Hotel in Cairo. This proved a successful arrangement for travelling to the desert necropolis of Dahshur where the group visited two of the greatest pyramids, built by Sneferu (c. 2575-2551 BC), first king of the Fourth Dynasty, the Bent Pyramid and the Red or North Pyramid. At the Bent Pyramid the eastern chapel and satellite pyramid were also examined. At the North Pyramid the mortuary temple was visited and several members explored the descending passage from high up in the pyramid to the two tall antechambers with corbelled roofs and the corbelled burial chamber. The Egyptian Museum at Cairo was then visited to view the richest collection of Egyptian antiquities in the world, and especially those of the Ptolemaic and Roman periods. In the evening members then returned to the Giza Pyramids and the Great Sphinx. In

the ancient city of Alexandria, all the important Ptolemaic and Roman sites were visited (Fig. 14). These included the great Serapeum (Temple of Sarapis) where the remains are undergoing conservation. The hilltop foundations of the Ptolemaic and Roman porticoed *temenos*, the earlier and later temple, the underground passages of the sacred Apis bull and particularly Diocletian's Column (Pompey's Pillar) set up in the late 290s, were all found to be impressive features. The group then visited the important site of Kom el-Dikka situated on the south side of the main east-west street, directly south of the Caesareum, where excavations by
the Polish Archaeological Mission in Alexandria, begun in the 1960s, continue. The area includes a huge late Roman baths complex and adjacent to it an equally large multi-chambered cistern. Nearby, on two streets, are lecture rooms with unique tiered stone seats, and the Small Theatre of fourth to seventh-century date which had a domed roof. Bordering these buildings to the east is an area of houses and workshops included a group of large courtyard houses of first and second-century date, buried under later occupation. Three houses were decorated with mosaic and marble inlaid floors, and at House alpha, also known as the "Villa of the Birds" (Fig. 15), Dr. Patricia Witts gave a short talk on the mosaics (Kolata et al. 2007). Of the catacombs and cemeteries of Alexandria, the most extensive examples, the catacombs of Kom el-Shoqafa, were visited.

Great Catacomb has a spiral staircase leading down from the ground-level buildings to a triclinium and down further to an underground temple and tomb chambers at different levels. Other sites seen in a tour of the city included the Roman el Ras-Elsoda temple and the Qayet Bey fort, considered by some to be the site of the ancient Pharos Lighthouse. Unfortunately the Graeco-Roman Museum was closed for refurbishment but some of its exhibits had been moved to the Alexandria National Museum in the restored Italianate palace of Al-Saad Bassili Pash, which also contains a very fine collections belonging to the Dynastic and Graeco-Roman periods. These include busts of Hadrian (Fig. 16) and Caracalla and sculpture and other artefacts raised during the recent underground excavations around Alexandria's sea coast.

The following day took the group 100 km southwards to the Fayum, passing the necropolis of Saqqara and the great Step Pyramid of Djoser (Third Dynasty), to the ancient city of Karanis (Kom Ushim) where major excavations were carried out by Michigan University from 1924 to 1935. The city was occupied from the third century BC to the sixth century AD, and built up a mound 12 m above the lake and surrounding plain. The stone South Temple (of the crocodile gods Petesouchos and Phepheros), was visited first (Fig. 17). It was rebuilt in Egyptian style in the first century AD, within a temenos associated with priests' houses, a banqueting room, and storerooms. It was in use until the early fourth
century. The group also visited the North Temple, also Egyptian in style with Graeco-Roman columns and of similar date to the other temple. The site also contains a bath-house, granaries and hundreds of mudbrick courtyard houses with associated debris. Many houses were left open after being excavated and have been slowly decaying ever since, but several buildings still display painted wall-plaster. The group then journeyed to Hawara, and the Pyramid of Amenemhet III (1844-1797 BC, Twelfth Dynasty). This was this king's second pyramid (the first is at Dahshur), with a core of mudbrick, the outer mantle of limestone having been robbed. Excavations by Lepsius and Petrie on the elaborate passages and burial chamber were discussed and the huge mortuary temple complex on the south side of the pyramid, the legendary Labyrinth of Classical writers and Roman tourists, was explored. The group then travelled to its second base at the Hotel Nefertiti at el-Minya.

