

The RAG

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Archaeologists in Israel announced last month that they had discovered the remnants of a Roman bath complex in Jerusalem which they believe dates to the 2nd century A.D.

Roman control of Jerusalem in effect commenced in c.37 B.C. when Rome's client Herod gained military power over Judaea. After Jerusalem was destroyed in A.D. 70, and the Jews expelled following the siege at Masada (A.D. 73), the city remained in ruins until Hadrian vowed to build a new city on the ruins; a city that would become known as *Aelia Capitolina* — 'Aelia', for Hadrian's *nomen gentilicium*, and 'Capitolina', for Jupiter. It would be *Aelia Capitolina* from 135 to 326 by which time Rome under Constantine had begun to adopt Christianity.

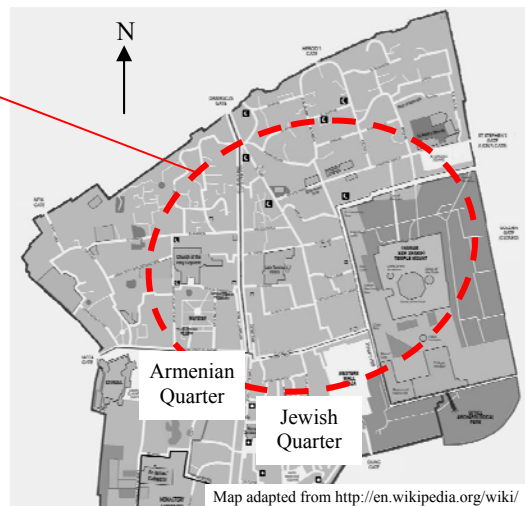
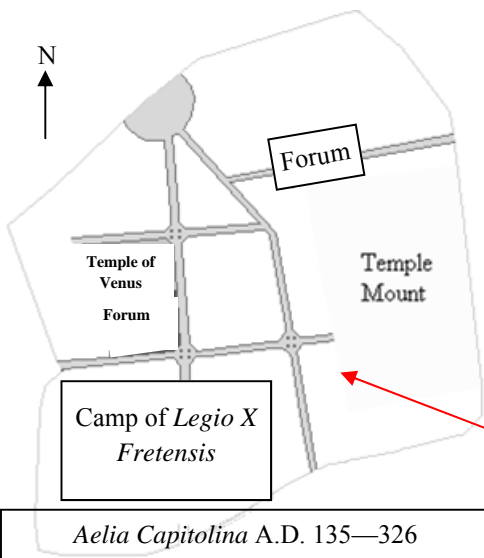
of terracotta tiles that were probably from the roof of the complex. The tiles bear the stamp of the *Legion X Fretensis*. The meaning of 'fretensis' is uncertain, a theory about a battle near the Strait of Messina (*Fretum Siculum*) notwithstanding. In any event, presumably it was the Tenth Legion that built what is believed to have been a substantial complex.

One of the tiles also bears the paw print of a dog. The paw print overlies the Legion's stamp—an accident, a joke, or an insult?

A number of plastered bathtubs were found in the side of the main bath, and remnants of plumbing were also found.

Because the find is in what today is the Jewish Quarter of the Old City it has led to a rethink of the size of *Aelia Capitolina*. It was not thought that the Roman occupied city extended as far as the land occupied today by the Jewish Quarter. The camp of the Tenth Legion was known to occupy land that is today part of the Armenian Quarter of the Old City. The Roman camp was perhaps larger than what has hitherto been thought.

The remnants of the complex will be incorporated into the planned new construction on the site.



Map adapted from <http://en.wikipedia.org/wiki/>



A Flying Saucer perhaps?
See p. 7

The recent discovery was made in the course of excavation in the Jewish quarter of the Old (and of course still today walled) City. The discovery is ironical in that it was made in the course of excavation for the purposes of the construction of a new Jewish ritual bath — a *mikveh*. It is a case of what goes around comes around!

The remnants discovered include steps leading to a floor constructed of industrial quality white mosaic tiles. Also included are hundreds

Map of the old city today— note the preservation of the principal Roman road network.

Ed.

Recent Trends in Aerial Archaeology in Italy

Bob Bewley

Bob Bewley will be known to those who took part in the Tours of Roman Britain several years ago when he was our host at English Heritage's HQ at Swindon as Director of their Survey Unit. He is now Operational Director for the Heritage Lottery Fund, and an Honorary Research Fellow here at UWA.

The first official aerial photography for archaeology in Italy was in 1938 (Lugli 1939). However it was the work of John Bradford, towards the end of the Second World War (May 1945) in the Tavoliere di Foggia (Puglia) in southern Italy, which transformed our understanding of its potential in that part of Europe. There were incredible discoveries of large multi-ditched cropmark enclosures, which subsequent excavations showed to be of an early Neolithic date (Bradford 1957, Jones 1987). For more on Bradford's life and work see Radcliffe (2006) and on his archive Musson and Radcliffe (2010). See photo below.



Photo 1. (Ref 00004)

As so often happens, archaeological discoveries are compromised by political events. Paradoxically Bradford had freedom in the air, whilst operating in a military environment (a common theme in aerial archaeology), as Europe was still at war. As the Allies advanced northwards to overcome the Nazis, Bradford was able to photograph and research the discovery of one of the most important and significant archaeological landscapes anywhere in the world.

The short-lived fascist regime in Italy had introduced laws banning all "unofficial" aerial photography, and archaeology was not deemed to be official enough. Although the law remained in place for many years there were a number of archaeologists who were not deterred, namely Otto Braasch, J.K. St Joseph, Jim Pickering, Derrick Riley and Barri Jones to name but a few.

The Tavoliere is a cropmark archaeologist's paradise as the density and variety of archaeological sites is quite outstanding in the European context. I remember talking to Derrick Riley when he had returned from one of his trips with Otto Braasch. He was working on a short publication of the material – and he quipped that he did not think the Italian authorities would ever catch up with him. Even if he did publish, he reckoned he would be long departed this earth before anyone was bothered to launch a prosecution! The law was more honoured in the breach than its observance.

