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Rituals, Technologies and Subsistence in the Desert Margins

Investigating Saruq al-Hadid, Dubai, U.A.E.

By Lloyd Weeks, Charlotte Cable and Kristina Franke

Since late 2014, the University of New England (UNE) has been collaborating with the government of Dubai to investigate the site of Saruq al-Hadid, United Arab Emirates. Our project, known as SHARP (the Saruq al-Hadid Archaeological Research Project), aims to understand one of the most surprising, complex, enigmatic and perplexing late prehistoric sites in the region, through an integrated programme of field research and post-excavation recording and analysis of its abundant material remains.

A Desert Discovery

The story of the archaeological investigation of Saruq al-Hadid began in 2002, with the fortuitous discovery of the site by the ruler of the Emirate of Dubai, HH Sheikh Mohammed bin Rashid al-Maktoum. The site is located in mobile dune fields on the northern edge of the famously inhospitable Rub' al-Khali (or empty Quarter) desert: one of the last places that archaeologists would have considered looking for evidence of rich and complex Bronze Age and Iron Age occupation. Nevertheless, while flying over the dunes in his helicopter, HH the Sheikh noticed an area of darker dunes that were differently oriented than those in the surrounding desert. A subsequent surface survey of the site by local archaeologists revealed that the dark dunes were in fact covered by a dense concentration of black slag—the waste products from copper smelting. Within and below this slag field were thousands of prehistoric artefacts, including copper alloy tools and weapons, artefacts of iron, gold alloy, and silver, many pieces of worked bone and shell, alongside pottery and other archaeological remains. Together, they testified to a significant occupation of the site during the early Iron Age, c. 1000 BCE.

From the moment of discovery, Saruq al-Hadid posed a series of difficult and unexpected questions for prehistorians of Arabia: what had encouraged the prehistoric inhabitants of the region to exploit a site in such a seemingly difficult and isolated desert environment? Why were the metallurgical activities (represented by the slag, artefacts and other residues) undertaken so far away from any known sources of firewood and ore? Was the site's environment different in the past?

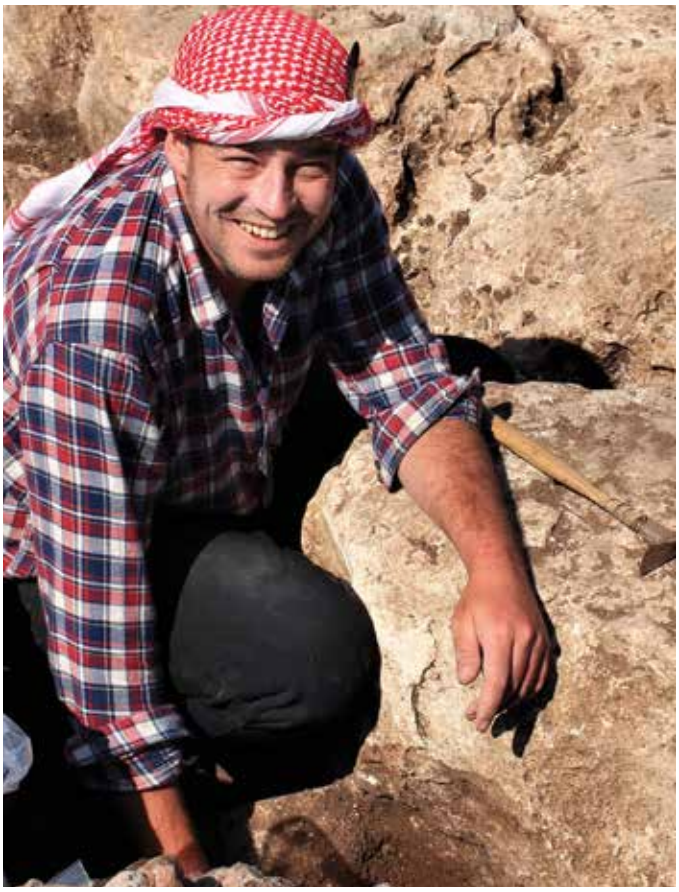
James Fraser

The new Senior Curator of the Nicholson Museum

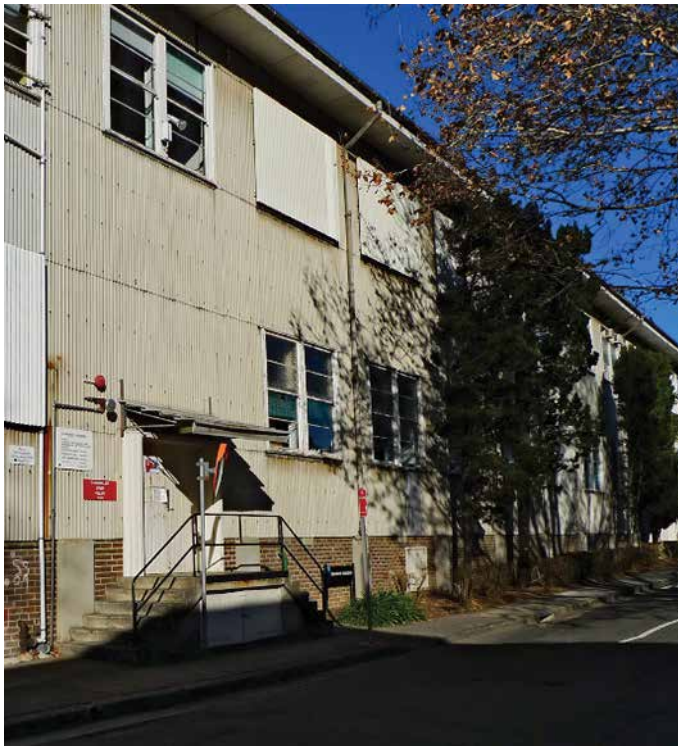
Dr James (Jamie) Fraser has returned to Australia as the new Senior Curator of the Nicholson Museum at the University of Sydney. Jamie is well known to NEAF members as Bulletin contributor, public lecturer, excavation director, and trench supervisor on numerous excavations including Pella. He was formerly working in the Middle East Department at the British Museum as Project Curator for the Levant and he has just completed the first season as Project Director of The Khirbet Um al-Ghozalan Excavation Project in Jordan with the British Museum. Jamie's most recent NEAF gig was last year when he shared with us his recent important work with the Oriental Institute repatriating antiquities to the National Museum in Kabul.

Jamie comes to the Nicholson with a broad archaeological and museological experience from around the world. Since the early 2000s he has participated in many international fieldwork projects including Jordan, Syria, Iraq, Greece, Uzbekistan, India, Cambodia, Afghanistan, the Solomon Islands, and Australia. Much of Jamie's fieldwork research in Jordan has been under his own direction towards his now-completed doctorate on the dolmens (stone-slab tombs) of Jordan and is the subject of his forthcoming book, 'Dolmens in the Levant' (Palestine Exploration Fund Annual XIV).

Jamie joins fellow NEAF and Pella stalwart, Dr Paul Donnelly, who is Associate Director of the University of Sydney Museums. He, Jamie and the rest of the museum team will be developing exhibition and program content for the new Chau Chak Wing museum to open in 2019.



Jamie directing the British Museum's excavation project at Khirbet Um al-Ghozlan in the Wadi Rayyan in Jordan, March 2017. Photograph by Adam Carr.

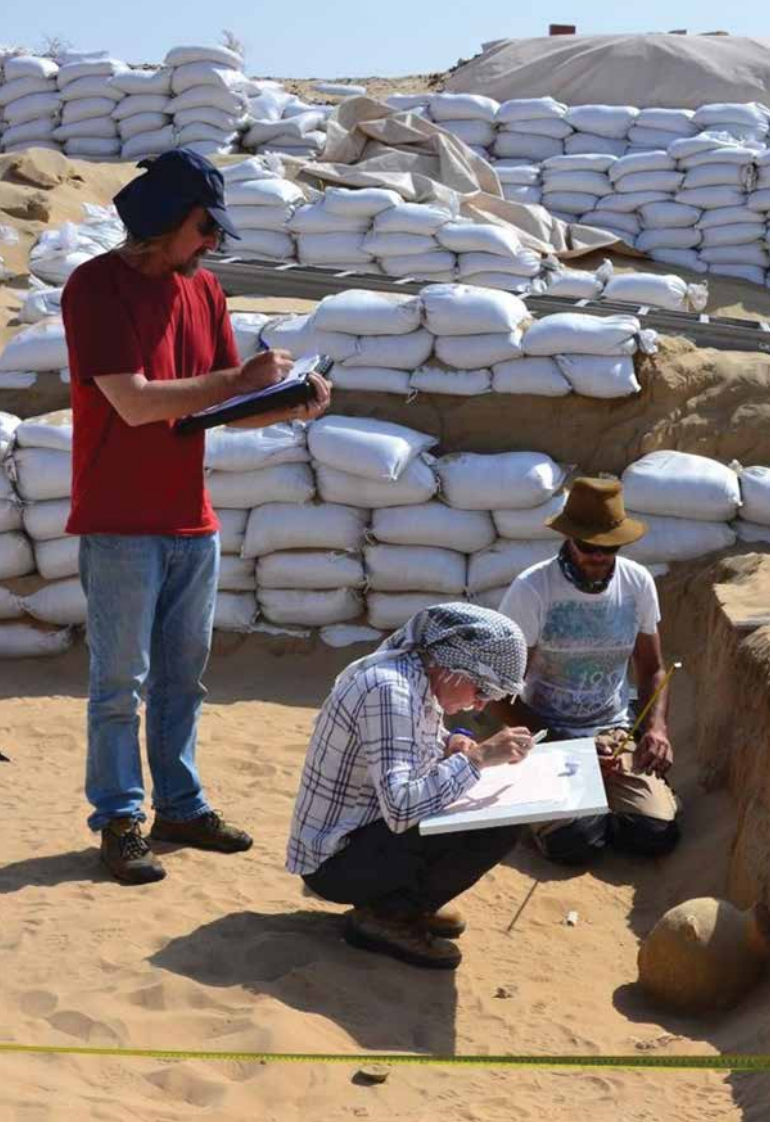


Adieu the Transient Building

In early 2016, the Transient Building at the University of Sydney was demolished. Although called 'transient', the building had been in place since the late 1940s when the government introduced the Commonwealth Reconstruction Training Scheme enabling returned ex-servicemen to receive support during their education. This caused student numbers at the University to jump to 10,779 in 1948. As there was a desperate shortage of space for the students the 'temporary' Transient Building was erected at this time.

Considered by some as an eye-sore, it was nevertheless the home of NEAF from its inception in 1986 until NEAF's move to CCANESA in 2010 and the home of The Pella Project until 2015.

Although riddled with asbestos and partitioned like a rabbit warren, the Transient Building was a part of NEAF's early history and will be remembered.



Tim Hill, Kat McRae and Julian Jansen van Rensburg excavating at Saruq al-Hadid.

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The site was an immediate challenge to the conventional understanding of the development of complex Iron Age societies in the region.

An Embarrassment of Riches

Archaeological work at Saruq al-Hadid commenced shortly thereafter in 2003, with survey and excavations by a local Dubai team. Subsequently, a Jordanian team conducted work at the site for five years; a team from the University of Arkansas conducted two seasons of field research; and the government of Dubai carried on with its own fieldwork. Over a period of 11 years, this fieldwork revealed the remains of one of the richest archaeological sites in southeastern Arabia, consisting of copper alloy artefacts, gold artefacts and scrap, iron objects, and a range of other extraordinary finds. Swords, daggers, vessels of copper and ceramic, jewellery from dozens of materials and all kinds of adornments were daily discoveries. At the same time, the hundreds of tonnes of copper production waste, combined with gold, iron, and copper scrap, offered a puzzling counter-story to the beautifully finished objects.

Yet a third theme was soon evident: alongside all of these material remains were a range of other artefacts, especially pottery, richly adorned with snake imagery. Based on these representations (which also occurred in the form of copper alloy snake figurines), it appeared that this desert 'industrial' site also had a strong element of 'cultic' activity. What 10 years of excavation had failed to reveal at Saruq al-Hadid, however, was any sign whatsoever of standing architecture – no walls or floors, no houses or store-rooms, no palaces or temples — no permanent buildings of any kind. Nor had any graves, otherwise so common in the prehistoric archaeological record of the region, been discovered.

SHARP

Research by our project, SHARP, began in late 2014 after this decade-long period of intensive excavation. Our mandate was to help clarify the stratigraphic sequence of the site through additional excavations; to continue the process or recording and documenting the incredible assemblage of material remains from the site, particularly in visual terms; and to improve the understanding of the human occupation and activities undertaken there through the development of an integrated program of scientific analysis: archaeobotanical and zooarchaeological studies, typological and materials science analyses of ceramic remains, copper alloy and ferrous artefacts, metallurgical residues, gold alloys, bone and shell remains, and so on. Our team includes an appropriate range of specialists: Dr Charlotte Cable (UNE, Post-Doctoral Fellow) as Field Director, Kristina Franke (UNE, Post-Doctoral Fellow) as Analytical Director, Hélène David-Cuny as Chief Illustrator, Dr Claire Newtown (Univ. du Québec à Rimouski, Canada) as archaeobotanist, James Roberts (UNE, PhD student) as zooarchaeologist, Dr Steven Karacic (Florida State University, USA) as ceramicist and Ivan Stepanov (UNE, PhD student) as archaeometallurgist studying ferrous remains, in addition to teams of excavators and illustrators to support these efforts. In the two and a half years since our project began, we have made significant strides in understanding a range of aspects of the site – even though a coherent understanding of its nature remains frustratingly elusive.