Our next major site was the great city of Antinoopolis in Middle Egypt, reached by ferry-boat across the Nile to the village of Sheikh Ibada on the east bank. The city was founded on a long established site by Hadrian as a memorial and shrine to his favourite Antinous, who had died here in the Nile in 130 when the imperial party were touring Egypt. This led to a building boom of Graeco-Roman architecture in Egypt. The group initially examined the temple of Ramesses II and then made its way southwards along the colonnaded street across the Wadi Ibada towards the Theatre and the southern section of the City Wall dividing the inhabited area from the extensive South Necropolis. Little was found remaining of the imperial buildings recorded 200 years ago in the Napoleonic Survey, such as the Colonnades, the Hippodrome, the Theatre gateway and the monumental Arch, which were demolished in the nineteenth century, but fragments and traces were visible, together with enormous heaps of pottery (Figs. 18 and 19). Recent excavations since 1965 by archaeologists from the University of Rome have also explored and recorded an early church near the East Gate, mudbrick houses with painted wall plaster and mosaics, tombs in the South Necropolis, inscriptions and statuary. At the end of the nineteenth century Albert Gayet carried out a series of excavations in and around the city, particularly on Roman-period tombs.

Some important discoveries of mummified burials of people with painted funerary masks or ‘mummy portraits’, belonging to the late Hadrianic and Antonine periods, were found, similar to the larger numbers found further to the north in the Fayum area. The painted mummy portraits of Egypt’s Roman period are among the most remarkable products of the ancient world. They are historical and cultural documents of outstanding interest and importance, and many are of superb artistic quality (see Doxiadis 1996, Walker and Bierbrier 1997, both reviewed by the writer in ARA 3). The most spectacular find from Antinoopolis was the so-called ‘Tondo of the Two Brothers’ (see cover photo). This is an encaustic portrait on wood of two young men (not necessarily brothers), of the highest rank, belonging to the period following the founding of the city by Hadrian; the ARA group were able to see it in the Egyptian Museum in...
Cairo. It is not technically a mummy portrait, but a rare example of a particular class of image of deep social and religious importance in life, which was later incorporated into funerary ritual. It will be discussed further in a future issue of ARA. Bryn Walters gave a brief address on site about the events surrounding Antinous's death and Hadrian's reaction to it, and the local villagers of Sheikh Ibada, particularly schoolboys, gave the group a noisy welcome, at what was potentially a vast and atmospheric site. The group then proceeded back across the Nile to the west bank and the site of the city of Hermopolis Magna (Khemenu, el-Ashmunein), where Hadrian was staying in 130. This is the site of the great Temple of Thoth which was renovated by Petosiris, the high priest in the reign of Ptolemy I (306-282 BC), but which was demolished in 1826 and burnt for lime by Mohammed Ali to build factories. Two other Egyptian temples lie in the northern area and to the south, a water tower and potters' dump. Important excavations by Donald Bailey of the British Museum took place here in the 1980s and these have revealed the layout of the central buildings, repaired in AD 264. These include the Tychaion temple, the Sphinx Gate, the Bastion, all surrounding the central cross-streets and tetrastylon. The most impressive building surviving today is the huge fifth-century basilica church (one of the largest in Egypt) with its rows of columns separating the nave from the aisles. The group also visited the open-air museum containing two huge quartzite baboons, dating from the time of Amenophis III. The cemetery of Hermopolis across the Bahr Yusuf is at Thynis (Tuna el-Gebel). This contained a Serapium dedicated to animal burials sacred to Thoth with catacombs filled with hundreds of thousands of ibis and baboon mummies dating from the Ptolemaic and early Roman periods. The cemetery also contains a large number of tombs whose temple-like superstructures were seen protruding from the drifting desert sands. Many are mudbrick structures but two temple-tombs are very fine. That of Petosiris (see above) has a pronaos in front containing painted reliefs with scenes of daily life. The agricultural and other scenes are in the ancient Egyptian tradition but the figures are Greek in style. The tomb also contained Petosiris's father and brother but his own sarcophagus is now in the Egyptian Museum, Cairo. The nearby temple-tomb of Isidora dates from the mid-second century AD. She drowned in the Nile and her mummy remains in her tomb.