In fact his publication (Riley 1992) helped stimulate a change in the law, which finally came about in 2000, as we had been working towards a workshop in aerial archaeology (Musson 2008). This workshop was part of an EU-funded Culture 2000 project to raise awareness of archaeological sites in Europe, using aerial photography as the main technique (Bewley and Rączkowski 2002).

Ever since the Cold War had ended (in 1989) the former Soviet countries had opened up, allowing archaeologists there to turn to aerial survey, and requested training and support from archaeologists in Britain. Similarly, those countries which had had aerial reconnaissance campaigns were also looking to re-introduce the campaigns on a more permanent basis, and Italy fell into this latter category. (It is still technically illegal to take aerial photographs in Greece, Spain and Portugal).

So, the planning for a workshop in Italy was going well but we did not relish the prospect of being told we could not take anyone flying during the workshop because of an antiquated law. Amazingly within a matter of months the Italian government repealed the law and our workshop – the first of many in Italy – was a great success.

Organised in co-operation with Siena University in 2001 and operating from the local airfield (which also has a wonderful restaurant), we were privileged to fly over Tuscany and the wonderful Etruscans sites, such as the tomb at Volterra: see photo top of next page.

Following on from this beginning, other Italian universities approached us to assist with the organisation of future workshops – this time in the south – at Foggia.

There were successful workshops at Siena in 2003 and 2005 and at Grosseto, Tuscany, in 2007. Otto Braasch has returned there on many occasions, often with friends and colleagues, which is a great experience (not least crossing the Alps from his base at Landshut in Bavaria).



Photo 2 (Ref -2)]

In one of the years he was unable to return I was asked to be the pilot for two local archaeologists from the University of Foggia, Valentino Romano and Roberto Goffredo, and we spent a wonderful week searching for Roman sites; many were Roman villas but one was a small and very rare, double aisled church: photo below.

In addition to a few overseas visitors the change in the past 15 years has been dramatic in terms of remote sensing in Italy – with a number of important centres – mainly in the Universities of Siena, Foggia and Lecce. The laboratories in Siena are incredibly active in both undertaking surveys – led by Stefano Campana, and organizing regular workshops in all forms of remote sensing (www.lapetlab.it).

In the far south, at Lecce University, under the direction of Giuseppe Ceraudo, there is a very well produced journal, *Archeologia Area*, which is becoming a regular and important publication. The latest volume has an in-depth article on the recent developments of aerial archaeology in Europe (Musson 2008) and Italy (Ceraudo 2008).

Apart from John Bradford, whose pioneering work lay in discovering the landscapes of the Tavoliere, there is one person worth mentioning, Chris Musson. Chris developed a love of Italian archaeology (perhaps not surprising as he has worked in Wales for most of his career, where the weather is less conducive to both aerial and field archaeology). This has given him the drive to maintain the impetus to help with the organisation and implementation of many workshops, flying tours and many publications (in Italian) (Musson, Palmer, Campana 2005).

Conclusion

This has been a rapid and personal trip through a few parts of Italy, but aerial photography has been of great value in almost all parts of the country. Italy's archaeology, so often expected to reveal predominantly Roman landscapes, has much greater depth, from the early neolithic right up to the twentieth century.



Photo 3 (Ref 00031)

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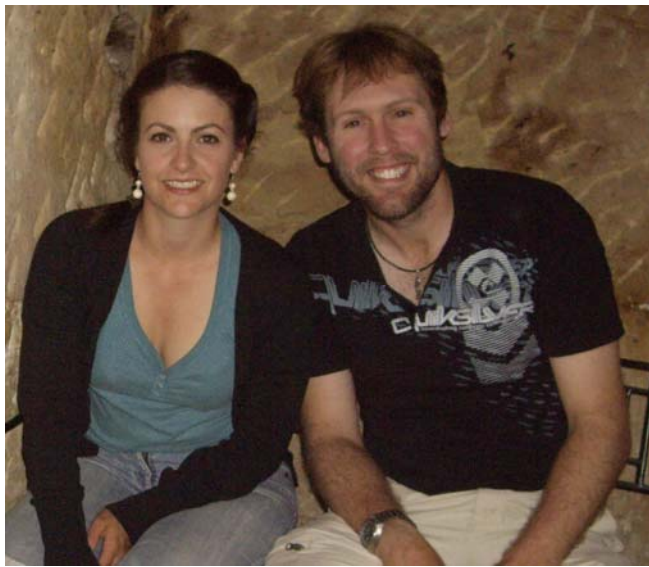
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Roman Archaeology Travel Scholarships

Starting in 2004, a Travel Scholarship has been awarded to a student planning to undertake a field project in Roman Archaeology. Since 2006 these have been funded (for a five year period) by Don Boyer and bear his name.

Some recipients have joined Archaeological Field Training Schools, some have gone on extended research visits to sites and/ or museums, and some have travelled extensively. To date we have awarded Scholarships to eight students and seen them involved in Roman Archaeology from Britain right across Europe and, most recently, into western Asia as far as Damascus. You can read brief reports on the Rag web site: http://www.romarchgroup.humanities.uwa.edu.au/travel_scholarships

The Scholarships have been immensely successful in supporting students who would otherwise have been unable to afford the considerable costs of getting to the Roman world. More than that they have played a role in encouraging students to go further in their fieldwork or research. Below are brief up-dates on a few of the recipients (largely in their words):



Felix Hudson and Karen Henderson (pictured) were recipients of the 2004 Scholarship and used the funds to volunteer on a survey and excavation looking for the water management system leading into the Roman city of Tropaeum Traiani on the Dacian Frontier (Romania).

After completing his Arts and Commerce degrees in 2004 with majors in Archaeology, French and Finance, Felix worked as an accountant at PricewaterhouseCoopers for 2 and a half years, before joining Mainsheet Corporate as a Management Consultant. In proof of the great circle of life that is Perth, Felix rejoined PwC after they bought Mainsheet in 2009. He is now a manager in the Strategy practice, providing consulting and change management services to a range of clients, with a current focus on the higher education sector. Since Romania, he has continued to indulge his Indiana Jones tendencies with travel through the temple jungles of Cambodia and the Incan ruins of Peru and Bolivia. In between this, he has enjoyed a triple premiership run with his beloved University footy club team, the Dingoes. He has recently returned from a short visit to Jordan, where he assisted Karen in her PhD field season,

built a rock wall, swam in the Dead Sea and had a ridiculously good time in Petra. He remains a source of cheap labour (just need to feed him really) available for archaeological fieldwork.