A Persistent Place

Our excavations have revealed a long history of occupation at the site. Aside from a scattering of Neolithic tools in the general region attesting to human use during the early Holocene climatic optimum—when the region more broadly may have been characterised by fertile grasslands and perhaps standing lakes—evidence for occupation from our excavated trenches dates back as far as the late 3rd millennium BCE, known locally as the Umm an-Nar period (c. 2700-2000 BCE). A series of well-built, stone-lined fire places dug into the thick natural gypsum pavement underlying the dunes at Saruq al-Hadid attest to apparently seasonal occupation, and are surrounded by numerous post-holes that would have supported temporary structures of perishable materials: skins, textiles or, as used ubiquitously in the region even today, palm fronds. This occupation continued into the early second millennium BCE, known locally as the Wadi Suq period (c. 2000-1600 BCE), when well-built hearths and smaller fire pits with concentrations of ash, pottery

and animal bone are found both dug into the gypsum pavement and within sand dune deposits that seem to have begun accumulating across the site. By the late Wadi Suq period or the beginning of the Late Bronze Age (1600-1300 BCE), the human use of the site and its hinterland for herding and hunting resulted in the accumulation of a very large midden of animal bones. Literally hundreds of thousands of fragments of bones from domesticated species (sheep and goat, and very rarely cattle), wild animals hunted for their meat and hides (Arabian oryx, gazelle, dromedaries) and a range of other species that reflect either hunting activities in the local, increasingly arid desert environment (including hares, snakes, lizards, birds, rodents), or the importation of food from other regions, including the coast (cormorants, dugong, and a variety of marine fish). Together, the animal remains and the representation of different parts of the animals attest to the predominant use of the site for subsistence activities: hunting, meat processing, and eating (perhaps feasting?).

The plant and charcoal remains from the Bronze Age levels are less spectacular, but provide evidence for the use of a range of desert trees (acacia, prosopis) and shrubs (e.g., calligonum) to fuel camp fires and cook food. As is typical for the harsh environment of southeast Arabia, plant macro-remains are very poorly preserved at Saruq al-Hadid. Nevertheless, charred or biomineralised date seeds from these layers attest to the consumption of dates (domesticated in the region sometime in the mid-Holocene and the foundation of oasis agricultural systems in southeast Arabia from c. 3000 BCE), small fruits of the zizyphus tree, and cereals (one grain and counting!). Interestingly, considering the significance of metal artefacts and metalworking activities at the site in the subsequent Iron Age, the Bronze Age levels of Saruq al-Hadid contain very few metal remains, with artefacts predominantly comprising ceramics and stone tools of types typical for the region in the second millennium BCE.

A ceramic 'incense' burner or brazier with an applied snake decoration.

Changing Significance

The site appears to witness a dramatic change in its use and significance in the early Iron Age, c. 1000 BCE or a little earlier. This change is presaged by the ephemeral deposits that sit on top the Late Bronze Age animal bone midden at the site; characterised by the presence of numerous ceramic 'incense' burners or braziers scattered across the dunes. These braziers bear abundant snake representations, whether as low-relief plastic decoration or in painted form, and they represent the first appearance and prominence of this imagery at the site in a context where metallurgical activities are still not documented to any significant extent. The dating of this ephemeral scatter of material at the site—sandwiched between deep and dense deposits of the preceding Late Bronze Age and subsequent early Iron Age remains—is currently proving to be one of our biggest challenges at the site. Initial C14 dates from these layers show a broad chronological spread and are sometimes out of stratigraphic order, highlighting the complex anthropogenic and natural taphonomic processes that shape an archaeological site situated in mobile sand dunes. We hope that our upcoming round of C14 dates—currently awaiting analysis at ANSTO, Lucas Heights—will clarify the chronological position of this very interesting early manifestation of snake cult at the site.

Dramatic changes in the nature of materials and activities at the site occur at the start of the Iron Age, at the very end of the second millennium BCE. From this point onwards, metal artefacts and production residues start to dominate the assemblages from the site, while snake images on pottery and in metal testify to the continued importance of this symbol for spiritual behaviours in the region. The iron artefacts and fragments from these levels at Saruq al-Hadid are amongst the most interesting finds from the site; found in great abundance, they represent almost all of the known iron from Iron Age southeast Arabia, an area previously described as having 'an Iron Age

The darker dunes, now known to be a deflated surface of metal slag, first noted by HH Sheikh Mohammed bin Rashid al-Maktoum, that led to the discovery of Saruq al-Hadid.

without iron'. Technical studies of this material indicate an uneven control of metal composition commonly associated with a newly-introduced technology: artefacts are variably and heterogeneously carburised, with some pieces having the characteristics of mild or even hard steel, but many being made of soft iron. There does not appear to be any evidence for iron smelting on the site, although secondary iron working remains a strong possibility. Typologically, some of these ferrous artefacts, particularly the long swords, have very good parallels far to the north in Iron II period sites in Luristan, western Iran. Many of the copper alloy artefacts from Saruq al-Hadid also have good comparanda in Luristan and more widely across the Near East of the early 1st millennium BCE, and some have drawn parallels between distinctive Saruq al-Hadid artefacts and material from as far away as Assyria or even Urartu. These long-distance connections are echoed in the typological parallels for gold objects from the site, which can be traced as far as the Southern Levant, and in other remains such as faience cylinder seals and scarab seals that attest to contacts, perhaps indirect, with the Mesopotamian and Egyptian worlds.

These changes in site use and international contacts are also reflected in the bioarchaeological remains from the site. Zooarchaeological analyses highlight the utilisation of many of the same species as seen in the Bronze Age—oryx, gazelle, camel—but the different proportions of body parts suggest the intensive working of animal hides rather than the use of the animals for their meat. Likewise, Iron Age levels in our excavations at Saruq al-Hadid have as yet produced no archaeobotanical evidence of food remains (no seeds or fruits), whereas abundant charcoal remains attest to the use of local desert species including acacia and calligonum for fuel. Highly surprisingly, the early Iron Age levels at Saruq have also produced hundreds of fragments of preserved wood. Ongoing analyses of this material highlights the dominance of non-local species coming from oases (date palm), the Oman mountains and mountain wadis (olive tree), but also truly exotic species such as ash and fir that can only have come from very distant areas such as the Zagros mountains in Iran or perhaps the eastern Mediterranean region. This evidence maps onto that for hide working and shell and bead manufacture at Saruq al-Hadid, to highlight a range of craft activities at the site alongside the vivid evidence for metal production; besides the different types of complete and fragmented slag pieces, copper ingots of varying composition and shape and various spills and copper production debris materials have been recovered in large numbers. The combined evidence for the variation in metallurgical residues indicates that several steps of the copper metal production chain were undertaken at Saruq al-Hadid during the early Iron Age. Nevertheless, contemporaneous deposits at the site still lack any evidence

for substantial architecture. Ephemeral stone alignments and rare post-holes, alongside ash concentrations, testify to the continued use of light-weight, organic, perishable structures at the site.

However, a note of caution is required: Saruq al-Hadid is a large site, with surface remains spread discontinuously and at different densities over an area of perhaps 70ha. It is highly likely that our picture from excavations in the centre of the site presents just one aspect of its use in the early Iron Age: the hunting, feasting and subsistence activities that characterised the central sector of the site in the Bronze Age seem likely to have been occurring elsewhere on the site at this time. Likewise, craft production activities seem to have been spatially distinct. Excavations by other teams working at Saruq al-Hadid have, for example, isolated evidence for intensive charcoal deposition well away from other evidence for occupation and metallurgical activities, possibly indicating on-site charcoal production to support smelting operations at the site.

A gold plaque from Saruq al-Hadid.

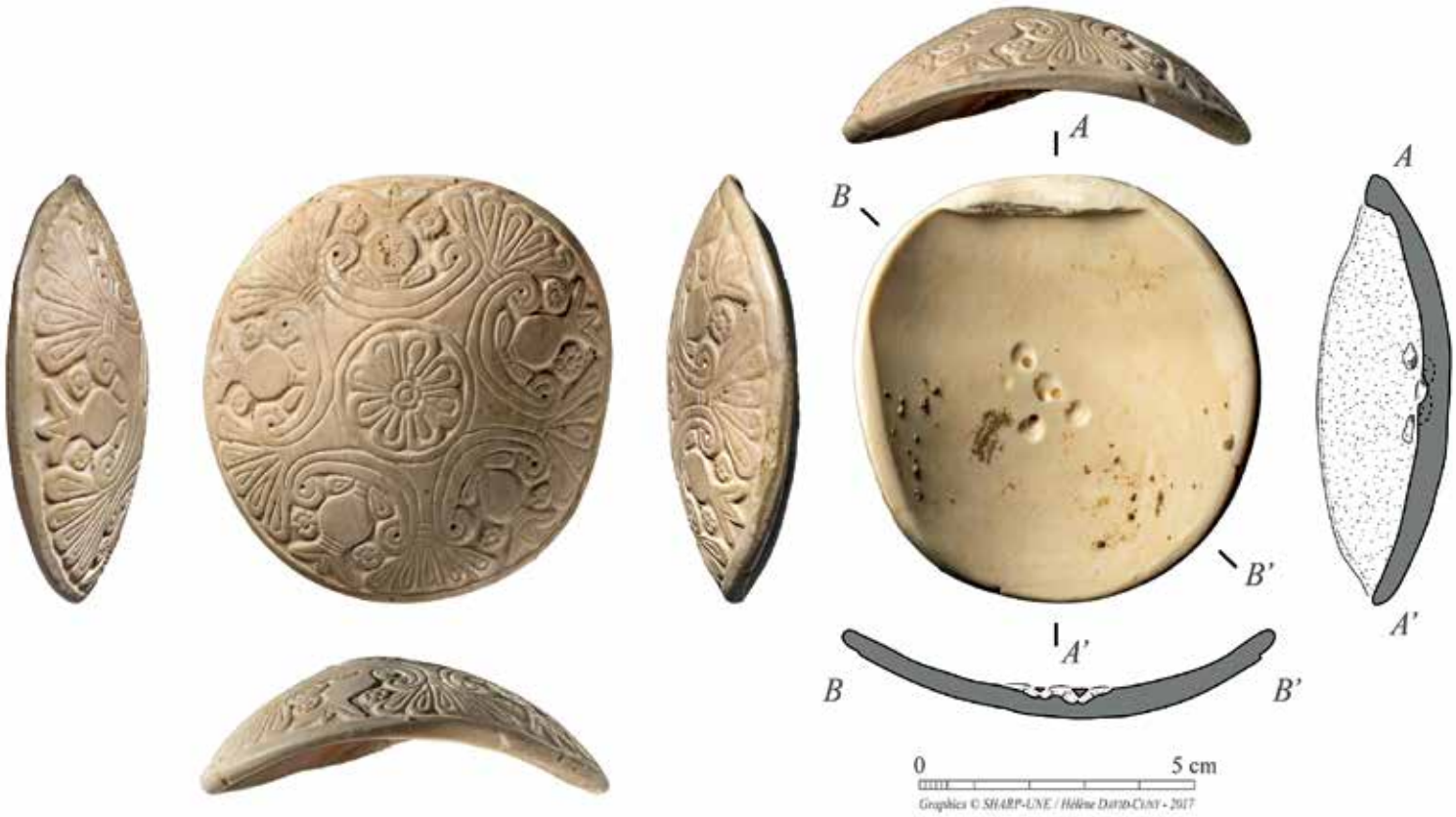
Taphonomic Challenges

Sitting on top this deep (up to 6m) sequence of natural and cultural deposits in the central part of Saruq al-Hadid is the dense layer of smelting debris that first indicated the site's existence to the keen-eyed Sheikh. It is clear that this layer has formed as a result of the strong wind erosion that characterises the site. This 'deflation deposit' is similar to desert pavement or 'lag deposits' known in many hyper-arid contexts, and represents a stable surface created by the erosion of sediment and the downward movement of archaeological materials until the density of artefacts is such that the surface is covered and further erosion is stopped or significantly slowed. This means that our upper deflation deposits potentially include material deposited originally across long periods of time, and artificially brought together by natural site formation processes.

Typological and radiometric analyses of material from the slag layer indicate that it includes artefacts and smelting residues of early Iron Age date. However, we have now undertaken thermoluminescence dating of a sample of the common fragments of furnace walls and lining—known as 'technical ceramics'—that can be found in the surface slag layer and these suggest an extremely long period of use of the site for metallurgical activities that begins in the early Iron Age, continues into the Late Pre-Islamic period (the two or three centuries either side of BCE/CE) and into the early Islamic period (9th and 10th centuries CE).

These results are interesting and, in some ways, surprising. Intensive copper smelting is known to have taken place in southeast Arabia in the early Iron Age and

Bronze arrow heads and metal slag emerging from the surface deposits at Saruq al-Hadid.