Most of the following day was spent travelling by train to ancient Elephantine (Aswan) in Upper Egypt, where the group were based at the Basma Hotel and from where the ancient Egyptian granite quarries could be seen, including the famous Unfinished Obelisk, the largest ever attempted, still lying in situ. The main objective here was to visit the Ptolemaic and Roman period temples which stood on the island of Philae in the Nile, but which have now been moved from their original site (now beneath the waters of Lake Nasser created by the Aswan High Dam), to the island of Agilkia. The removal and restoration was carried out in a project headed by UNESCO. An Italian consortium worked on disassembly and reconstruction from 1972 to 1980 as part of the huge international effort to save the principal monuments of ancient Nubia. Access to the island was by a ferry-boat which also circumnavigated the island, thus providing fine views of the ancient buildings. This visit was to be the first of several to the greatest Egyptian temples seen on this tour, emphasising the continuation of the worship of the Egyptian gods and the continued building, embellishment and maintenance of their temples into the Ptolemaic and Roman periods. The main structures of Philae form the great Temple of Isis built by Ptolemy II Philadelphos (282-246 BC), with the Birth-house in the front court. Other temples include those of Arsineus, Harendotes, Hathor, and Augustus. The great Kiosk of Trajan (Fig. 20) may belong to the Augustan period and served as a barque shrine for Isis. A retaining wall surrounding the complex is broken by openings such as the Porch of Nektanebo and the Gates of Hadrian and Diocletian. The group also visited the newly built and magnificent Nubian Museum at Aswan. It stands within a park containing open-air displays. The museum exhibits a display running from prehistory to the Islamic period. Travelling northwards again, along the course of the Nile, the group visited two further major temples. The first of these was the double Temple of Kom Ombo, with its two sanctuaries of Sobek and Haroeris. The temple was started by Ptolemy VI Philometor (180-164 BC) and extended under Ptolemy XII (80-58 BC). It continued to be added to and decorated with painted reliefs and inscriptions up to the time of the Roman emperor Macrinus (AD 217-218). The temple is surrounded by a 3 m-thick stone wall and the temenos by a mudbrick wall up to 7 m thick. Close to the gate into the temenos a chapel of Hathor-Aphrodite now contains some mumified sacred crocodiles from the nearby necropolis. The second temple on this journey north was the great sandstone Temple of Horus in the ancient city of Edfu (Apolionopolis Magna), situated 75 km south of Thebes on the west side of the Nile.

The temple was inaugurated by Ptolemy III in 237 BC incorporating
the pylon from an earlier New Kingdom temple, and completed in 57 BC. It is the best-preserved temple in Egypt with the tallest pylon (36 m) guarded by twin statues of the falcon god Horus. It is covered with hieroglyphic inscriptions of texts associated with the cult of Horus and his triumph over Seth, and describing the building history of the temple itself. It contains the original granite shrine from the earlier temple and the well-preserved Birth-house and Nilometer lie in its outer temenos.

The final base for this tour was the Winter Palace Hotel at Luxor and on arrival at the site of the great ancient city of Thebes (modern Luxor) on the east bank of the Nile part of the group visited Karnak (Diospolis Magna) where three sacred enclosures of Amun-Re, Montu and Mut make up the largest temple complex in the world. The visit concentrated on the great Temple of Amun which was begun in the Eighteenth Dynasty and continued to be added to into the Roman period. Also within the Amun temenos is the Temple of Khonsu, twenty other temples and chapels, the surviving two (of four) Obelisks of Thutmose I and Hatshepsut and the rectangular Sacred Lake. The group then visited the Luxor Museum, whose magnificent displays include some of the fine collection of New Kingdom and later statues, known as the Luxor Temple Cachette, which were deposited in the early fourth century AD (see below) and rediscovered in 1989. Here is also the mummy of Ramesses I, recently identified and returned from the USA, and many objects, including one of the chariots, from the Tomb of Tutankhamen.