After returning from Romania 2004, Karen worked as an administration assistant in Strata Management before commencing a Graduate Certificate in Geographic Information Science at Curtin University in 2005. This was with a view to learning a particular mapping skill (Photogrammetry - mapping from vertical photographs) to help in obtaining her Honours in Archaeology on the Desert Kites in Jordan (2006). After this Karen did a brief stint in the Department of Premier and Cabinet as an administration officer, followed by the Heritage Council, with a view to funding another overseas trip to further her training in Spanish dance. In her travels (September 2007-November 2008) she danced full time in Spain for 6 months and worked for a boutique hotel and restaurant as Front of House Manager in Newbury in the south of England. On the way home, she met up with David Kennedy in Jordan in relation to an application for a PhD in Archaeology at UWA. She is currently writing her thesis on *"The Works of the Old Men in Arabia": An Interpretive Aerial Survey of Ancient Stone-Built Structures in the Basalt Desert, Northern Jordan* and works part-time as a research assistant on the Aerial Archaeology of Jordan Project. She has just returned from her first field season for her PhD in Jordan, aided by Don Boyer, Felix Hudson and Jean-Charles Dumas.



Anne Poepjes (pictured doing field work at Jarash). I received funding from the RAG to attend the Tour of Roman Britain in 2005, after which I arrived in Jordan where I had had two stints in 2002 and 2003.

My intention was to spend a year researching Cultural Heritage Management in Jarash, an amazing archaeological park in the northwest of Jordan, heralded as the best preserved Graeco-Roman city in the Eastern Roman Empire. At the end of that year, I decided to extend my time, and am still here more than six years later.

Living in another country is always an interesting experience, but having the opportunity to live and breathe the life of an archaeological park has been the literal 'chance of a lifetime'. My work here has allowed me to understand not only another culture and lifestyle, but to be involved in the continuing process

of change in a heritage park.

After arrival, as all research scholars do, I continued my contact with the main staff of the site - the Inspector of Antiquities, the Director of Tourism, the Curator of the Museum and the Director of Restoration. I had already mapped out a plan for my thesis, and was ready to fill in the blanks so to speak. However, after only a few months, it became apparent that my thoughts and ideas about how my research would proceed, and even how these people would interact with me, would have to be adjusted. Even though on the surface the organization of departments and ministries seemed to be the same as at home, with job titles, job descriptions and work practices all easily understood, the actual mechanics of it were completely different.

Over the past six years, I have been fortunate to witness the many changes, not only in the park, but in the surrounding town, as Jarash and those who wish to preserve it, have attempted to move towards a more modern town, but retain the heritage of the park and the remains, not only the monumental remains included within the walls of the park, but those lying within the modern town and surrounding region.

To this end, I have been a team member of the three seasons of the Jarash Hinterland Survey project, attended conferences and lectures for heritage and tourism, not only in Jarash but in Jordan and the Middle East, and built up a photographic and text database. I have also travelled extensively in the surrounding region, for the purpose of composing a comparative study of Jarash with other similar cities in Israel, Syria and Egypt.

For the past three years I have been a faculty member of the Jordan Applied University of Hospitality and Tourism Education, as the co-ordinator of the English Language Program.



Rebecca Banks (pictured with Don Boyer) will be known to attendees of the RAG lectures from tasting her cakes and quiches in 2009 while she lived and worked in Perth.

Rebecca's Don Boyer Scholarship in 2006 allowed her to join the Museo de Cap de Cavalleria field-school at Menorca, Spain excavating a Republican Roman Fort. She went on to graduate from UWA with a Bachelor of Arts (Honours) with a dissertation topic on the Temple of Bel at Palmyra (RAG 3.1). She subsequently joined the Silchester Town Life Project Field School run by the University of Reading and directed by Michael Fulford (a letter from which can be read in RAG 3.4) and volunteered at the Museum of London in 2008.

Rebecca has just returned from Sydney where she has been completing her Masters in Museum Studies at Macquarie University. She has had a very busy year with internships at

the Museum of Ancient Culture and Australian National Maritime Museum. Her exhibition of the Colin Pitchfork Collection for the Australian Council of Ancient Numismatic Studies will coincide with their next publication of Ancient Coins in Australian Collections next year and is currently on display at the Museum of Ancient Culture. She will be finishing her degree by correspondence from Perth while volunteering at the Fremantle Shipwrecks Gallery.



Martina Mueller (pictured) was a joint recipient of a Don Boyer Roman Archaeology Travel Scholarship 2007. She writes:

"Since my first field trip to north-western Europe in autumn 2007, which was partly funded by the Roman Archaeology Travel Scholarship, I have continued to work on my PhD thesis on speculative recreations of Roman buildings in countries such as the UK, Germany, Belgium, Austria and Switzerland. I am still in the process of analyzing the thousands of photos I took during site visits and evaluating all the material I brought back with me from these travels. Unfortunately, a relocation from Perth to Sydney shortly after the trip resulted in a short period of suspension from my studies. Since taking up my research again however I have been able to present some of the results of my research at two conferences and to conduct further research in Europe on two subsequent visits. During my last research trip in September 2010 for instance, I presented a paper on recreated wall paintings at a conference in Darmstadt, where 37 other PhD students from five European countries talked about their current research on the Greek and Roman world. During this stay and a previous trip in 2009 I also re-visited some of the sites with recreations to learn about the latest developments at these places. Amongst others, I had a look at the newly recreated buildings at Xanten and at the Saalburg Roman fort and

visited the very impressive new Roman museum at Xanten which at the same time serves as a protective shelter for the excavated Roman baths of the former colonial town. Further work in the archives at the Saalburg and in the State Archives of Basel have provided invaluable and exciting additional material for my thesis which is due and on track for submission in October next year."