A carved shell depicting floral elements and pomegranates from the SHARP excavations at Saruq al-Hadid.

in the early Islamic period, but until now the evidence for copper production in the Late Pre-Islamic period has been very limited and of smaller scale than recorded from Saruq al-Hadid. Technical studies of these smelting remains show that the Iron Age and Islamic period smelters at the site had developed the technology to extract copper from complex sulphur-rich copper ores. In the case of the Iron Age smelting remains, the remains suggest operations that produced very impure metal requiring significant refining before it could be used.

A Persistent Riddle

Despite our significantly improved knowledge of the site's stratigraphy and chronology and of the activities that were taking place there, Saruq al-Hadid continues to confound our efforts to interpret and understand it. It is one of an increasing number of sites from the region which show evidence for snake imagery in 'cultic' contexts that are commonly associated with metalworking and with water. It is also, since the discovery of the site of Uqdat al-Bakrah (aka As-Safah) in Oman, not alone in providing evidence of isolated metallurgical production activities in the desert and desert fringes of southeast Arabia.

Nevertheless, the sheer material richness of Saruq al-Hadid sets it apart from contemporary sites in southeast Arabia, and the 'abandonment' of finished and semi-finished (and possibly even 'decommissioned') artefacts alongside more commonplace production residues differentiates it from commonly-understood production sites, where the residues of production tend to be copious but the expensive end-products tend to be rare. Saruq al-Hadid appears to have been a production site where at least a proportion of the material manufactured was abandoned before or never intended for every day use. It was a seasonally or periodically occupied site where people seem to have come from other sites or regions of Iron Age southeast Arabia to both make and discard materials.

We know of ethnographic and historical accounts from societies in Arabia and further afield that testify to the importance of periodic gatherings of people from multiple communities and regions, which provided an appropriate social context to confirm and re-confirm social bonds, to build networks and shore-up alliances, and to engage in a wide range of activities that ensured the continuation of communities and societies. Saruq al-Hadid appears to have been an important locus for these kinds of activities, activities that were associated with craft production and understood within a shared ideological framework that incorporated a snake cult and associated rituals that linked individuals and communities from across the region. The nature of these hypothesised communal activities at Saruq al-Hadid remains to be better characterised, as does the extent to which the site's significance in the early Iron Age draws on its long tradition as a 'persistent place' visited already for a millennium or more from the Bronze Age. Our ongoing research on Saruq al-Hadid and its remains will, we hope, allow us a clearer insight into these complex issues. □

Some of the Oryx leucoryx herd in the Wadi Rumman enclosure to the west of Wadi Rum.

News from Jordan

By Michele Cotton

The very opportunity to travel into the deserts of Jordan and to remain there for any significant period, to drive myself around and stop when you feel like it gives me the greatest pleasure. The stark contrast between Sydney city life and the open dusty places of Wadi Rum is indeed therapeutic.

Besides, with the time to listen to the sparrows, doves, desert larks and the wind rustling the date palms, one can reflect on the passage of time and its effects on civilisations over the millennia.

A walk up a scree slope, a wade through sandy banks to the base of massive sculpted rocky escarpments, I start imagining who else has travelled these paths. How did ancient civilisations survive here? Were names given to some of these imposing geological outcrops and structures? Some of them must have had names, they are majestic and beautiful, many with individual personalities.

At the end of another restorative trip to Jordan I consider how fortunate I have been to have learned more about the factors that affect life in the southern deserts and Wadi Rum. While this trip had no archaeological intent the idea of combining archaeology with natural history and anthropology was never more appropriate.

The synchrotron at the new Amman Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME) project recently opened and supported by a range of neighbouring countries is an exciting and inspiring example and while it may not bring peace in the Middle East it underlines the importance of sharing acquired knowledge throughout the region. There's a lot to look forward to and further information can be found at: http://www.bbc.com/news/av/science-environment-39930738/sesame-project-opens-in-jordan.

This multidisciplinary approach is something I really enjoy more than anything and I look forward to attending this year's NEAF presentations, taking the ideas they generate and applying them to what I see in my next desert visit at the end of this year. ☐

A welcome rest in the shade of the old acacia in Wadi Rumman.

Pots of Memories

By Catriona Bonfiglioli

Herb Stetzenmeyer joined the team at Pella this year after a 50 year hiatus as he had last worked at the site as a 19 year old in 1967 when the Near East was a very different place. While he was at Pella, Herb generously brought along his 1967 photos of the site and took time to talk with Catriona who presents this excerpt here.

Bumping into an old friend at the museum is always a pleasure but when you haven't seen each other for nearly 50 years you're entitled to shed a tear. And that's exactly what Herb Stetzenmeyer did when he found himself staring at a Bronze Age vessel he had excavated with his own hands from a tomb at Pella in Jordan.

Herb says he always wondered what happened to the chocolate-on-white vessels he dug up at Pella in early 1967, he told the *NEAF Bulletin*. When American Center for Oriental Research (ACOR) director Dr Barbara Porter took Herb, his wife Marie-Claude and a few friends on a special tour of the new Jordan Museum (see: http://jordanmuseum.jo/en) he had no idea what to expect.

"I wasn't prepared for what I saw," he said. "All of a sudden, I was standing in front of a case of Middle Bronze Age pottery, very fine intact pieces, and I stopped short because I recognised the pieces and not just from the books ...I recognised a number of pieces that I took out of the tomb with my own hands ...I have to say it was quite an emotional moment for me and I did shed a tear."

1967 Pella

The encounter with the pots in Amman transported Herb back to his first trip to Pella and his time excavating tombs while other College of Wooster excavators worked on the West Church.

"We started halfway up the hill in the necropolis. I should have known we would find something because of course the hills are filled with tombs here at Pella. So we scratched our way down the hillside and all of a sudden we found the entrance to a tomb. It had been robbed in antiquity almost certainly but there were still interesting things inside."

The ceiling had collapsed but they cleared the entrance and just "going through that entrance way and climbing up over this mound of soil and being able to see with my torch that in fact it was a large enough tomb to hold probably over 100 pieces of pottery, many of them still intact ... that was a thrill," he said. "It was exciting to start pulling out of the tomb intact Middle Bronze Age pieces". "This was not Tutankhamen's tomb" said Herb, "but it was still a thrill for a 19-year-old student".

"We were taught right from the beginning that this is not a treasure hunt, this is serious archaeology, this is history. So the finds are fun but it's not the objective."

The 1967 Wooster expedition made many exciting discoveries particularly in the West Church. "Once they cleared the apses they found a sarcophagus. We still don't know who's inside that sarcophagus but it was obviously someone very important in the time, maybe sixth or seventh century," Herb said. "That was exciting."

So how did Herb who was studying at the College of Wooster in Ohio, come to join the 1967 Wooster expedition to Pella?

"I was sitting one day in Latin class and the classics professor—who I believe was on the Wooster expedition

A 1967 view across the American compound towards the main tell at Pella with the village of Tabaqat Fahl still occupying the summit. Photo courtesy of Herb Stetzenmeyer.

Some of the American team and locals at the village of Tabaqat Fahl located on top of the main tell in 1967. Photo courtesy of Herb Stetzenmeyer.

to Pella faculty committee—stopped me after class and said: 'You know, you really need to go on this dig.'"

"It was quite extraordinary having never been in the Middle East before or having been on an archaeological expedition. It was just a big thrill for a 19 year old in every way: it was an adventure, it was romantic, it was academically very, very interesting. ...We studied Arabic, pottery sequences, ancient history and, of course, the history of Near Eastern archaeology."

How did Wooster's Dr Robert H. Smith come to choose Pella as the site for the College's archaeological expedition?

"It has always been known that Pella is one of the richest sites in Jordan because of the continuous occupation ...almost uninterrupted for 7000 years. If you throw in Wadi Hammeh ...you throw in the Natufian that pushes it back another five thousand years. So anyone would have wanted to dig here," he said.

"There's enough here to dig here for a couple of hundred years I should think, so it was very easy I think for Dr Robert H [Houston] Smith to have chosen to dig at Pella."

A bigger question was how Dr Smith persuaded Wooster to back the expedition.

Dr Smith had been appointed as a professor of religion but he had also worked with Jim Pritchard at Tell es-Saidiyeh in Jordan, so as well as highlighting Pella's crucial role as the city of the refuge he could describe the archaeological heritage he had seen during his visit to the Pella collection at Jerash in 1964.

Herb said Wooster's President Professor Howard Lowry was also pivotal in galvanising the college's support for the expedition as an expression of the college's passionate dedication to liberal arts education.

In 1967, the Wooster expedition was dealt a double blow by the 1967 Arab-Israeli war and the tragic and premature death of Dr Lowry, but Dr Smith worked hard to bring the team back to Jordan eventually teaming up with the University of Sydney.

"Dr Smith did absolutely the right thing by collaborating with Basil Hennessy and the Australian school of archaeology," Herb said. "It has worked out perfectly. I mean look at what has happened: it's a state of the art expedition and its still ongoing after 50 years," he said.

"What Wooster started, the Australians have really done a superb job at continuing," Herb said.

2017 Pella

After learning from Dr Porter of the Pella Volunteer Scheme, Herb, who describes himself as a "Professional Grandfather" and has an extensive track record in Middle East investment management, joined the field team in 2017 demonstrating his expertise in the trench, his gift for storytelling, and his advanced *kafiyyeh* arranging skills.

So what is it about Pella which fascinates Herb who worked with Dr Smith on the Pella of the Decapolis publication?

"First of all it's the continuous occupation that makes it so rich but also I'm fascinated by the Biblical record and Biblical times: the Middle Bronze Age. I think it's very exciting that the Canaanite Migdol temple has been discovered: an expression of Canaanite culture that existed for a thousand years and well before the Hebrew tribes even heard of Canaan."

Has archaeology changed much since his first visit?

"Of course there are some technological advances and of course every year we know more about the site but there is nothing that replaces the need to get down and dirty to do the work of archaeology.

"You are on your hands and knees with a trowel and a brush and you're digging and there is no substitute for that." □

Messages from the Desert

Revealing the undiscovered past of Jordan's Wadi Rum

By Glenn J. Corbett, American Center of Oriental Research, Amman

Jordan's Wadi Rum desert, located about 75km south of the famed ancient city of Petra, is one of the world's most spectacular and awe-inspiring landscapes. Named a UNESCO World Heritage site in 2011, Wadi Rum's towering sandstone mountains, sweeping dunes, and expansive desert vistas give the sense of being in another world. Indeed, it's no surprise that Wadi Rum is fast becoming a favoured backdrop for Hollywood sci-fi blockbusters like *The Martian* and *Rogue One: A Star Wars Story*.

But amid the natural, otherworldly beauty of Rum, the desert's remarkable human history has often gone unnoticed by travellers and scholars alike. In fact, for much of the 20th century, only a handful of intrepid scholars had braved this barren and inhospitable terrain in search of the archaeological traces of the various tribes, armies, merchants, and pilgrims who had lived in or passed through this remarkable but seemingly desolate region over the millennia. For archaeologists, typically more interested in cities and villagers than deserts and nomads, Wadi Rum remained very much *terra incognito*.

This void on the archaeological map, however, began to be filled by the pioneering research of Dr William J. Jobling, late professor of religious studies at the University of Sydney. Over the course of the decade-long 'Aqaba-Ma'an Archaeological and Epigraphic Survey (AMAES), 1980–1990, Jobling and a small but dedicated team of Australian and Jordanian field assistants traversed dune-filled valleys, narrow mountain passes, boulder-filled screes, and barren desert waste in search of any trace of the human past. What they found was an astonishing array of archaeological sites that evidenced the nearly continual use and habitation of this marginal desert environment across more than 10,000 years.

A Pioneering Archaeological Survey

During the course of its nine field seasons, the AMAES documented with photographs, maps, and drawings a desert landscape that was rich with undiscovered archaeological treasures. In addition to identifying small but remarkable desert settlements, including prehistoric stone enclosures, rock shelters, and an early Islamic village and open-air mosque used by passing travellers, the survey recorded the archaeology of extensive wadi (valley) systems that were intensively used and settled in the past. Amid these wadis, Jobling's team discovered numerous springs, catchment pools, wells, cisterns, and dams that made life in the desert possible, but also thousands of boulders and rock faces carved with rock drawings and inscriptions that were a visual and textual testament to the human experience within this bleak desert environment.

Dr William J. Jobling.

The sheer quantity of rock art and epigraphic material carved into the soft, colorful sandstones of Rum led the AMAES to focus considerable effort on recording this little studied aspect of Jordan's archaeology. On seemingly every stone were carved symbols, images, and even entire artistic compositions that provided evocative if often enigmatic windows onto the lives of the actual people who called Wadi Rum home throughout prehistory and antiquity. Though difficult to date, the drawings exhibit an intimate knowledge of desert wildlife, with realistic portrayals of common hunted animals like the ibex, ostrich, and oryx, as well as lions, cheetahs, and wild onagers, animals that haven't been spotted in Rum for centuries. Perhaps more interesting, some of the earliest rock art (presumably dating to the Neolithic period) depicts domesticated cattle like the Zebu bull that can only survive in lush, well-watered habitats, suggesting Rum once had a very different climate and environment than we see today.