The following day the group crossed to the west bank to visit the great Theban necropolis. The visit to the Valley of the Kings incorporated several tombs and most of the group explored the tombs of Thutmose IV (KV43), Tutankhamen (KV62), Ay (WV23), Ramesses I (KV16) and Ramesses IX (KV6), following in the wake of many tourists, but especially the Greek and Roman ones up to the second century AD who left their graffiti on the tombs’ decorated walls – the tomb of Ramesses IX, for example, has 46 such inscriptions, that of Ramesses V/VI no less than 995. The West Valley, containing the tomb of Ay (probably originally intended for Tutankhamen), provided an atmosphere of silence, not easily obtainable in the East Valley.

Continuing on the west bank, the group visited the great Temple of Medinet Habu, one of the most impressive in Egypt, of which the main structure is the best preserved mortuary temple of Thebes, containing more than 7,000 sq metres of decorated surfaces with much original polychrome painting surviving. It was built by Ramesses III (Twentieth Dynasty) to serve as his mortuary temple and was also dedicated to Amun-Re and other gods. Many scenes on the outer walls of the temple and pylons show the king defeating the Sea Peoples and Libyans when they invaded Egypt for the second time in the eighth year of his reign. The temple is surrounded by a fortified wall which also enclosed a Royal Palace and magazines, and this in turn was enclosed by three further walls, one of mudbrick, which also contained the Small Temple of Amun, the Chapel of the Divine Adoratrices and the Sacred Lake. The mudbrick wall was pierced by huge gates, including the High Gate where the assassination attempt against Ramesses III probably took place.

Travelling back to Luxor, the group passed the Ramesseum, the mortuary temple of Ramesses II and of a similar layout to Medinet Habu in being enclosed together with a palace and magazines. It contains also the shattered remains of the largest statue in Egypt, so it was appropriate that the group should examine the two great Colossi of Memnon, the two huge seated statues of Amenophis III (Eighteenth Dynasty) which stood before the outermost pylon entrance of his mortuary temple a short distance north-east of Medinet Habu. Much of this large temple complex, built intentionally on the flood plain, was demolished to build the mortuary temple of Merenptah, but a recent survey of the remains has shown that there were several groups of colossal statues guarding the other entrances into the complex. The Colossi are each flanked by smaller statues of queens. After the earthquake of 27 BC the right-hand Colossus began to ‘sing’. This phenomenon encouraged large numbers of visitors in the Roman period. Hadrian, his empress Sabina and the imperial entourage visited the Colossi in AD 130, and many others have recorded their visit in Greek and Latin inscriptions on the Colossi, but in 199 the singing Colossus was repaired under Septimus Severus.

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![Fig. 21. Luxor, Temple of Amun-Re. Reconstruction of the Roman fortified walls, grid of streets and the tetrastyle whose pillars bore statues of the four emperors, all surrounding the pharaonic temple.](image)
and was silenced forever.