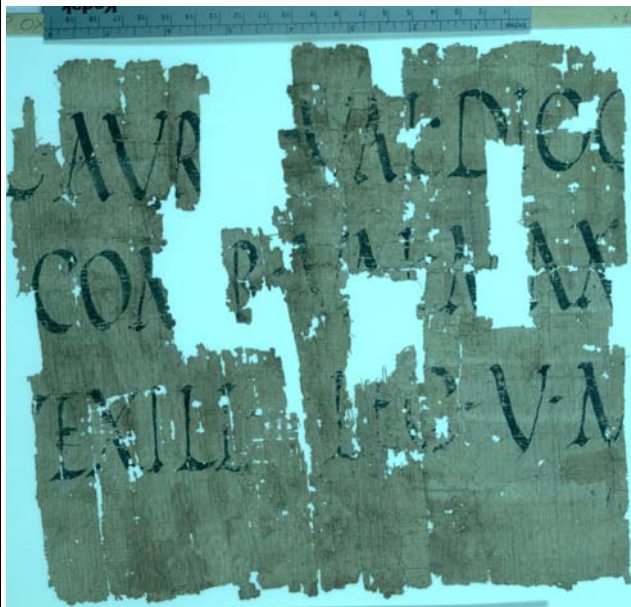
Latin Inscriptions II: The Stonecutter

Sandra Ottley

Dr Sandra Ottley continues her series on the significant role ‘epigraphy’ plays in the study of the Roman world. This time she explains how stones were inscribed.

At the infamous dinner party given by Trimalchio (in the *Satyricon*, by the Roman writer Petronius) one of the guests, Habinnas, is introduced as a priest and a stonemason. Later Trimalchio gives Habinnas detailed instructions regarding the decoration he wants on his tomb as well as the inscription he wants Habinnas to cut: *Here rests Gaius Pompeius Trimalchio of the household of Maecenas. He was formally declared Priest of Augustus in his absence. Though he could have claimed membership of every Roman guild, he refused. He was god fearing, brave and faithful. He grew from small beginnings and left thirty million, without ever hearing a philosopher lecture. Farewell, Trimalchio; and fare well, you who read this.* (Petronius, *Satyricon* 71)

The *Satyricon* is, of course, a fictional work. However, it is a combination of ancient literary references and surviving inscriptions that enable us to have some understanding, not only of the techniques involved, but also of the sequence of events which lead to the commissioning and erection of an inscribed stone. Presumably an individual or group would come to a decision to erect a permanent record, perhaps, as in Trimalchio’s case, in the form of a tombstone. The text to be inscribed would then be written down. A fragmentary piece of papyrus found at Oxyrhynchus in Egypt (POxy v0041, n2950) may well be the text from which a stonemason was intended to work. The text is written in large elegant capitals and is a dedication to the emperors Diocletian and Maximian by a *[v]exill(atio) leg(ionis) V M[ac(edonicae)]* – “A detachment of the Fifth Legion *Macedonica*” (Fig. 1).



Once the text had been finalised it would be taken to a stonemason’s workshop (*officina*). We are fortunate to have a two surviving inscriptions that appear to be advertising the work of stonemasons. At Palermo there is a remarkable bilingual Greek and Latin inscription (*ILS* 7680) on a stone panel which can be interpreted as a shop-sign and reads - “Inscriptions arranged and cut here, for sacred and public buildings” Unfortunately, there are errors in the grammar of both the Latin and Greek texts – something that is hardly going to inspire confidence in the discerning customer (Fig. 2). Another inscription (*ILS* 7679) which is surely a ‘shop-sign’, is from Rome and reads: “If you need inscriptions cut for tombstones, or any sort of stonework done, this is the place!”

At the stonemason’s shop the customer would be able to select the appropriate design, and the stone itself could be chosen, presumably from a selection of semi-prepared stones and slabs. With the text drafted, the design chosen and the cost agreed, the stonemason (*lapicida* or *faber lapidarius*) could commence his work.

Once the face of the stone had been smoothed off the stonemason might chisel a series of horizontal (and sometimes vertical) lines across the stone to mark the top and bottom of each row of lettering.

These faint lines can remain visible on the stone. The actual letters might also be lightly inscribed with a chisel or marked in chalk, charcoal or paint. There are a number of unfinished inscriptions known to us where the letters still to be cut are outlined with a point or in paint. This process of preparation and arrangement is now termed *ordinatio*.

The actual lettering of the text may start large, in order to give prominence to the name of an emperor or a deceased person and then be reduced as the lines progress. The whole process required some planning on the part of the stonemason. If a mistake was made there was no opportunity to start over on that piece of stone. It is clear on many inscriptions that considerable preparation of the stone and a careful layout of the text had been carried out. However, this was not always the case, particularly in the provinces where the tradition of inscribing stone and the experience of the stonemasons was not as well established. It would appear that sometimes the stonemason actually gave very little thought to the length of each line or the overall length of the inscription relative to the space available to him. The sudden realization, perhaps half way through an inscription, that it was simply not going to fit on the stone led to the development of a variety of techniques to deal with the problem. Words could be abbreviated, letters reduced in size or the linking up of lettering, known as ligaturing. Ligaturing involved the linking up or the running together of three, four or even five letters; one letter could even be placed inside another. However, even with these techniques an inscription could still spill over into the margins at the sides or bottom of the stone.

Stonemasons were also not immune to making grammatical errors or spelling words incorrectly. However, mistakes of this kind could have just as easily been made by the customer when presenting his draft of the text. In AD 467 the author Sidonius Apollinaris writes, in a letter to his nephew, that he happened upon the grave of his grandfather while in Lyon. The grave, according to Sidonius, had recently been disturbed. Sidonius wanted to rectify the situation and provided a new slab for his grandfather.

He wrote to his nephew: *The verse inscription to go on it I composed that night ... please have it cut on the stone. But watch that the mason doesn't make a mistake on the stone. When that happens the malignant reader will ascribe it to me, as either deliberately done or from carelessness, rather than to the cutter himself (Epistle 3.12.9).* Sidonius is clearly concerned about his reputation, perhaps with good reason.