And around 2,000 years ago, for reasons that are still not very well understood, the ancient tribespeople of Rum, in the thousands if not tens of thousands, took to carving their names and simple prayers and messages into the desert's boulders and rock faces. Their short inscriptions, carved in a rudimentary alphabetic script known to scholars as Hismaic (or Thamudic) but in a

Hismaic (or Thamudic) inscriptions in the stunning Wadi Rum.

language remarkably akin to Arabic, provide intimate insights into the lives and thoughts of the ordinary people who lived on the desert fringes of the ancient Nabataean kingdom centred at nearby Petra. The authors memorialise themselves and their ancestors, offer prayers of thanks, health, and security to their gods, express heartache and sadness over deceased friends and family, and autograph drawings of the animals that were critical to their daily existence, especially the camel and the ibex. Although Hismaic appears to have been widely used for no more than a few centuries, the "epigraphic habit" continued, with subsequent generations learning to write their messages—albeit in far small numbers—in Greek, Latin, and especially the elegant cursive script of the first Arabic (or Kufic) inscriptions. This tremendous open-air archive, made up of the texts of some of Jordan's earliest literate peoples, is only available to us now thanks to the pioneering work of William Jobling and the AMAES.

Fulfilling a Legacy of Scholarly Research

William Jobling unfortunately passed away in December 1994 at age 53, just as he was beginning the work of publishing and making available the important results of the AMAES. As the years passed, his widow, the late Lee Jobling, transferred the survey's impressive archive of photographs, notes, and maps to Richard Morgan, who had joined the survey for several seasons in the 1980s as photographer and field assistant. Housed at the Morgan family estate in Bathurst, New South Wales, the archive was made available to scholars and researchers interested in continuing Jobling's important work in Wadi Rum and, in 2005, the author, then a young Ph.D. student in archaeology at the University of Chicago, made his first visit to Bathurst to learn more about the survey's sites and finds. Over the next five years—and several more visits to Bathurst—I used the AMAES archive to develop a detailed geographic and contextual study of the Hismaic

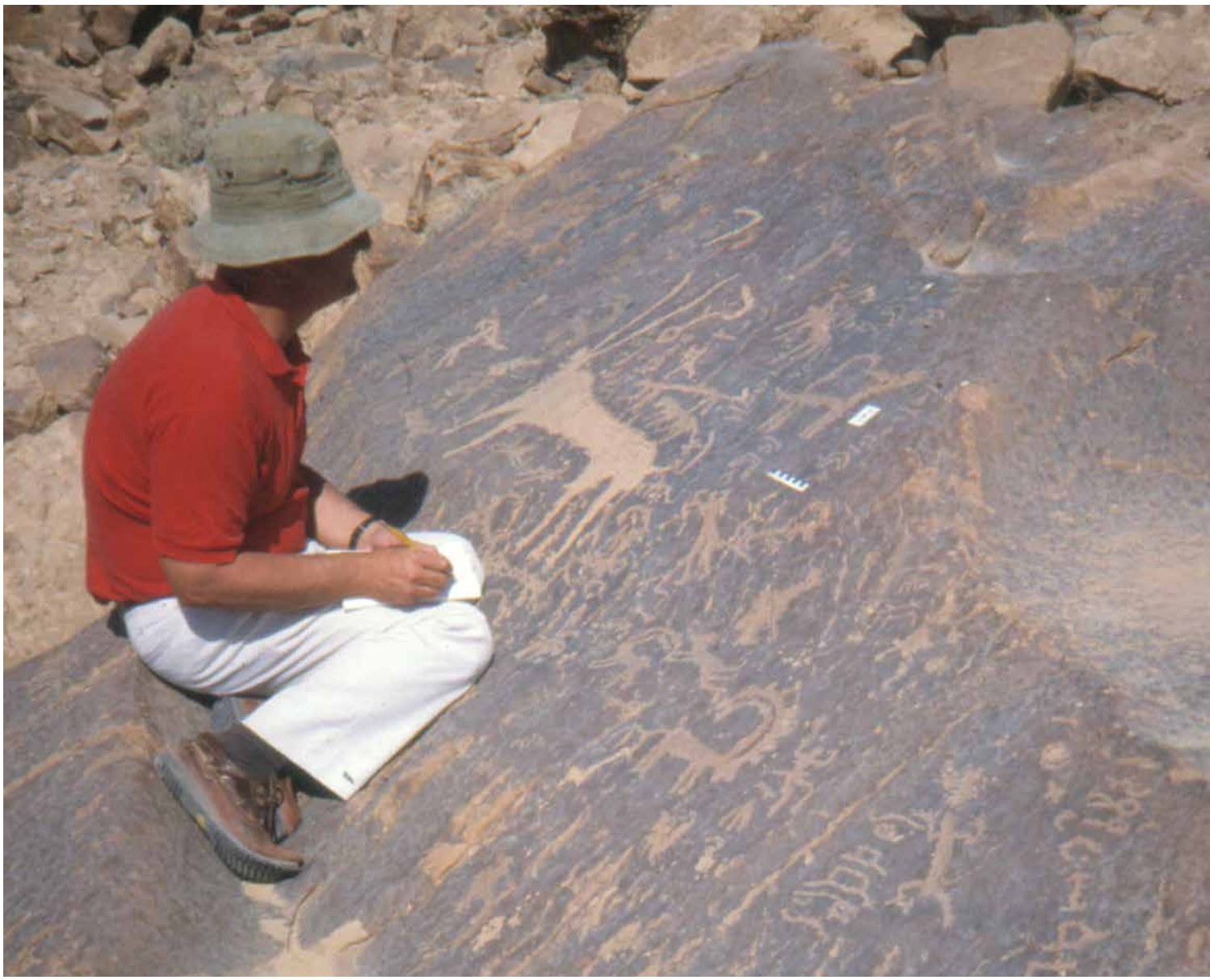
inscriptions and rock drawings found within Wadi Hafir, one of the richest epigraphic and rock art sites identified by the survey (for more, visit www.wadihafirsurvey.info).

But in using the AMAES material for my dissertation, I also made a commitment to the Jobling family to ensure that future scholars would have access to the survey's findings for their own research, thereby allowing the survey's path-breaking legacy to be preserved. As such, in my current position as associate director of the American Center of Oriental Research (ACOR) in Amman, Jordan, I began working with Richard Morgan and Jobling's daughters, Rebecca and Kate, to transfer the AMAES archive to Amman where it could be properly catalogued, digitised, and ultimately made available to researchers and even the wider public via the web. During another trip to Bathurst in September 2016, nearly 20 boxes of the survey's photographs and records were shipped to ACOR in Amman, where they are now being stored and processed for eventual scanning.

NEAF's contribution

During 2017, thanks to a supporting grant from the Near Eastern Archaeology Foundation, given in honour of long-time University of Sydney administrator and AMAES photographer and field assistant Michael Bannigan, ACOR's archival technicians will create high-resolution scans of nearly half of the survey's 5,000 colour slides, an important first step in preserving the collection for posterity.

As the digitisation project grows and secures additional funding, the survey's invaluable photographic data will be linked with scans of Jobling's field notes and on-site readings, maps showing the locations where inscriptions were found, and even the tracings that were occasionally made of the inscribed stone surfaces. Using the latest digital technologies, it is hoped that the results of Jobling's important survey can ultimately be made available through a robust and user-friendly online database that will finally reveal the wealth of Wadi Rum's little known archaeology to the world. ☐



Jobling recording petroglyphs at Wadi Rum.

Egyptians and Immigrants

Data Collection in Europe

By Bonnie Clark

NEAF Grant-in-Aid recipient

Although much has been said in regard to the archaeological and historical evidence for foreigners in Egypt during the Middle Kingdom and Second Intermediate Period (c.2050-1550 BCE)—with the inclusion of Nubian mercenaries in the Egyptian army, the possibility of migrant colonies of tradesmen from the Aegean, and the arrival and subsequent rule of Asiatics in the Delta—there has been little research into how this is reflected in the human remains dating to this time. The aim of my PhD project, therefore, is to evaluate the material evidence for immigration and integration in the Middle Kingdom and Second Intermediate Period, and compare this to the biological information gained through metric and non-metric assessment of crania from contemporary sites in Egypt and the surrounding regions. In doing so, I hope to be able to identify foreigners within the Egyptian population, as well as determine their possible origins through the inclusion of comparative non-Egyptian cranial samples. Furthermore, the results will eventually be broken down into clusters of sex, status, and geographical region, in order to assess whether the nature and extent of immigration was consistent, or fluctuated according to the above variables.

In July 2016 I travelled to Europe to begin my data collection, with the intent of utilising the extensive skeletal assemblages housed in the Duckworth Laboratory (Leverhulme Centre for Human Evolutionary Studies, Cambridge), the Musée de l'Homme (Paris), and the Panum Institute (Copenhagen University, Copenhagen). Nine weeks were spent between locations, and, after familiarising myself with the organisation and documentation of the collections, over 400 Egyptian, Nubian, Middle Eastern, and European crania were assessed during the regular working hours of the labs (usually 9am-5pm, Monday to Friday). There were, however, obstacles in locating and accessing temporally and geographically relevant crania from the Mediterranean and Near East which were preserved well enough for craniometric analysis, but I was fortunate in finding a few small Iron Age Mesopotamian samples, as well as a contemporary Danish sample as a representative European group. Age and sex were estimated via cranial indicators due to an overarching absence of matching post-cranial remains, and a brief examination for pathology or trauma was conducted before each skull was photographed. I then set about taking 29 measurements and recording the presence or absence of 30 non-metric traits for each cranium, ordered into separate spreadsheets for each site or sample. Upon even superficial observation, it quickly became apparent that there is much more diversity within and between Egyptian samples than previous anthropological scholarship had led me to believe. I was

Cranium of a 12th Dynasty Egyptian male from Aswan (Duckworth Laboratory, Cambridge).

able to use the CRANID software to confirm my suspicions of a highly mixed society by tentatively drawing biological affinities between some of my 'Egyptians' and various groups from Africa, Western Asia, and Europe provided in the CRANID database. I also observed a distinct cline in the samples, which emphasised a more "Caucasian" influence in the north and more 'Negroid' influence in the south. Not only was this demonstrated in the Egyptian samples, but it surprisingly continued into the Sudan, with C-Group Nubians from the Lake Nasser region exhibiting more similarities to Upper Egyptians than to their fellow C-Group Nubians from the Kerma region. These preliminary judgements, however, will need to be re-evaluated once I am able to apply statistical methods and analyse the numerical data.

Several other questions arose during my examination of the crania from Egypt and elsewhere, including whether the higher frequencies of dental attrition and poor dental health in Egyptians (as opposed to Nubian samples) was due to genetic or cultural factors, whether the process of immigration has an impact on the individual's general health, and whether those crania that aligned with more modern European populations in the CRANID database may be better matched to ancient samples from the Near East or Mediterranean for which there is a paucity of comparative data. This trip has certainly provided me with plenty of fuel for future publications!

Thanks to the generosity of NEAF, I was able to cover the cost of accommodation at Downing College, Cambridge, for the entirety of my time spent there. I would also like to express my gratitude to my supervisor at ANU, Dr Marc Oxenham, the funding bodies at ANU, the directors and staff at the Duckworth Laboratory/Leverhulme Centre for Human Evolutionary Studies, the Musée de l'Homme, and Copenhagen University, for permitting me to access and examine shelf after shelf of invaluable study material within their collections; and to the numerous other experts in the fields of archaeology and anthropology who have been so kind as to provide me with their time and support while I undertake my research. ☐

Trenches on the edge of 'Lake Petrie' at Naukratis.

A Greek Trading Port in Egypt

Excavation at Naukratis in the Nile Delta

By Wendy J. Reade

Deciding to spend a year living and working in Greece led me to many unexpected adventures. It was in Athens that I met Dr Alexandra Villing, of the British Museum. This meeting led to an invitation from Alexandra and her co-director, Dr Ross Thomas, to work on their excavation at Naukratis in the western Nile delta in May 2016.

Discovery of ancient Naukratis

The site of ancient Naukratis was the first Greek settlement in Egypt, probably founded in the 7th century BCE. It was an important trading city on the eastern bank of the Canopic branch of the Nile, being both a major Egyptian cultic centre, as well as a centre of administration for trade and taxation. The Canopic Nile was the main link between the Nile Valley and the Mediterranean Sea at the time, but it no longer exists today, and there are few visible remains of the city. Finds from the site include imported East Greek and Phoenician/Levantine trade amphorae, Greek and Corinthian fine-ware pottery, as well as Achaemenid Persian finds, and it is likely that the city continued to function as a major regional centre until early Byzantine times.

Naukratis was discovered by Sir William M. Flinders Petrie in 1884 and excavated over four seasons until 1903. Large parts of the town were uncovered, including the Greek sanctuaries of Aphrodite, Apollo, Hera and the Dioskouroi, the large 'Great Temenos', later identified as an Egyptian temple complex for the god Amun-Ra, as well as workshops, streets and houses. Despite this and subsequent work, our understanding of Naukratis remains incomplete and controversial, due to the limited and selective study and publication of the excavated material. The current excavations are being undertaken to fill gaps in our knowledge about the site, its function and development as a major trading entrepôt in the region, and the resulting influences of the two great civilisations on each other.