The group’s final destination, back on the east bank, was the Temple of Amun-Re at Luxor. This great temple was linked to the Temple of Amun-Re at Karnak through the annual Opot Festival for the rejuvenation of the king. Built on the site of earlier temple structures, it nevertheless embraces over 3,000 years of building history. Starting with a Middle Kingdom shrine it was substantially extended north-eastwards by the addition of the ubiquitous colonnaded hypostyle hall, and a series of colonnaded courts and a huge pylon with colossal statues and obelisks, mainly by Amenophis III and Ramesses II. In the outer walled Forecourt of Netanebo I with the Avenue of Sphinxes laid out earlier by Hatshepsut to connect with Karnak, a small Temple of Sarapis survives. Its remains, partially re-erected, date to the first century AD and, according to an inscription, it was consecrated to Hadrian in 126. Later two Christian churches and an Islamic mosque were added to the assemblage. But most fascinating is the late Roman phase when the temple was surrounded with a massive rectangular enclosure of brick walls with semi-circular bastioned gates, some of which have been repaired and displayed. The interior was divided by a grid of paved streets with two tetra stylos of four monumental columns which bore statues of the four emperors, at crossing points behind the principal gates to the Nile quay and to the east (Fig. 21). About this time the recently discovered cachette of ancient statuary (see above) was also buried. The front chambers of the shrine behind the hypostyle hall were closed off and a central semi-circular monumental niche facing north framed by Corinthian columns was built within the remodelled chamber. The ancient painted reliefs and inscriptions were re-plastered and painted with figured scenes. Much of this work may date from the time of Diocletian and members of the group reviewed with Bryn Walters the various recent interpretations of the Roman phase put forward by scholars. One, that the temple had been converted into a legionary fortress and the painted hall was intended to serve as a shrine of the standards in a converted legionary headquarters building, was discussed. However, good evidence of a military presence was lacking. Recent conservation of the remnants of the rare Roman painted scenes by Chicago House, the American Research Centre in Egypt and the Egyptian Antiquities Conservation Project had highlighted certain details. With the aid of water-colour records made in the nineteenth century before much of the painting was destroyed, it can be shown that the central niche paintings depicted figures of the four emperors. A huge eagle with outstretched wings, grasping a wreath, sat above them. To the left, the eastern part of the south wall showed two emperors enthroned upon a bejewelled plinth surrounded by courtiers and soldiers. Some held shields and one held a standard. It is part of this group which has recently been conserved (Fig. 22). Other groups of courtiers appear on the west side of the niche. All this evidence may indicate continued use of the temple for the Opot Festival with the Roman emperors continuing the ancient religious and ceremonial practices as the new rulers of Egypt.

The ARA is very grateful to Salah Tawfik and the Egyptian authorities for facilitating access to sites and locations not normally available to visitors, and to all the local people we met on this tour, including guards, coach and taxi-drivers, porters, hotel staff and medical practitioners, for their assistance and hospitality.

Fig. 22. Luxor, Temple of Amun-Re. Area of recently conserved Roman wall painting on the south wall of the shrine room, showing courtiers gathered below and to the left of enthroned emperors. Area: c. 1.75 m sq. About AD 300.

Photo: © Robert Partridge, Ancient Egypt Magazine.
2007 AGM AND SYMPOSIUM AT THE BRITISH MUSEUM

The Annual General Meeting and Symposium was held at the Stevenson Lecture Theatre at the British Museum, London on 3rd November. It was attended by the Trustees and members, numbering 115 in total. Sam Moorhead (British Museum and ARA Trustee) was unfortunately away and unable to attend; the ARA is grateful to Jennifer Adams (Department of Coins and Medals, British Museum) who acted as host, and welcomed the ARA to the British Museum. Thirteen members tendered their apologies for absence. The Chairman, Grahame Soffe, gave a welcoming address thanking Board members, Bryn Walters, Dr. David Evans, Don Greenwood, Anthony Beeson, Mike Stone and Sam Moorhead for their work over the year (Fig. 23). He also thanked David Gollins (Editor of ARA NEWS) and Professor Martin Henig (Research Advisor) for the work they had carried out on behalf of the ARA. As ARA Bulletin Editor, he confirmed that issue 18 was near publication. After this he gave an illustrated review of the year’s events and thanked Dr. Michael Grant de Longueuil for his help in providing some of the photographs. The Treasurer, Dr. David Evans, gave a powerpoint illustrated review of the audited accounts, which were agreed by the membership. He pointed out that despite a drop in the number of membership enrolments, the Trust finances were stable. He also reported on the progress of the ARA website.