The most common tools used by a stonemason were the chisel (*scalprum*) and the hammer (*malleus*). Also important for squaring the stone was the mason's trowel (*ascia*) and pick axe (*dolabra*), plus tools used by architects, such as squares, compasses and levels. From surviving specimens and from visual representations we can reconstruct two types of *scalprum*: one with a straight edge and one that may be called 'nib-pointed.' These tools were represented on stone as a decorative feature, especially on tomb monuments to craftsmen. The letters inscribed by these tools were usually capitals. The form the letters take however changes and develops over the centu-

ries. For example, under the Roman Republic letters were chiselled using a frontal approach. This produced letters with a flat bottomed groove. But by the mid to late first century AD oblique chiselling had become fashionable producing a V section groove and effectively changing the style of the letters.

When all the letters had been cut the whole inscription was usually painted over in red, sometimes using cinnabar (*minium*) which can survive in the crevices of the letters. Pliny the Elder writes that "*minium* is used in books and it makes lettering more visible, both on walls and on marble, and on tomb monuments as well" (*Natural History* 33.122).

It would seem however, that stonemasons did offer alternatives. For those customers who were not quite as wealthy the letters themselves may simply have been painted on, rather than being cut with a chisel. This method would have had a reasonable lifespan as long as the stone was protected from the elements. Another option, but clearly a more expensive one was to have the letters individually cast in bronze. The use of tangs would allow the letters to be attached to the stone slabs. On the Arch of Severus in Rome the outline of each letter was cut into the stone blocks with the intention of providing a point of attachment for the bronze letters. Consequently, even though the bronze letters have long since disappeared, the texts can still be read.

In other cases the bronze letters were simply attached to the stone and all that remain are the series of holes by which they were once attached. The arrangement of the holes is often enough for us to recognise which letters were once there. Occasionally, the letters would be gilded. Suetonius (*Life of Augustus* 27) reports that the death of Augustus was foretold when the bronze or gilded letter C, on an inscription below one of his statues, was struck by lightning and destroyed. The remaining letters – AESAR – meant 'god' in Etruscan. In the Forum Baths at Pompeii there is a marble basin. On the basin's rim there is an inscription in bronze letters – this is one of the rarest of cases where the original bronze letters remain *in situ* (Photo opposite).

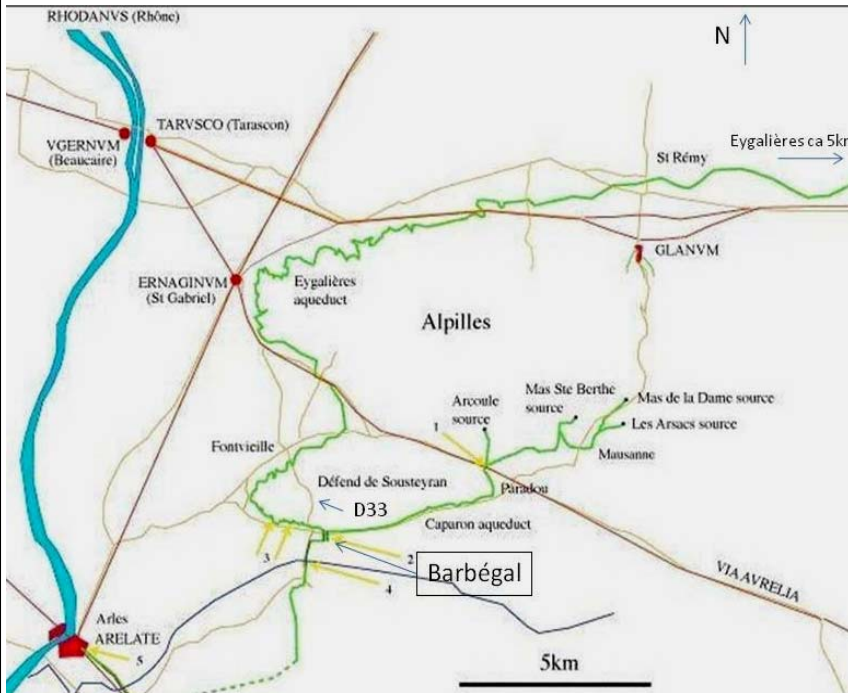


Throughout what was once the Roman world there is an immense wealth of extant inscriptions – probably about half a million. This means that the stonecutter and his trade was important and widely diffused, forming a significant part of Roman culture.

Barbégéal, Provence—A Roman industrial site

Norah Cooper

For romanophiles, Provence in southern France is Utopia. There are the magnificent aqueducts like the Pont du Gard (see RAG 4.4 (2009)), arenas at Arles and Nîmes, Roman city remains at Vaison La Romaine and a theatre and arch at Orange. One of the lesser known, but probably archaeologically more significant sites, is the Roman industrial mill complex at Barbégéal, not far from Arles.



Map showing position of Barbégéal with modern road D33 and yellow arrows 1-4 pointing to visible aqueduct remains

The Romans were technologically innovative and we are entitled to wonder why they did not bring about a full-on industrialization – a Roman industrial revolution. The simple and not necessarily satisfactory reason generally given for this failure to fully industrialize is the availability of a massive slave labour force. With so many ‘free’ hands they had no real incentive to economise by inventing labour saving devices. Why the start of the first industrial revolution as we know it had to await the 18th century is a complex question; it is sufficient here to observe that the necessary conditions did not exist in the Roman world. But the industrialization the Romans did achieve is very impressive as can be seen from one area alone—water powered mills.

At least four Roman multiple mill sites have been discovered. One of these is on the Janiculum Hill in western Rome (*Gianicolo* in Italian), where mills were installed along an aqueduct; there is one at Chemtou in western Tunisia where there were three horizontal mill wheels and a third one in Israel on the Crocodile River near ancient Caesarea with two horizontal wheels. The fourth, the most impressive, is at Barbégéal, which is near Fontvieille in Provence.

Barbégéal was an immense flour mill probably dating from the fourth century AD. There were 16 vertical water-wheels arranged in two parallel rows of eight, situated on a hill, so that the water cascaded from one waterwheel down onto the next powering the millstones. The water finally ran into a drain at the base of the mill: photo of model p. 10)

Two aqueducts (shown in photo opposite and aerial photo top next page) carried water from Eygalières, 50 km away in the mountain chain of the Alpilles to Barbégéal, 12 km north of Arles the Roman town (now Arles) situated on the Rhone River (Map). The aqueducts arrived at a steep hill, where one was immediately diverted in a 90 degree turn to take drinking water directly to Arles and the other aqueduct proceeded straight on passing through an opening in a solid rock outcrop to feed the series of parallel water wheels.