On the flight from Greece to Egypt I reflected on the ancient connection between these two lands through trading routes that were plied across the Mediterranean below, and along the waterways of the delta to the Nile Valley. Was there a wooden trading ship preserved in the black mud at Naukratis? As I pondered the not insignificant conservation issues such a find would bring, the deep blue sea beneath us gave way to the densely green

The fields of Kom Ge'if.

delta triangle. Somewhere in its midst hid the secrets of ancient Naukratis, while at its apex we descended towards the pale dusty enormity of concrete Cairo.

Arrival at Naukratis

The next morning our small excavation team boarded a minibus for the journey north to the small agricultural delta village of Kom Ge'if: our home for the next three weeks. We hurtled along, lurching and swerving with the rest of the mad flow. Trucks loaded several times higher than they were wide defied gravity. Huge vehicles bore down on us, while others pushed up on the inside. One blast of the horn was advance warning, two signalled pushing past through space that didn't exist, and three indicated that somehow space had been stretched to achieve the manoeuvre. Just as relief was sighed, a donkey cart trotted head on into our stream of traffic. The bus swerved deftly as the traffic bounced over unmarked speed humps, and then careened around road-side sellers who darted between the cars with hands full of corn, or tissue packs. Brakes are only for the faint-hearted.

As if to keep pace with the frenetic traffic, the temperature was rising; it was well over 40 degrees Celsius most days of our stay. When we neared Kom Ge'if our bus turned off the main highway north to bump along a narrow hard-packed earthen road. Now traffic consisted of donkey and buffalo carts, tuk tuks that serve as local taxis, and lumbering tractors. We stopped at the site of Naukratis for our first inspection before heading on to our apartment.

In the early 20th century, the tell, or mound, of Naukratis had been dug away by Petrie and the *sebakhin*, who used the rich mud bricks as fertiliser for their fields. The site is now a depression in the flat landscape that fills with ground water to form what is known as 'Lake Petrie'. It is dotted with clumps of reeds that are homes to white egrets, though its stagnant waters are unhealthy and the government on occasion drains it. As of 2016, the water had partly refilled the depression so excavation was only possible around the edges, where the archaeologists hoped to elucidate features of the city. There were two areas where new trenches were opened on the edge of the lake on what would have been the riverside on the long vanished Canopic branch of the Nile, and on the northern side, both waterlogged, unshaded and insect-infested.

Our accommodation was a second floor apartment on the outskirts of town, overlooking the fields. The vast rooftop outdoor area provided an ideal place to sit in the afternoons to wash and sort pottery, and to watch golden sunsets before menacing mosquitoes drove us inside. From this wonderful vantage point we could survey the daily routines of the farmers, the progress of the wheat harvest, threshing the yellow grain and ploughing the rich fields, the village children flying kites, and the constant parade of farm carts: a visual feast as old as time. But it was the incessant noisiness of this rural scene that was so unexpected. Carts drawn by beasts of burden clanked loudly along the packed earth road. Tractors worked almost around the clock, often heard thundering past our apartment in the early hours of the morning, at which time there was once a traffic jam and much honking of horns as a parked vehicle blocked a tractor on our corner. As that din subsided, the Call to Prayer took over, the mosquitos tore voraciously at my bed netting, and so it went all through each night. I wondered how Petrie had found it.

Inside, our little four-bedroom apartment had a central living room with a small balcony where a few of us worked on cataloguing, drawing, photographing and conserving the finds, which were mostly pottery: a mix of local Egyptian and imported Greek wares, highlighting the function of this site as a trading port. I spent happy days cataloguing and conserving these ceramics. There were a few tantalising pieces of waterlogged wood, but no ship preserved in the black mud.

Work at Naukratis

I was amazed by the skill of a very experienced archaeologist amongst us who had excavated the rich black Nile silts for long enough to be able to distinguish black mud-bricks from the surrounding black mud silt. "There, you see!" he exclaimed poking his trowel point into the black sludge. "That is a mudbrick", deftly tracing its outline with the trowel. "And here another, and another." More outlines traced. "But this is just silt", stabbing the point into more black mud. "Feel the difference!" in a triumph of excavation experience. I took the trowel and prodded as instructed, but had to admit defeat: proof that archaeology is as much an art as a science, with skills of observation, judgement and interpretation refined over years of practice.

Excavation was not the only source of information available to the archaeologists. Our geologist spent his days traversing stubbled fields in the wake of harvesting tractors, opportunistically targeting places to core the earth, before the tractors returned to plough the fields. He and his workers turned the auger by hand as it bit down into the ground, and extracted sections of earth that provided a vertical snapshot of what lay beneath the surface. Sometimes these cores contained pottery and soil changes that indicated settlement activity. Sometimes they were pure black Nile silt, evidence of the long lost course the Nile flowed when the city was alive. With day after day of methodical augering, it was possible to identify and map this section of the now silted Canopic river branch.

A magnetometer was used to detect and map archaeological features that are buried in the ground, without excavating them. It requires walking straight, equidistant transects of fields at a steady pace, with the equipment carried on poles in an 'H' configuration, harnessed to the front of the operator's body. As the operator walks, the instrument measures spatial variations and contrast in the magnetic properties of the soil and subsoil. And because it detects magnetism, it is of course sensitive to the presence of iron in particular, requiring that the operator and workmen not wear or carry anything made of metal. This led to some amusement amongst the workmen as they had to remove belts from their trousers, and tie them up instead with string. Clothing with metal rivets, zippers, or buttons couldn't be worn, and there was much examination of each other's attire to determine whether buttons or studs were actually metal or plastic.

The data captured by the magnetometer is manipulated on a computer, producing a map of the structures detected underground. The precision of this technique is helping to correct and extend earlier maps of the site, especially of areas once excavated, but now increasingly encroached upon by the expanding village fields, and by lake levels rising once again. High lake water, crop-yielding fields, and the ever-expanding village greatly impede the investigation of this significant site.

As the hot days wore on, communication from the trench supervisors developed into a charmingly mock-formal correspondence written on sheets of thick paper torn from field notebooks and hand-delivered by a workman to me in the 'house'. These notes would typically read, "*Dear Wendy, Please supply this fine gentleman with pottery that needs to be returned to the site. Would you also be so kind as to supply some sheets of A3 graph paper? If there is a spare long measuring tape, that would also be*

Digging through the black Nile silt.

Wendy reconstructing a transport amphora.

most welcome. Best wishes E & A." Or sometimes just a jolly, "*Dearest Wendy, Have fun! Kind regards E & A*", on the delivery of some lovely new pottery jigsaw for me to mend.

Apart from my conservation and cataloguing tasks, I began to include kitchen duties in my repertoire. We had a small kitchen containing a stove with one working gas burner, cold water only, no cupboards, flies, and a shelving system cleverly constructed from plastic water bottles cut in half and suspended on a web of strings attached to a few nails in the wall. Each dangling half bottle provided storage for cutlery and other kitchen items, while food storage was improvised in boxes at one end of the living room. A few of us took turns to prepare the evening meal: cooking dinner for thirteen on a one-burner stove was a culinary challenge, but the results were always tasty and much appreciated at the end of a hard day.

We bought supplies from a small supermarket in Damanhur, a larger town half an hour's hair-raising drive from Kom Ge'if. Here I was happy to find dried dark red hibiscus flowers. When steeped in boiling water with a little sugar they make an infusion, which the Egyptians call *karkade* (kar-ka-day). I discovered this refreshing drink when I first worked in Egypt in the 1980s, and now made fresh jugs of the crimson brew for the team to enjoy chilled when they returned hot and weary after a day in the field.

Apart from Damanhur, our only grocery 'shop' was the weekly village market a few dusty streets from home. It made a delightful break from indoor work to walk to the market, trade greetings with the townsfolk and shop for fresh produce, in a hybrid of broken Arabic and English.

As the excavation season came to an end, my last task was to reconstruct three large Greek transport amphorae, wine or oil containers symbolic of the trading heart of this ancient city on the edge of Nile. By the stamps on their handles, the fabric of their ceramic, or the distinctiveness of their shapes, the archaeologists can identify their origins and bring to life the story of a once great trading centre, where two cultures met and enriched each other.

The methodical rhythm of our daily routines echoed the age-old rhythms of the landscape, until the excavation season finished as the harvesting and ploughing were also nearing their end. The fields had turned to a dark dry brown as May was slipping into June, even though the full force of summer had yet to be felt. It was time for us all to move on and wish new-found friends bon voyage. I was nervous about my return flight to Athens on Egypt Air because, only the week before, the airline had lost a plane in a terrible accident over the Mediterranean. This time I couldn't bear to look out the plane window, but huddled, blinkered, in an aisle seat until touch down in Athens signalled a safe arrival. I was bound straight for the Peloponnese for my next fieldwork engagement, but that is another story.

I am grateful to Ross Thomas and Alexandra Villing of the British Museum for inviting me to work with them on their exciting project, and for allowing me to write this vignette of life and work on their excavation. ☐

For further information on the British Museum work at Naukratis, visit: http://www.britishmuseum.org/research/online_research_catalogues/ng/naukratis_greeks_in_egypt.aspx

The Wandering Star of Ghassul

From the east to the west – and back again?

By Bernadette Drabsch

Some of you might have noticed that late last year the stunning 'Star of Ghassul' returned to view, having inexplicably materialised on the western horizon. This unforeseen reappearance of the star was first noted in a controversial exposé written for '*The Times of Israel*' and published on November 13, 2016 (http://www.timesofisrael.com/mysterious-6000-year-old-star-mural-sees-first-daylight-in-jerusalem/) which was followed by a more cautiously worded article written for the Israel News published on the 16th of November (http://www.haaretz.com/israel-news/.premium-1.753414).

These articles came as a great surprise to me, as they mentioned that the famous 'Star' wall painting from Teleilat Ghassul, had been removed from the Rockefeller Museum, skilfully conserved and displayed at the new headquarters of the Israel Antiquities Authority, located beside the Israel Museum. Since this was reported, as I did my PhD on the Ghassul wall paintings (and published a book on the subject), I have frequently been asked

whether I knew this was happening, and my opinion of the conservation efforts and the chosen venue for display. When archaeology and politics intertwine, outcomes are rarely optimal, and as the controversy surrounding the 'Star' illustrates, even material excavated long before the Second World War remains a matter of contention. Let us start with a bit of background.

The 'Star of Ghassul' fresco as painted after lifting by the artist associated with the Pontifical Biblical Institute. Frontispiece 'Teleilat Ghassul Vol 1.' Mallon, Koeppel & Neuville 1934.

Lifting the plastered slabs on the southern side (29.12.1932).

Lifting the main section that included the star motif.

The 'Star of Ghassul' was originally part of a much larger wall painting, first uncovered in December 1932 by Fathers Mallon and Koeppel and their team from the Pontifical Biblical Institute. The large mural, measuring 8 x 5.5 metres, was originally connected to the western wall of Room 10 in a large multi-room complex, located on the north-western region (Tell 3) of the 20-hectare site of Teleilat Ghassul. Mallon stated that it was found in close association with pottery, flint and bone objects of high quality.

The excavators estimated that the painted wall on the western side of the dwelling must have been at least 3 metres high before suffering collapse (perhaps in an earthquake). The 6000-year-old painting lay a mere 20 cm below the modern surface of the site when discovered. The Jesuit excavators also noted that the large, eight-rayed star (which measured 1.84 metres in diameter) sat at the centre of the mural, and was surrounded by an interesting array of figural, geometric and architectural motifs.

Due to the large area of the painted wall, which had collapsed face down, the excavators were unsure of the best method of extraction. After considerable debate, they started by cutting the fresco into slabs and covering the back of these with plaster: a technique that they had used with bone and fossils. This met with some success and they lifted a few of the slabs from the Southern (left) side of the painting in that manner. Koeppel noted that these slabs came from the portion of the painting that contained the masks.

Once Father Koeppel had lifted several slabs, he realised that the designs were beautifully preserved and intriguing in design. He became concerned about accidently cutting through an important part of the design which couldn't be seen from the back. So, after much debate, the excavators decided to lift the main part of the fresco—the middle of the mural—as a single block, using a method more typically employed for lifting mosaics. The principal of that technique consisted of constructing a solid and strong wooden container to completely surround the fresco (top and bottom), reducing the need to slice it up. Ideally the painted surface would remain 'sandwiched' between two layers of earth and bricks. When the packing was completed, they just had to turn the completed 'box' over, transport it to a suitable store-room, and carefully reveal the fresco contained therein…

However, in the initial exposure it was noticed that the painting had collapsed onto other fallen debris, and broken into two parts. One of the two parts had slipped a few centimetres forward, away from the other, leaving a gap between the two portions.

Housing the frescoes

It would appear that once the painting had been fully excavated, it was boxed and taken to Jerusalem and at some point, during the succeeding years, it would end up in two different storage facilities. The smaller plaster-backed fragments were placed in the Pontifical Biblical Institute in Jerusalem, where they remain today. However, Koeppel made note in his 1940 volume that 'the original Star was now in the Archaeological Museum in Jerusalem' and he published a photograph taken by Herr Schweig in 1938, showing the central star motif '*in state at The Palestine Archaeological Museum, Jerusalem*'. While it was certainly common practice for artefacts to be 'divided' between local authorities (in this case the British Mandate Palestinian Department of Antiquities) and foreign missions (the PBI), it was rather odd that a single painting might be divided, even then. So, one must wonder what the purpose of this separation was, when it occurred and whether a formal division took place at all.