Don Greenwood, the Membership Secretary, confirmed his continuing concern at the enrolment situation and announced a proposed promotional drive in the new year. In his report the Director, Bryn Walters, repeated his view expressed at the previous AGM, that electronic communication and the draining of government funding of the heritage sector in favour of the forthcoming Olympic Games, was a factor in the declining membership of the ARA and many other heritage bodies. He went on to review plans for the following year’s programme of events and reminded members that a major archaeological field project, in which the ARA would have a contributory role, was still being worked on but this would take time and effort to establish. Two trustees, Sam Moorhead and Mike Stone were unanimously re-elected to the Board and Banks and Partners (Chartered Accountants) were re-elected as Auditors. The Chairman then thanked Sam Moorhead, Jennifer Adams and the projectionists at the British Museum for their help in setting up the meeting and for making arrangements in the lecture theatre at short notice, and Janet Senior (Fig. 23) for supervising the reception.

Following the AGM, the Symposium centred around two illustrated presentations on the theme of the Roman Frontier beyond Britain. The first of these was given by Dr. (now Professor) Eberhard Sauer (Fig. 24), University of Edinburgh, on the current joint project of the Iranian Heritage and Tourism Organisation and the Universities of Edinburgh and Durham, co-directed by Hamid Omrani and himself. The project explores the Gorgan and Tamnishe Walls, two major linear barriers in northern Iran, built in the fifth or early sixth centuries AD. The Gorgan Wall, associated with

Fig. 24. Prof. David Mattingly (left) and Dr. (now Prof.) Eberhard Sauer, speakers at the Symposium, in conversation in the Great Court, British Museum. Photo: © Grahame Soffe.

over 30 forts, resembles Hadrian’s Wall, but significantly exceeds it in scale (Fig. 25). It is architecturally independent from Roman walls and an impressive testimony to the skills of Persian engineers and the power of the Persian army in Late Antiquity. The second was given by Professor David Mattingly (Figs. 24 and 26), University of Leicester, who took us

Fig. 25. Gorgan Wall, Iran: a brick kiln, probably one of thousands, which produced the bricks required for the construction of the Wall. The parallel arched cross-bars of the kiln are in the background. Dr. Mortezza Fahani is standing in the sondage through the kiln, in the foreground. Photo courtesy of Eberhard Sauer.
on a highly personal journey along and beyond the Roman Frontier in Africa, taking in many extraordinary, but poorly known sites. We learned that the fossatum africæ was a system of linear barriers probably initiated by Hadrian after his visit to the area in 128, but still maintained down to the late fourth century. Our speaker is probably one of the few British archaeologists to have ever visited the series of frontier barriers built along a 1,000km front, from Algeria to Libya. His most recent work has taken him far south of the frontier to the land of the Garamantes in the central Sahara. Far from being the nomadic barbarians the Roman sources present them as, the Garamantes turn out to have established a sophisticated kingdom, based on irrigated agriculture that supported a large population living in complex towns and villages.

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Fig. 26. Prof. David Mattingly on location in Libya. Photo courtesy of David Mattingly.


A GEOGRAPHICAL SURVEY OF THE TRUCKLE HILL ROMAN VILLA, WILTSHIRE

by David Sabin and Kerry Donaldson

In March 2008, a geophysical survey was carried out at Truckle Hill, North Wraxall, Wiltshire, by Archaeological Surveys Ltd. The survey area covered c. 12 ha, including the Scheduled Ancient Monument (SAM) of the Truckle Hill (North Wraxall) Roman villa and land immediately to the south of the villa. The recent discovery of the detached Roman bathhouse some 150 m north of the villa (see the article by Phil Andrews on page 10 of this issue), and the lack of modern archaeological research at the site, has highlighted the need for further investigation of the villa and its environs.