Photo: Norah Cooper

Arches of one of the aqueducts 50 m north of Barbégéal; remains of second aqueduct on the right of photo



Aerial view of aqueduct leading to Barbégal on scarp. Photo: D. L. Kennedy

It is thought that the wheels were over-shot water wheels, with the outflow from the top driving the next one down and so on to the base of the hill: photo model next page. Vertical water mills were well known to the Romans, being described by Vitruvius in his *De Architectura* of 25 BC, and mentioned by Pliny the Elder in his *Naturalis Historia* of AD 77. There are also later references to floating water mills from Byzantium and to sawmills on the river Moselle by the poet Ausonius.

Today there are substantial masonry remains of the water channels and foundations of the individual mills (photos immediately below). In Hodge (1990) it has been estimated that the capacity of the mills was 4.5 metric tonnes of flour per day, sufficient to supply enough bread for about 12,500 people, the estimated population of Arelate at that time.



Photo: Norah Cooper

Cut through rocks for second aqueduct to top of Barbégal. Wall on right shows 90° turn of first aqueduct to Arelate

It will never be known who the architect/engineer of Barbégal was. However there is an intriguing tomb in the lovely cemetery at Les Alyschamps in Arles dedicated to Quintus Candidius Benignus which says that he was an hydraulic engineer, “clever like none other and none surpassed him in the construction of machines and the building of water conduits” (Hodge 1990).

Barbégal is a large ruin in a very well populated area. It is clearly visible on a scarp above open fields and lies next to remains of two aqueducts. However, its significance was not recognised until the French archaeologist Fernand Benoît published the results of his studies in 1940. (There is a plaque to Benoît at the top of Barbégal). How many more remarkable Roman Empire industrial sites have left traces

that have hitherto gone undiscovered?

There is easy access to Barbégal, but many travel guide books make no mention of it and in fact, although on some maps it has *Le Grand Barbégal*, a castle and hotel, there are no road signs specifically to the Roman site but instead to *Meunerie* (French for Flour Mill) and *Aqueduc* (Aqueduct). Drive south on the D33 for about 2.5 km from Fontvielle (7 km NE of Arles) and pass the famous Moulin de Daudet, come to a crossroad and turn left onto the D29. You can approach the site from the top of the hill by following the signs to *Aqueduc* on the D29. Park at the side of the road and walk south along the remains of the two aqueducts. Suddenly the aqueducts separate and you emerge through what seems like a great gateway with only sky and a spectacular drop to fields below in an open plain. In the distance there is a massive farmhouse which is reminiscent of a Roman villa .



Photo: Norah Cooper

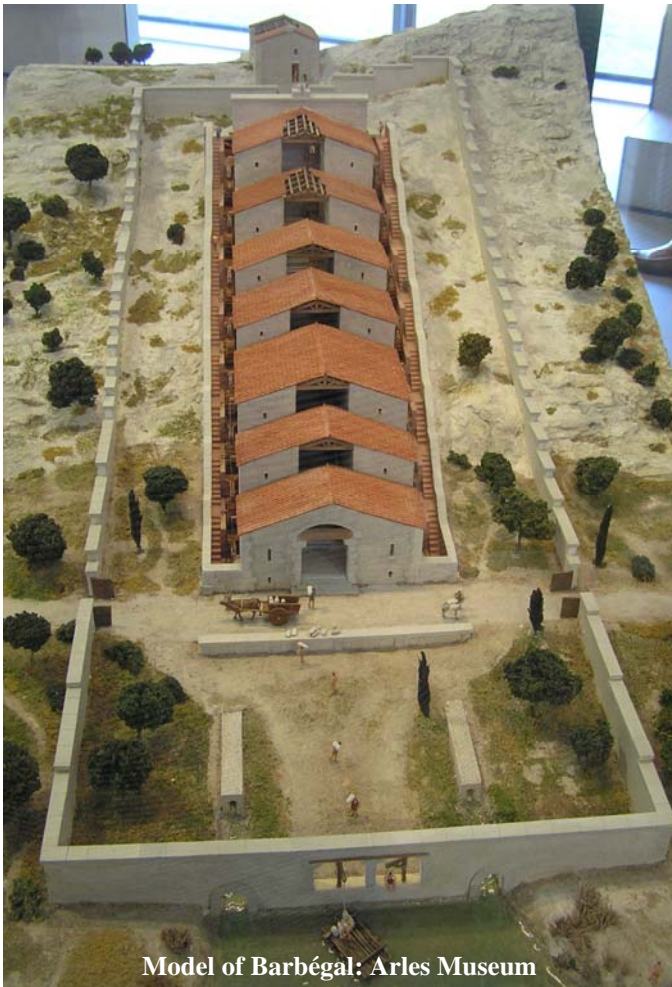
View from base of Barbégal

The other approach is less spectacular but gives a better impression of the size and layout of the site. Instead of following the signs to *Aqueduc*, on the D33 continue through the crossroad for a few hundred metres and park next to a private house sign, *Masdagard*. Cross the road and follow the path which runs beside a field for about 500m and you arrive at the base of Barbégat. You can climb up from there through the ruins to the top .

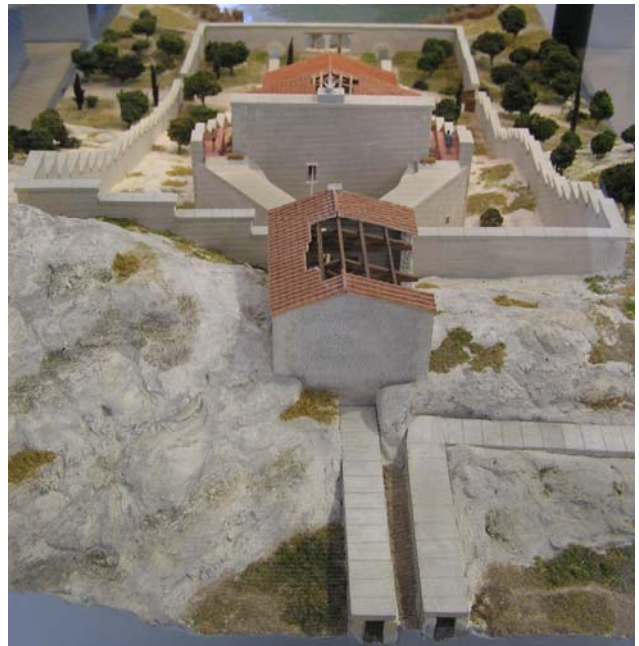
The models photographed in this article are from the Arles Archaeological Museum, a wonderful museum filled with Roman artefacts including a massive statue of Augustus Caesar, sarcophagi and mosaics.