In 1932, when the painting was excavated, the British Mandate Department of Antiquities was situated in Way House, Jerusalem, an old building with a small exhibition hall. While it is possible that the star portion of the fresco was taken to that facility straight after excavation, it is perhaps more likely that it was originally placed in the more substantial PBI building with the other fragments and at some later stage, the more stunning part of the painting was relocated to the newly built Palestine Archaeological Museum, where in 1938, the photo was taken of it 'in state' by Herr Schweig. In 1938 the beautifully designed Palestine Archaeological Museum had just opened its doors, having been funded by a $US2 million grant from wealthy American philanthropist, John D. Rockefeller Jr., and it is possible that the British Mandate Department of Antiquities wanted to have the most significant artefacts displayed in their new facility.

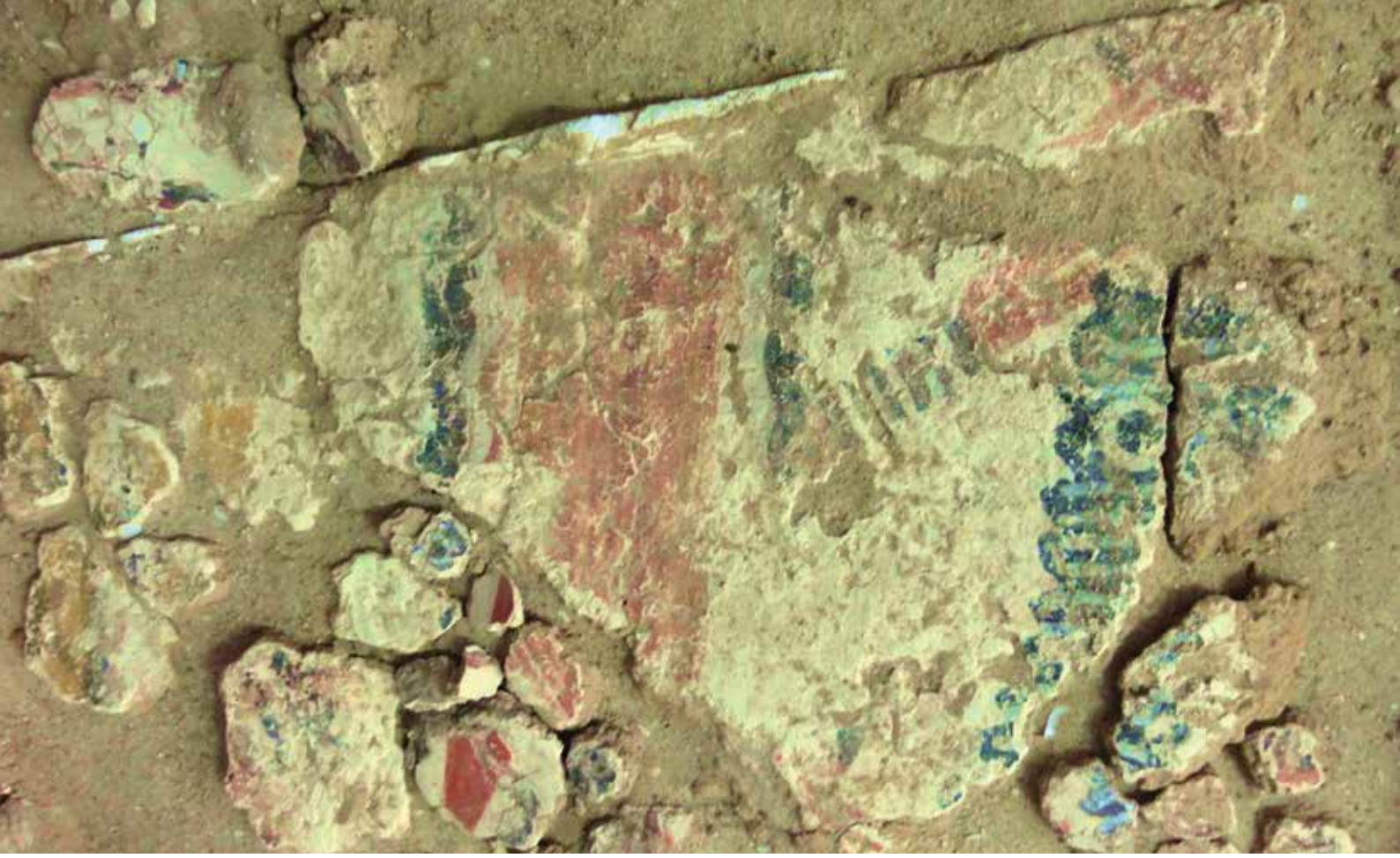
Bernadette viewing the uncovered 'Star' fresco in the basement of the Rockefeller Museum, 2010.

This lovely art deco building came to house most of the important artefacts excavated in Mandatory Palestine, which then covered all of the later territories of Israel, Palestine and Jordan. In addition to the impressive museum display rooms, there were conservation labs, and a library. The innovative design featured a central courtyard with sunken reflecting pool, and offices for the newly established Department of Antiquities for Palestine, spread over a 10-acre (4 hectare) plot overlooking the Mount of Olives. Unfortunately, the original grand vision for this museum could not be realised due to the increasingly bitter Arab-Israeli conflicts after 1947. The division of Jerusalem in 1948 saw the museum literally on the front-line between warring parties, with many of the functions of the British Mandatory authorities coming to be vested in the Jordanian Department of Antiquities, which was housed in the building after 1949. The museum continued to be run by an International Board of Trustees, but the increasingly strained financial circumstances of the Museum forced its nationalisation by the Jordan government in 1966. During the fierce fighting in Jerusalem in 1967, the Museum was occupied by Israeli paratroopers, and subsequent to the war, came under Israeli control, as the building was regarded as war booty, being a Jordanian governmental building at the time of seizure. The status of the artefacts curated by the Museum was less clear, and remains so to this day. The Palestine Museum was renamed the 'Rockefeller Museum', and came to be managed jointly by the Israel Department of Antiquities and Museums (now known as the Israel Antiquities Authority) and the Israel Museum.

Unfortunately, the legal limbo in which many of the artefacts curated by the museum stood, meant that funding the conservation, research and display of the collections became increasingly problematic as the years rolled by. It was not clear who had the right or indeed the responsibility to work on the materials, and this led to neglect and deterioration of many significant elements of the collect1ion. This neglect impacted very severely on such fragile artefacts as the 'Star of Ghassul' fresco, which was stored largely uncovered, in the basement of the Museum from 1938 to 2016.

Recent Investigations

As part of my PhD research into the wall paintings of Teleilat Ghassul I travelled to Jerusalem in 2010, with



The smaller portions of the 'Star' fresco housed in the PBI, Jerusalem, 2010.

the hope of examining extant wall painting fragments, and accessing unpublished records of the excavation and subsequent research on the wall paintings. As the original PBI publications mentioned that some of the 'Star' fresco was held at the Palestine Archaeological Museum, a visit to that facility was on the top of my list. Entry to the museum involved numerous security checks, but I was eventually granted access to view some rare unpublished documents and more importantly, the fragile fresco. Despite a determination to remain professional and detached, my first instinct on seeing the neglected, dust-covered mural was to cry. This artefact is so important to the history of art, the history of religion, the history of social complexity and the cultural heritage of Jordan, but was sitting forgotten and unappreciated. After taking many photographs in an attempt to record each broken fragment, I left the fresco in the basement with a heavy heart and an appeal to its current guardians to take better care of it.

It was with some dread that I then tried to locate the remaining fragments of the fresco at the Pontifical Biblical Institute, in Jerusalem. The Jesuit priests were very helpful, and although the fragments took a while to find, it was a relief to see that they were in a much better state of preservation, having been stored in a number of sealed wooden boxes, and housed in their museum. Fortunately, the original colours were still bright and the motifs easily visible. I photographed and recorded these fragments, as I did with the remains of the other frescoes and records held in the attic. My PhD research into the frescoes revealed many new insights, and I became convinced, after much deliberation, that the 'Star' most likely represented a very early form of a deity, perhaps similar to the later Mesopotamian goddess Inanna, making the unique fresco very likely to be one of the earliest forms of sacred art.

Modern News

I was therefore surprised to hear that the Israel Antiquities Authority had recently decided to conserve the badly damaged 'Star' fresco, and more problematically had chosen to display it (albeit temporarily) in their new headquarters situated in West Jerusalem. Whilst I was happy to see the 'Star' beautifully restored, several pieces of the larger scene housed nearby at the PBI were unfortunately not included. The 'Star' fragment was also displayed incorrectly having been rotated 90^0 clockwise from its correct orientation and there was very limited contextual information displayed along with the 'Star'.

As a result, I've been left to ponder some difficult questions. While the careful conservation of the 'Star' is to be applauded, the removal of the 'Star' from the Rockefeller and its display in the West Jerusalem headquarters of the IAA would appear to cross some guidelines relating to cultural property as outlined in the 1954 Hague Conventions. I will admit to feeling very torn. Whilst I am happy to see the beautiful and fragile artefact conserved I would like to see it find a permanent home displayed alongside other significant artefacts from Ghassul, perhaps in the Jordanian National Museum. Of course, this need not preclude travelling exhibitions in other lands, including Ramallah and Jerusalem… but then, I'm an idealist living in a far from idyllic world… ☐

Olives growing near Pella today: inheritors of a 8000-year-old tradition.

Extending the Olive Branch

Research into the prehistoric exploitation of the olive tree and its fruit the southern Levant

By Anne Dighton

Catherine Southwell-Keely Grant recipient

It is difficult to imagine our lives without olives and olive oil. For those of us fortunate enough to have spent time around the beautiful Mediterranean, it is also difficult to imagine that landscape without the distinctive and, to my mind, regal and evocative presence of the olive tree. Despite this, our understanding of the exploitation of the tree in prehistory is limited when compared with our understanding of the process and impact of human exploitation of cereal crops.

Pliny writing in the *Naturalis Historia* argued that:

"*except for the vine, there is no plant which bears a fruit of as great importance as the olive.*"

But what of the importance of the fruit and oil of the olive tree before Pliny was extolling its virtues? The form and scale of prehistoric human interaction with the iconic olive tree remains unclear.

In areas where olive trees would have formed part of the natural environment in prehistory, little is understood about the role they played in the lives of the communities that shared that environment, particularly during the Neolithic and Chalcolithic periods. This is despite the significant presence of olive remains in archaeological occupation deposits during these early periods. Olive domestication is generally believed to have first occurred in the eastern Mediterranean in the southern Levant, though we have a limited understanding of the earliest impact of anthropogenic pressure on the olive tree itself, and the broader environment in which it grew.

Given the olive's contemporary importance in cultural, economic and even political terms, how might we be able to conceptualise its importance as far as back as 8000 years ago? My doctoral research allows me the great privilege of working on the archaeobotanical assemblages of two sites key to the attempt to answer this question —Pella and Teleilat Ghassul—both located in the Hashemite Kingdom of Jordan.

Ghassul & Pella

Teleilat Ghassul in the southern Jordan Valley has been pivotal in gaining an understanding of this early human-olive interaction. The presence at the site of significant quantities of olive fruit remains and olive wood charcoal dating to the Chalcolithic period demonstrates significant olive exploitation by the Ghassul inhabitants much earlier than had previously been thought. John Meadow's morphological analysis of olive endocarps, or pits, demonstrated a significant size increase, and a significant reduction in variation in the size of the stones through time at the site suggesting the Ghassul residents were managing the olive trees in the area, possibly by selecting trees with larger, fleshier fruit, or perhaps by simply removing less desirable trees.

Pella has a long occupation history, beginning in the Late Neolithic period. The earliest contexts at Pella provide us with consistent evidence for exploitation of olive trees by the Pella inhabitants. This is exciting as it is among the earliest evidence in the world for olive exploitation, beginning as early as 6200 BCE. In addition, Pella has what is potentially some of the world's earliest evidence for small-scale, domestic production of olive oil dating

to approx. 5000 BCE. Gaining further understanding of the purpose, scale and impact of this exploitation in these earliest periods at Pella will form part of my PhD research, however, there is no doubt that the Pella inhabitants were interacting with olive trees much earlier than previously thought.

Research Methodology

The methodology on which my research will be based involves the use of proxies for understanding human-woodland interactions in the form of the identification and analysis of seeds, fruit and wood charcoal. Other proxy data will also be investigated, including correlation of data from the study with existing regional pollen records and genetic investigations into olive tree domestication, in addition to investigation of relevant stone tool and pottery vessel types and potential evidence for installations for the production of oil. Analysis of both the fruit remains and the wood charcoal at these sites will allow a greater understanding of how and why these early interactions with olive took place and what the impact on the surrounding environment and woodland composition may have been as a result of the increased exploitation of these trees. I also hope that these analyses will allow me to look at the change through time of the form and scale of human-olive interaction to provide some insights into what sociocultural change olive exploitation may have brought about in the organisation of daily life at Pella. What kind of changes were wrought by the introduction and availability of what may have been seen as a "luxury" resource that was more than simply another component of a subsistence regime?