The site itself lies on a hilltop plateau formed by limestone of the Jurassic Great Oolite. The tongue-shaped plateau is surrounded by steep sided valleys, except on its north-western side. The land is currently under permanent pasture, and the scheduled area covers c. 4.5 ha at the northern end of a field 12 ha in area. The villa was partly excavated in 1859-60 by G. Poulett Scrope (see references in Andrews above) and plans of the villa were produced for his original published report (Fig. 1), but with no modern archaeological investigation at the site, the accuracy of the plans and the exact location and orientation of the villa were unknown. The excavation revealed a very well-appointed villa, with the main house containing sixteen rooms and a bath-suite. A courtyard was located south of the house and two further sets of buildings to the south of the courtyard. An important and rare feature was the cemetery located south-west of the courtyard (Fig. 1). There were four inhumations, two in stone sarcophagi, and one urned cremation. Four of these graves were contained within walled enclosures or tomb chambers. Another indication of the villa’s wealth and status is the recent discovery of a rare and high-quality Roman cameo (see Editorial Note to Andrews above).

Techniques – Magnetometry and Earth Resistance Data

The initial methodology devises for geophysical prospection required detailed magnetometry, across the whole 12 ha available, followed by targeted earth resistance survey. Target areas were to be determined from the results of the magnetometry. This approach considers the strengths and weaknesses of both techniques: magnetometry responds
considered further. The gradiometer response to archaeological features relies on contrasting magnetic susceptibility. Positive anomalies are formed when soils of enhanced magnetic susceptibility, caused by burning and biological processes, fill ditch or pit-like features. By contrast, negative anomalies can form where material of low magnetic susceptibility, such as stone, displaces soil. Building remains rarely produce well-defined negative anomalies as they tend to be surrounded by rubble derived from the decaying structure before burial under soil. The good definition of the villa walls (Fig 2), the courtyard wall and other buildings to the south may be related to removal of loose rubble during the nineteenth-century excavations. The resistance data contained wide ranging values with zones of relatively high resistance occurring over structural remains; relatively low resistance anomalies indicate moisture retentive soils within ditches and were possibly associated with material backfilled after the nineteenth-century excavations (Fig. 3).

Fig. 1. Truckle Hill Roman villa. Poulter Scrope’s general plan of the villa and cemetery, 1859.

Fig. 2. Truckle Hill Roman villa. Greyscale plot of processed magnetometry data for the northern section of the surveyed area. Range: black = +5 nt, to white = −5 nt. © Archaelogical Surveys Ltd.
Assessment of Poulett Scrope’s plan

There is a strong correlation between the nineteenth-century plan and negative linear anomalies indicative of walls. Using a Geographic Information System (GIS) it has been possible to combine the survey results and the original plan using several common control points. Geophysical data represented by greyscale graphics are geographically referenced to the GIS using the Ordnance Survey OSGB36 datum. Control points were then selected for features common to both the geophysics and the scanned image of the original plan. The GIS is then forced to effectively warp the scanned plan to the magnetometry data (Fig. 4). The excavation plan can now be considered with much greater confidence and the exact location of Poulett Scrope’s excavations within the SAM boundary can be determined. It is also likely that the excavation was surveyed and scaled accurately, as although there are discrepancies between the survey results and the plan, these are likely to have been caused by choosing inappropriate control points in the survey. The survey results also hint at severe disturbance perhaps associated with relatively recent agricultural activity over some parts of the site. The original plan indicates a building, or range of buildings, adjacent to the south-western corner of the courtyard that does not appear to be associated with negative linear anomalies indicative of surviving walls. There is a variable magnetic response in this area that may indicate disturbed building remains and some magnetically theremennant material such as brick and tile. In addition, Poulett Scrope’s cemetery (see above) was associated with walls which have not been detected as magnetic anomalies. The magnetometry data does contain discrete positive anomalies caused by pit-like features which may be the excavated graves, but the walls could well have been ploughed away in the last 150 years. Disturbance of the site was evident in the late 1970s and recorded by the Swindon Archaeological Society, after the removal of a hedge line and deeper ploughing. Possibly, the western and south-western parts of the site have suffered the most. Under the current landowner the site is likely to remain under permanent pasture and the chances of plough damage are minimal.