I would like to thank my husband, Roger Cooper, and Marianna and Eldridge Büültjens, for their enthusiastic company in my travels.

Reference: A. Trevor Hodge, "A Roman Factory," *Scientific America*. November 1990, vol 263: 58-64.

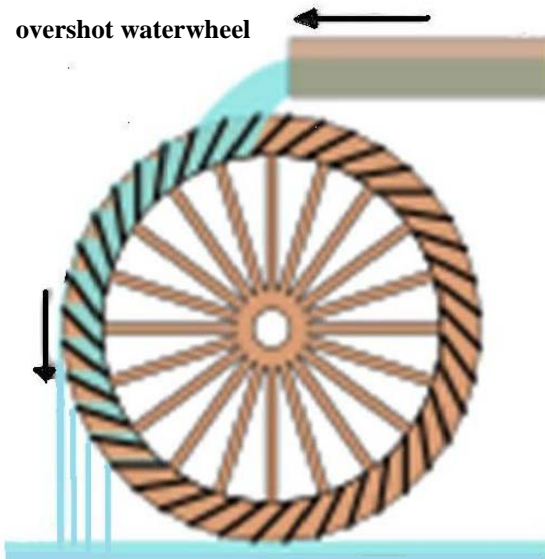


Model of Barbégat: Arles Museum



Model showing two aqueducts at top of Barbégat as in photo page 8: one redirected to Arlelate; other diverted to both series of watermills

overshot waterwheel



Model of part of mill showing overshot waterwheel: Arles Museum

My Career in Archaeology

Glenys Wootton

It's like archaeology. That's a slow thing, isn't it? It can't be speeded up. But the Time Team! ... Speed archaeology! ... And that's what you want. Speed this thing along! Dig, Dig! Then they say we've found stuff! Archaeologists, you found stuff? What have you found, what have you found? Well, give us a toothbrush and ten years and we'll tell you ... I like it, and I went and helped them, I love Time Team! ... I hadn't dug a ditch all my life ... and I dug, nothing in it. And that's true archaeology; sometimes there's nothing in there. But I wanted to find a hoard of Roman coins, or a sword or a Viking helmet! I'm really not into archaeology, I'm into piracy! (Eddie Izzard).

I began my academic 'second life' as an ancient historian and, unlike Jane Austin's Catherine Morland (and regarding history of the more ancient type) I read it a little more than as a duty. I relished the drama, excitement and 'heroic ideal' of Homer, campaigned with the young Alexander across the east, and fell particularly hard for the gloomy, anti-social emperor Tiberius – but then fell equally in love with his literary nemesis, the master wordsmith Cornelius Tacitus.

Then I found 'stuff', or rather 'stuff' found me, first as Research Assistant to Professor (now Emeritus) John Jory, aiding in his search for monuments illustrating the elusive Roman pantomime performer, and then as tutor in Greek and Roman Art & Architecture (for our very own ancient and loved curiosity, John Melville-Jones, and being an 'expert' myself by this time). Next, while pursuing, for the purposes of my doctoral thesis, the equally elusive elements of the Roman mime, I taught a variety of Greek and Roman history subjects offered by CLAH, but each year still remaining faithful to the art and architecture of these ancient civilisations (and to JMJ!), and coming to realize more and more the value of the material culture.

And over time I looked on with envy as our intrepid Professor David K, got up close and personal with crown princes and exotic helicopter pilots, living the 'Boy's Own Adventure' lifestyle on and over the Jordanian landscape, but comfortable in the knowledge that they also serve who only stay at home covering teaching commitments. And I would read of how Howard Carter had summed up the situation in the great days of excavating: "... anything to which a fancy was taken, from a scarab to an obelisk, was just appropriated, and if there was a difference with a brother excavator, one laid for him with a gun". That's for me, I decided. But, although I taught the literary based history, I never got my hands on any more 'stuff' until, through a fortunate (for me) series of messed-up itineraries and misunderstandings, one day in February 2009 I discovered that I too was an archaeologist – a word that I couldn't even spell the day before.

At this juncture I need to point out, for the sake of my credibility (and David's academic integrity) the old adage: that the only difference between ancient historians and archaeologists is muscle! But I would add that it is also a deep respect for the physical remains of a civilization, whether it is a coarse cooking pot, a chalcedony signet ring, or a temple to the Capitoline

Triad; because ancient 'things' are really ancient people. So, having once been told that even the eminent Sir John Beazley himself (he of Attic Black- and Red-figure pottery fame) had never put a trowel in the ground, archaeology held no horrors for me, being more than somewhat familiar with the builder's trowel myself (my life in that trade another story).

But it soon became clear to me that it was easier (for me at any rate) to become an archaeologist – at least to know the value of it – than for many of my students, who had also been raised on a literary diet of Homer, Herodotus, Tacitus *et al.*

Roman Archaeology gave me my first opportunity to convert the students to an appreciation of the value of the ancient physical remains and to an understanding that archaeologists provide the only means of investigating over ninety-nine percent of our past. So, I dragged them (not all kicking and screaming) across the 'known world': from the remains of Rome's earliest *coloniae*, like Ostia and Cosa, to the food scraps left by her army on the Rhine; from the wind-cooled harbour of Herod's showpiece Caesarea, across the searing heat of the Dead Sea Valley to that last bastion of Jewish resistance, Masada; to North Africa and Lepcis, and to the mineral deposits of Spain. Along the way we met the 'Tollund Man', the 'Spitalfields Woman', and the baby Vernaculus, who had died on his naming day.