Teleilat Ghassul has already provided fantastic evidence for people manipulating a valuable resource in their environment but there is more to be done. Further investigation and analysis of the wood charcoal at Ghassul will allow a greater understanding of the woodland species being exploited at the site, the climate during the Late Neolithic and Chalcolithic periods in the region and the role the olive tree played in the economic life of the people of Ghassul. At Pella, the long occupation sequence provides me with an unparalleled assemblage through time to explore the changing relationship of the people living there with an important resource in their landscape; a resource that went on to become one of the most important and iconic tree crops in the world.

2016 Research

I am immensely grateful to NEAF for awarding me the Catherine Southwell-Keeley Grant. The grant allowed me to undertake a research trip to Europe in April/May of 2016. In addition to giving me the opportunity to travel to Vienna to attend and present at the International Congress on the Archaeology of the Ancient Near East (ICAANE) conference, I was able to meet with scholars in Europe and the United Kingdom to discuss different theoretical and methodological approaches to my research. Presenting at ICAANE gave me the opportunity to talk about the

Late Neolithic olive fragments or jift (the by-product of pressing of olives for oil) from Trench XXXIIG 509.1.

updated archaeobotanical research and results from Pella and also establish some excellent contacts for the future.

The grant also enabled me to travel to Berlin and Liverpool. Dr Reinder Neef is one of the foremost archaeobotanists working in the Near East. Dr Neef has worked extensively in Jordan and wrote a seminal paper in the 90s on olive domestication, a paper on which I, and many other researchers, have relied heavily. I spent an interesting day with Dr Neef and his colleagues in their lab at the Deutsches Archäologisches Institut (DAI) in the beautiful Berlin suburb of Podbielskiallee. I confess sitting in an historic laboratory, drinking pots of tea and chatting with the scholar whose work has informed much of my own was hardly a tough day at the office, particularly as our discussions continued over lunch at a nearby beer garden on a beautiful, sunny Berlin day! I also spent time going through the extensive reference collection of plant remains, both seeds and fruits in addition to wood charcoal that Dr Neef has compiled over decades of fieldwork.

Dr Eleni Asouti from Liverpool University in the UK is one of the world's foremost experts in wood charcoal analysis. I spent a valuable day with Dr Asouti discussing some of the methodological challenges of the wood charcoal analysis component of my research. I was also able to meet with Professor Douglas Baird, Head of Department of Archaeology, Classics and Egyptology who co-directed excavations at the site of Tel Shuna North in the north Jordan Valley. Tel Shuna North is another site key to understanding human-olive interaction in the region and Professor Baird has offered me the opportunity to use the archaeobotanical assemblage from the site as an adjunct to my PhD research. I was able to spend time in the impressive lab facility at the University doing some preliminary analysis of the assemblage. I also met with Professor Lin Foxhall, Head of School of Histories, Languages and Cultures and author of one of the definitive books on Classical period olive exploitation.

My thanks go to NEAF for their support; the trip would not have been possible without their support. ☐

Aerial view of Area A trenches AI-VIII during the 1967 season.

J. Basil Hennessy and Teleilat Ghassul

Celebrating Fifty Years of Australian Excavation and Research (1967-2017)

By Stephen Bourke, Director, Ghassul Excavations

Introduction

Basil Hennessy first visited Teleilat Ghassul in January 1952, while serving on Kathleen Kenyon's excavation staff at Jericho. He went to the site with another aspiring young archaeologist, James Mellaart, because Kenyon had lectured them on the need to re-investigate this famous proto-urban township, as the main period of Ghassul's occupation, the fifth millennium BCE, was missing at Jericho. And so a long and eventful relationship between Australia and Ghassul began.

Teleilat Ghassul was discovered by a Jesuit archaeological mission from the Pontifical Biblical Institute in 1928. The White Fathers had been looking for Sodom and Gomorrah, and were attracted to the huge 20ha site on the north-eastern shores of the Dead Sea because its ash-covered hillocks seemed a good candidate for one or the other Biblical site that had met with the deity's displeasure. Excavations led by fathers Mallon and Koeppel began work in early 1929, and to their credit, they recognised very early on that this was not the Biblical site they were seeking, but continued the exploration of what turned out to be the spectacular centre of a completely unknown prehistoric culture.

Over the course of eight field seasons between 1929-38, the industrious excavators revealed to the world one of the most startlingly original cultures ever to grace the Holy Land. A particularly brilliant manifestation of this 'Ghassulian' culture was the presence of polychrome wall paintings, at that time a revelation in both the art world and that of archaeology. The wall paintings were a combination of complex geometric forms, such as the still enigmatic 'Star' (of which more in the article by Dr. Bernadette Drabsch), impressionistic renderings of animals (the 'Bird'), and decidedly odd masked and elaborately garbed figures (the 'Notables'). Alongside these artworks, the Ghassulian culture featured elaborate multi-roomed, thickly plastered mud-brick dwellings, sophisticated painted ceramics, exquisite bone, ivory, shell, polished and chipped stone items. And to add the final touch, the Ghassulian was the first culture to use copper extensively, ushering in the Chalcolithic period, the age of copper and stone.

When it was finally established (after much wrangling) that the Ghassulian followed on immediately from the rather uninspiring Late Neolithic cultures Kenyon had uncovered at Jericho, the mystery deepened, and commentators evoked distant lands as the likely homeland of the Ghassulian culture, venturing origins as far afield as southern Mesopotamia or the Nile valley. A consensus

grew up that the Ghassulian was a short-lived brilliant immigrant culture, which had nothing to do with local Neolithic predecessors. That was the 'state of play' when Hennessy led the first season of renewed work at Ghassul in January 1967.

Hennessy at Ghassul (1967-77)

Hennessy's first ten weeks' work achieved a lot in a single season. His deep probe in Area A penetrated some 5.5m through the site, isolating nine individual building phases, reaching hitherto undetected Neolithic levels at the base of the site. Hennessy's conclusions overturned the then-current consensus, as he argued the later phases of the more 'Classic' Ghassulian culture grew out of earlier horizons that resembled Neolithic predecessors. He concluded the Ghassulian was indeed an indigenous south Levantine culture, originating in the local Neolithic.

As well, in his more extensively excavated upper strata, Hennessy uncovered neatly constructed brick plastered longhouses, one of which had preserved a 'chunk' of wall painting (the 'Zig-Zag' fragment), recently reinterpreted as perhaps the lower part of a striding figure. Finally, he noted clear evidence for several phases of severe tectonic disruption in the upper levels, and much evidence for 'squatter' occupation in the phases immediately after earthquake disruption.

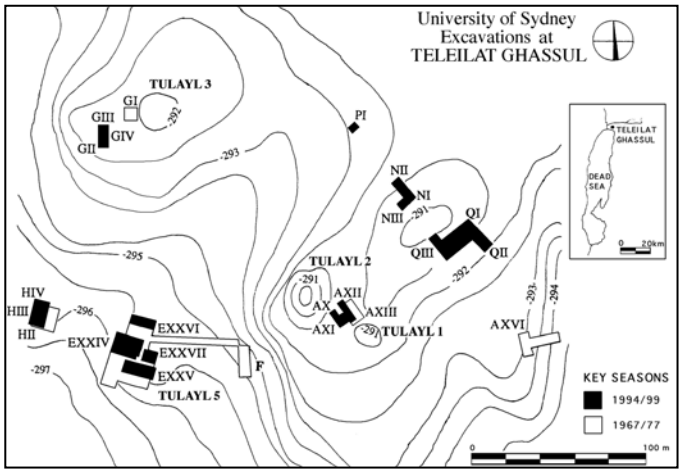
Conserving the freshly excavated wall paintings in 1977.

Basil Hennessy drawing the Area F III-V sections in November 1977.

Hennessy had planned at least three seasons of work at Ghassul, but the Six-Days' War of June 1967 put paid to those plans, with the Jordan Valley becoming a war zone until 1974. Once the valley was re-opened to fieldwork, Hennessy returned to Ghassul for another three seasons between 1975 and 1977.

Originally based in Jerusalem for the 1967 season, Hennessy took up a professorship at Sydney University in 1973, so that when he returned to Ghassul in September 1975, it was as the Director of the first major Australian-based field project in the Middle East. He opened ten new areas of excavation across the 20ha ruin-field, immediately discovering the famous sanctuary Complex (Area E) while expanding his deep sounding (Area A), and exploring the north (Area G), west (Area H), east (Area L) and southern (Area M) margins of the settlement. Highlights of the 1970s excavations were certainly the discovery of the two sanctuary buildings in Area E, along with much unusual cultic paraphernalia; fragments of two Neolithic round-houses at the base of the Area A sequence; and to cap it all off, a large and complex wall painting ('the Procession'), probably the most beautiful (and important) of all the stunning wall art recovered from Ghassul.

At the end of his fieldwork at Teleilat Ghassul,



Plan of Teleilet Ghassul showing the Australian excavation areas.

Hennessy had made a very strong case for the Ghassulian culture having local Late Neolithic origins, suggesting that any attempt to seek foreign antecedents to the culture was simply unnecessary. Further, he was able to show that in its most brilliant 'Classic Ghassulian' phase, the settlement developed carefully planned sub-urban housing complexes linked together by wide streets and open piazzas. As well, by the last phases of occupation, the settlement had developed public cult places, industrial quarters characterised by flint tool manufacture, specialised pottery production, and extensive agricultural storage facilities, which taken together suggested developing craft specialisation and the beginnings of social stratification. In short, Ghassul seemed to be developing many of the features that later came to define complex urban lifeways, but dating precociously early at around 4200 BCE. Perhaps tongue-in-cheek, Hennessy styled Ghassul 'the City Beneath the Sea'. Had he discovered the first true city in the southern Levant?

Renewed Sydney University excavations (1994-1999)

Building on Hennessy's carefully delineated stratigraphic sequences of pottery and stone tools, Sydney University excavators returned to Teleilat Ghassul in 1994. In the nearly twenty years intervening, important changes had transformed Near Eastern archaeology. The first was the increasing emphasis on documenting the economic underpinnings of early societies, and the second was the availability of portable computers to record and analyse the ever-increasing quantities of ever-more varied datasets. In the 1970s few excavations sampled systematically for botanical and zoological remains, with all information retrieved from excavations recorded on small file-cards, which soon came to rival the actual datasets in bulk and complexity. By the 1990s, all excavated sediments were sampled for botanical remains, and all zoological assemblages were scrutinized for changing frequencies of sheep and goat, cattle and pig.

These more carefully applied techniques of analysis were deployed to investigate a new generation of questions concerning late prehistoric settlement history. Now scholars aimed to document the process by which small subsistence-level Neolithic villages transformed into economically diversified, socially sophisticated Chalcolithic townships, seeking to identify key horizons of change, and the major factors involved in the transformation.

Hennessy's careful recording of the nine phases of domestic occupation, beginning with Neolithic round-houses, and moving through a series of increasingly more sophisticated multi-room plaster-lined rectilinear dwelling units, was the perfect subject for a study of 'the ways and means' of late prehistoric economic development.

A second developing research concern in the 1990s focused on the role of religion and cult practice in the regulation of increasingly larger-scale complex societies. Hennessy's discovery of a stand-alone sanctuary area in the southwest of the site (Area E), coupled with his identification of an earlier 'house shrine' in Area A (the structure containing 'the Procession' wall painting), allowed us to contemplate investigating the nature of changing cult practice over time.

We opened new trenches in all of Hennessy's major excavation areas (Areas A, E, G and H), while exploring new areas of the 20ha site, in the central north (Area N), the far northeast (Area P), and the central southeast (Area Q). Over the course of four seasons work (1994-99), we managed to establish complete sequences of occupation in the far west (Area H), the northwest (Area G), the northeast (Area P), the southwest (Area E), and the central tell (Area N) for the first time, while expanding probes in Hennessy's original deep sounding in Area A. These numerous complete sequences allowed us to determine the rate of settlement expansion over time, along with a growing economic diversification in the later horizons.

One further major change from the 1970s was the recognition that the increasingly complex business of excavation and analysis was no longer something one person could deal with, not helped by the fact that in my case, I was running parallel excavations at Pella, some 70km further north in the Jordan Valley. The deployment

Tony McNicoll (right) and Mark Watt removing a fragment of wall painting at Teleilat Ghassul during the 1977 season.

Excavations underway in 1994 in Area A.

of postgraduate students, writing their doctorates on aspects of the Ghassul story, immensely assisted in the process of analysis and publication. In rapid succession, PhDs on Areas A (Lovell) and E (Seaton), botany (Meadows), and zoology (Mairs) rolled off the slipways. Studies of the stone tools (Cropper) and wall paintings (Drabsch) followed some time later. Other studies on textile manufacture and dyeing, copper metallurgy, and account-keeping devices (tokens), as well as overview summaries of stratigraphy and architecture, integrating the 1990's work with Hennessy's, are all in progress and well advanced.