Earth resistance survey targeted the main villa building as interpreted from the original plan and the magnetometry results. High resistance anomalies generally correlated closely with the walls of the main house although it has not been possible to define the structure in detail. The results also possibly indicate a wider building than that planned by Poulett Scrope, perhaps indicating additional rooms along its northern side. This may account for some apparent errors in the original interpretation of the villa’s bath-suite where, as Bryn Walters has suggested, the frigidarium appears to be missing. High resistance anomalies to the west of the main villa building may suggest structural remains beyond the area excavated by Poulett Scrope and not visible within the magnetometry data. In addition, a number of anomalies appear within the courtyard area that probably represent more minor structures or garden features. A high resistance anomaly correlates with a hexagonal stone well-head with a stone-lined shaft which had been excavated within the courtyard. Amongst other material, the well was found to contain three human skeletons, and several stone columns and roof finials. At a depth of 20.7 m "the influx of water has hitherto prevented further excavation."

Enclosure ditch and defended promontory?

The magnetometry data revealed a strong positive anomaly representing a substantial ditch that appears to enclose the villa complex on its western and southern sides (Fig. 2). The ditch had been previously identified, in part, from aerial photographs and can also be seen as a slight depression within the northern part of the field. The feature is likely to continue beyond the survey area to the north but appears to stop abruptly at the south-eastern corner of the villa complex. Its function is likely to be defensive, as to the east of the villa, the land slopes
steeply into a narrow valley providing a natural defence; the western and north-western sides of the villa complex are open to the flat limestone plateau, and it is here that the ditch may have formed a substantial barrier. There is no evidence from the geophysics for an associated bank. The enclosure ditch could represent a pre-Roman defended farmstead but no anomalies consistent with prehistoric occupation were located within its confines. Several very low magnitude curvilinear anomalies were located immediately to the south of the ditch, perhaps providing tentative evidence for pre-Roman origins.

A second substantial ditch-like anomaly was located c. 70 m south of the enclosure and was found to cross the central part of the surveyed area from west to east. (Fig. 2). The ditch effectively cuts off the southern part of the field, which is surrounded by steep-sided valleys, and forms a defendable hilltop area of c. 6 ha. A low earthwork lies immediately to the south of the ditch and probably represents the remains of a substantial bank. At the southern end of the area, a number of ditch-like anomalies, including a possible circular enclosure, were located, and may represent prehistoric features.

**LiDAR**

Environment Agency LiDAR (Light Detection and Ranging) data were also analysed to assist in the interpretation of the geophysical survey results and to obtain surface data from tree covered areas immediately to the north of the villa. The data were collected in 2005 and have a resolution of 1 m. Vertical accuracy is considered to be plus or minus 15 cm but is often much better. Filtering is applied to data collected from wooded areas to produce 'bare earth' models, and vertical accuracy within these areas can be very variable. The data have demonstrated the presence of low earthworks that correlate with the position of the villa and the large enclosure ditch within the northern part of the survey area. To the north of the villa, within an area of deciduous woodland, a linear earthwork appears to represent the agger of a Roman road leading from the villa complex. The road can be followed for 800 m and curves away to the north-west in the direction of the Fosse Way. The route also splits with a second road running north towards a nearby Roman settlement at Shrub Farm, Castle Combe. Ground truthing the LiDAR data confirmed the presence of a low agger, c. 7 m wide, crossing through the woodland. The earthwork has survived well although it would not have been recognised without prior knowledge of its location from the LiDAR data.

**Summary**

The geophysical survey has provided valuable evidence for the location and state of preservation of the villa. The results have allowed an assessment of Poulett Scrope's plan and suggest that the major elements within the site were accurately scaled and drawn. However, there may be questions concerning the extent of the original excavations which may have implications for the original interpretation of the villa's bath-suite. The presence of a large enclosure ditch, possible defended promontory and other curvilinear ditches away from the main villa complex, tend to suggest a pre-Roman managed environment. It is hoped that future archaeological excavation will address the nature and chronology of some of these features. The work has also demonstrated the potential of LiDAR data as an aid to the interpretation of geophysical survey results and, in particular, its potential within wooded environments and on steep valley slopes.

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Fig. 4. Truckle Hill Roman villa. Abstraction and interpretation of magnetometry data with Poulett Scrope's general plan. © Archaeological Surveys Ltd.