Roman Britain. In September this year I mustered the troops for another campaign, this time to Britain. Our first couple of tries with Caesar were 'none events'; we achieved little but bragged a lot. We got further with Claudius, although we could never decide where we were when we landed! But, we did put down a rebellion by upstart Northerners and the fierce-eyed Boudicca, trounced the Druids, and advanced with the Flavians – through Snowdonia, through Cumbria, through Scotland – westwards, eastwards, forwards and backwards.

Then the 'accounts' ran out. Caesar lost his life and Tacitus lost his interest. Dio told us what he thought he knew; sometimes he was right – most times he was wrong. And there were rumblings in the ranks as some of the troops longed for the written word, and, unsurprisingly, maps and demographic tables couldn't fill the void. "But you're the Roman army, build a bridge and get over it"! And they did.

And we learnt how to make our subjects Romans. After we had dressed them down we dressed them up. We built temples and circuses, houses and amphitheatres; took a natural spring and gave them a spa. We mixed our gods with theirs and their food with ours.

We built marching camps and blocker forts, big forts and small forts: and WALLS. Walls are us: long walls and short walls, stone walls and turf walls. We can give you milecastles, watch-towers and flat-bottomed ditches. We can date pottery, read crop marks, decipher milestones and build roads. We can pronounce Inchtuthill, Ardoch, Caersws but not Y Pigwn. We know that a lead pipe or a terracotta tile can mean as much as a temple.

And we didn't make a desolation and call it peace (sorry, Tacitus!).

Roman Archaeology at UWA

Membership of The RAG

Notes and News

Fieldwork

The second half of the year was busy. In late September participants started arriving in Jordan to set up two projects that were to run simultaneously. The *Jarash Hinterland Survey 2010* was to have its third season and ten staff were to take part. Work in the field was directed by Fiona Baker who brought expert assistants from Britain to lead the small sub-teams in the field and provide expertise. Some team members were already in Jordan (Anne and Naomi Poepjes) and one was loaned from time to time from the AAJ Project (Stafford Smith). There will be an article in the next issue by Ann Boyer, but for the moment we need to again recognize the crucial role played by our Member, Don Boyer, who provided the lion's share of the funding.

In parallel was the 14th year of the *Aerial Archaeology in Jordan* project. Bob Bewley from the UK joined the project for ten days and other flights included Stafford Smith, Don Boyer, Karen Henderson, Paul Sharman and Nadja Qaisi. It was a more extensive season than planned bringing the annual total of flying hours to 50. The most ever. Once again the sharp increase in flying hours was thanks to a very generous grant from The Packard Humanities Institute.

Karen Henderson carried out her own fieldwork research for her PhD and has something to say about it elsewhere in this issue.

For Sale

David Kennedy has surplus copies of some books and journals. If anyone is interested in a run of *Journal of Roman Studies* from 1943 to 1959 for \$250 he will happily donate the income to RAG funds.

Don Boyer

In recognition of his significant contribution to the research activities of projects in the Discipline Group, the Vice-Chancellor has appointed Don Boyer and Adjunct Lecturer in the School of Humanities for three years. Don joins Bob Bewley and Paul Houghton in holding honorary positions in the School to support the working of the various research projects in archaeology.

Stafford Smith

Stafford has been a superb research assistant on the Aerial Archaeology in Jordan project both in UWA and in the field in Jordan. He has played the leading role in the mammoth task of having thousands of slides digitized and in bring the Flickr Archive of all the photos of the Aerial Photographic Archive for Archaeology in the Middle East to fruition – there are now c. 38,000 photos on the site for anyone to see and use. And he has been much more, not least taking over some of the role played by the late Mike Neville. We will lose his services shortly as he goes of to work on an archaeological fieldwork project in the Dutch Antilles in the Caribbean for three months. Does not sound like the sort of place you want to leave but we hope to have him back once more in the autumn.

Dr Mike Bishop

Mike arrived from Darlington in the UK to spend 6 weeks as a Research Associate. His brief – again funded by PHI, was to work with David Kennedy on a high-resolution 'window' of Google Earth that revealed thousands of archaeological sites east of Jeddah in Saudi Arabia. The objectives are an article setting out our findings and, longer term, to point the way to how a longer-term research project may be conducted over one of the least known landscapes in the Middle East

RAG Summer Programme

1.30PM to 4PM

Social Sciences Lecture Theatre.

Saturday 22 January

David Kennedy: "*Aerial Archaeology in Jordan ... and Beyond*"

Don Boyer, "*The Jarash Hinterland Survey*"

Saturday 19 February

Kevin O'Toole: "*Greek Eleusis: The Origin of the Mysteries and the Response of Archaic and Classical Athens*"

Rodney Greaves: "*Roman Eleusis*"

Saturday 19 March

Sandra Otley: "*Inscribing the Roman World*"

David Kennedy: "*Roman Careers: the Career Inscription of Marcus Helvius Geminus*"

\$25.00 Ordinary membership
 \$35.00 Family membership 1 (2 adults; 1 copy of RAG magazine)
 \$50.00 Family membership 2 (4 family members; 1 copy of RAG magazine)
 \$50.00 School membership (2 copies of RAG magazine)
 \$10.00 Student membership
 Complete and post the form with this edition of the RAG or contact The Treasurer at the email address below.

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www.romarchgroup.humanities.uwa.edu.au/

Chairman

Professor David Kennedy
M205 Classics and Ancient History
University of Western Australia
Stirling Highway
CRAWLEY WA 6009

E-mail: dkennedy@cyllene.uwa.edu.au

Tel: 08 64882150

Fax: 08 64881182

Deputy Chairman

Rodney Greaves
rodneygreaves@iinet.net.au

0438 941 582

Secretary

Norah Cooper
coopsathome@optusnet.com.au

Treasurer

Maire Gomes
Gomescm@bigpond.com

The RAG

Newsletter

Correspondence to the Editor:

Kevin J. O'Toole
M461 Legal Services
University of Western Australia,
Stirling Highway,
CRAWLEY WA 6009

Tel: (08) 64884709

E-mail: kevin.otoole@uwa.edu.au