1990's discoveries

The most noteworthy discoveries of the renewed excavations included the addition of the 'altar arc' and large storage facilities to the two known sanctuaries in Area E. Among the agricultural storage facilities in Area G, we may have found some of the earliest evidence for domestic kittens, which gladdened the hearts of our cat-mad fraternity. We explored sub-floor baby burials in Area Q, which contained intriguing miniature ceramic vessels, along with a miniature hematite macehead. This strongly implied that these infants had a status unrelated to their longevity, with clear implications for a developing social stratification. We recovered stamp seals and tokens in Area A, the first hints of developing bureaucratic practice, ultimately leading to the invention of writing. One small 'chunk' of polychrome wall painting ('the Garlanded Sickle') was added to the corpus, discovered in a new area of excavation (Area N). Finally, we explored a complete 20m x 10m housing complex in Area H, no more than 5cm below the surface sands, documenting courtyard work areas with stone tools still *in situ*, along with exterior cooking and animal feeding zones.

The careful analysis of the botanical and zoological assemblages provided many new insights into the major 'gear-changes' in the prehistoric economic progression from subsistence to reliable surplus. Key features include the development of olive domestication (among the earliest in the world) after 4500 BCE, and the slow change in textile production from flax/linen to wool, the domestication of the donkey, soon used to transport commodities across the region, and the use of the ox for deep plough agriculture. Careful scrutiny of the animal dung residues revealed the likely employment of crop rotation practices and green field fallowing, along with some limited use of check-dam irrigation. These increasingly sophisticated agricultural practices, featuring greater crop diversity and ever-more efficient production modes, documented the growing strength (and resilience), of Ghassulian economic activity over time.

Finally, we were also able to present a reliable absolute chronology for the Ghassulian culture. Radiocarbon dates had been produced in the 1970s, but these were few in number, and (as it turned out) technically flawed. We recovered a long sequence of short-life samples from each of several excavation areas, and with the help of colleagues at ANSTO, were able to overhaul understanding of Ghassulian chronology, showing it was a culture largely confined to the fifth millennium BCE. Crucially, we were able to show that the Ghassulian had ended by around 3900 BCE, much earlier than previously suspected, which forced other fieldworkers to re-examine their Chalcolithic datasets from sites in the Beersheba basin, returning similar results to ours at Ghassul. We now know that all Chalcolithic occupation had ceased nearly 500 years earlier than previously suspected, removing any remaining suggestion of Egyptian involvement in the demise of the culture, as there is no evidence for Egyptian presence, far less intense involvement, in the southern Levant before 3600 BCE.

The future?

It is now nearly twenty years since our 'renewed' excavations ceased. Most of the data has been processed and quite a lot published in preliminary and final form. We are now in a far better position to understand the development of the economic underpinnings of the movement from Neolithic period subsistence-based village life to an economically diverse, socially complex urban lifeway at the end of the Ghassulian. The role of religion and cult in the regulation of societal order is still hotly debated, but our work at Ghassul, especially Peta Seaton's on cult and Bernadette Drabsch's on wall paintings, underlines both the prominence of public religious ritual throughout the later stages of the Ghassulian, and the sophistication of its final manifestations. Craft specialisation, bureaucratic practice and social stratification all develop towards the end of the sequence, as houses become more elaborate, foodstuffs more plentiful, crafts more skilled, and exotic foreign goods (jewellery items) more numerous.

And yet, many questions remain unanswered. We may be much clearer on the origins of the culture, and on its key developmental pathways, but we are no closer to a definitive answer to questions surrounding the demise of the Ghassulian. Some advocate climate change, others economic collapse, still others disease or large-scale conflict. All these possible explanations were mooted fifty years ago, when Hennessy first came to the site. We are no closer to a solution today. Perhaps its time for another 'return'? □

A sketch by J.S. Bell showing his observation of a Russian camp during the Russian/Circassian war.

On Her Majesty's Secret Service

Excavating a dolmen in Circassia and other antiquarian adventures

By Maree Browne

'Over the gate on the northern side I observed a long and very distinct Greek inscription, although its height prevented my reading and copying it; and on part of the column, with its capital reversed, and now hollowed out and used as a mortar, there was an inscribed, "Divo Antonino, Divi Antonini". An Antiquarian would find this town [Sinope] worthy of an examination.'

Journal of a Residence in Circassia. Vol.1 p. 5

This quote and those that follow are from my great, great, great uncle's memoir of his time in Circassia in the late 1830s. The memoir is an extensive, two volume, tome detailing his time there as an agent/spy for elements within the British government. The book is *Journal of a Residence in Circassia* by James Stanislaus Bell. While I have his brother's copy—my great, great grandfather's—the journal is still in print and is considered to be one of the definitive histories/descriptions of the Caucasus during the Russian/Circassian war. James Bell was a dedicated sympathiser on the side of the Circassians and used his ships—the family were Scottish traders and ship owners—to bring arms to support the Circassians. This caused a major international incident between Britain and Russia and is known as 'The Affair of the Vixen.'

Circassian Archaeology

But to matters archaeological. While James Bell was in Circassia he took great interest in and recorded many physical features of the country as well as extensively recording traditions and customs. This included commentary on the antiquities he saw in his travels. He comments that there were *'Some scanty traces of antiquity which I have noted...'* This has meant that while there are commentary and illustrations of these, they are not extensive. However, he did excavate one barrow/tomb in the Semez Valley; now the valley of the Ozereika River which flows into the Black Sea at Tsemess Bay. This area is rich in the remains of dolmens.

What struck me in my great, great, great uncle's description of the excavations is how little has changed in atmosphere and antics in excavating a tomb or indeed the paucity of finds in many. Those of you who have dug will identify with the scene described below.

In the midst of a forest, which occupies the centre of this valley is a very large mound or barrow of huge stones, conceived to be the tomb of some mighty chieftain of old, especially as the stones are said not to be of this part of the country. Some months since we were taken to see this tomb, and expressed great desire to have it opened; but we found tools, men, and inclination, all wanting; and were told, moreover, a wondrous story of a former attempt on a small scale—which we saw had been made—when the men who were at work were terrified by strange and fearful sounds, and by one of them having his head turned round. In short, a Jin, or returned soul, was supposed to have its haunt there, and to attack those who dared to violate its dwelling. We therefore gave up the matter as hopeless, and should possibly have thought no more of it, had not the Circassians— emboldened, no doubt, by the result of my prediction of the eclipse—informed us they had made up a party to make another attempt upon the tomb, provided I would promise to be present. I did so; and a party of thirty or forty men assembled on the first day, and before I could get down two messengers had come to hasten my arrival. The scene which presented itself would have made a good subject for painting. The forest waved above us with a strong

Bell's drawing of a dolmen in the Pshat Valley.

wind, which moaned among the half-leafless trees, and added to the eeriness of the scene; the workmen performed their labour in the silence of expectation, which was shared in by the spectators, who crowded round the edges of the excavation, and only intermitted their anxious gaze downwards by an occasional glance at the expression of my face when any piece of bone, great stone, slab, or trace of structure, gave expectation of the feared retreat of the Jin, or of the locality of the hoped-for treasure. A group of smokers sat apart, beside a blazing fire among the tangled underwood and trunks of great fallen trees, and near them, tied to the branches, snorted our impatient horses. Directions were demanded of me as to where the opening should be made, and my opinion asked as to whether treasure might be expected to be found. Of this I gave no hope, as I had none; but said perhaps some ancient arms might be discovered. I presume, however, they imagined my magic-experience not to be great as to treasure-troving; for, notwithstanding my discouraging prognostications, they worked for three days, and became so hardy, through my assurances and their own experience, that there was no danger, as to do without my presence on the third. The mound was excavated to its very base ; but all the reward it yielded was a nest of ground-squirrels (exceedingly fat), a snake, some bones, and fragments of vases of red pottery. The skins of the former I have preserved among my collection of Circassian animals: chiefly birds.

Journal of a Residence in Circassia. Vol.1 pp. 282—283

James Bell did in fact draw one of the dolmens that he saw in the Pshat Valley, the area around modern Dzhanjot as well as record some artefacts that came to his notice.

Since my return to this part of the coast I have experienced a very severe mortification with respect to antiquarian research. About a year ago a man, who resides three or four hours' distance inland from Sashe, [modern Sochi] *while ploughing his ground discovered a small pit, in which he found buried a vast variety of articles of great value. Among others there have been mentioned to me a large silver basin and ewer; several small gold and silver figures; bowls, bracelets, and necklaces, of the same metals; gold, silver, and copper coins, sufficient, as is said, to fill the bonnets of two men. Immediately on hearing this account I begged that whatever remained of these articles might be brought to me, and in a few days a man arrived with the remainder; viz., a bracelet formed of a thick wire, very ductile from the purity of the gold, with triangular compartments at each end, in which were set jaspers adjoining the hook and eye for clasping; a short thick neck-chain of the same metal (with a hook and eye at each end) passed through the centre of a buoy-shaped ornament, thickest in the middle and diminished toward each end, and set with jaspers in chased compartments; the half of a small silver bowl; and a few copper coins so corroded from age that I cannot decipher them.*

The whole of the rest of these curious relics of antiquity had been disposed of, those of gold and silver for the purpose of being melted and used for the ornamenting of arms! Half of the bowl had been sold to be melted, and in cutting it for that purpose a rent had been made in the remaining portion. Those who take interest in such subjects will find in the drawing I have made an exact copy of all that remained of the engraving the bowl had been adorned with; and to these antiquarians I leave to determine the epoch (evidently very remote) "of a troublous world", when this treasure was restored to its mother earth for safety.

Journal of a Residence in Circassia. Vol 2 pp. 406—407

James Bell was well educated in Classical languages and history but was also knowledgeable of the writings of the other cultures who had interacted with the Circassians.

That considerable materials for a history of the Caucasian

tribes in general do exist in the literatures of Greece and Rome, of the Turks and Arabs, I firmly believe; but I doubt whether these sources have yet been exhaustively investigated, or their value as evidence critically examined.

Journal of a Residence in Circassia. Vol. 1 Preface x

He was also aware of his own shortcomings and makes this clear in his Preface.

More than one writer has expressed, in a confident tone, his own notions upon this subject. I trust it will not be esteemed presumption on my part (for presumption consists, not in refusing a blind confidence to the statements of any man, however distinguished, but in an over-estimate of one's own knowledge and abilities, and an underestimate of those of others), should I, after much consideration, give it as my opinion that the necessary preliminary inquiries are yet to make in regard to the history of this singular and interesting people.

Journal of a Residence in Circassia. Preface ix—x

James Bell's interest in so many aspects of the natural environment and the material culture of the places he travelled through were a life long endeavour. This is shown in his recording and publication of the archaeology of Circassia, as well as of its botany and the geology.

Off to the Mosquito Coast

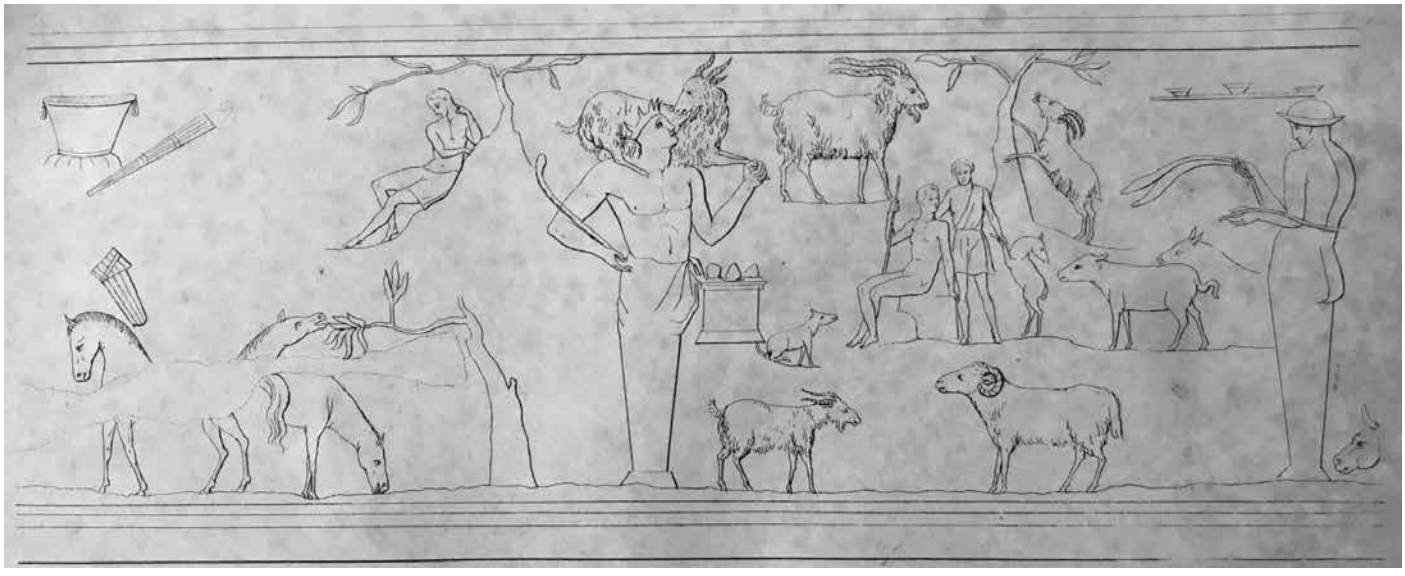
James Bell left Circassia in October 1839. He subsequently became Sheriff and Commandant of the Mosquito Shore (part of modern Nicaragua) in 1841 and lived there for many years raising the young king and the king's sisters as well as his own children. These children were given into his care by their father, King Robert, shortly before his death. My own great, great grandparents visited him there with my great, great grandmother giving birth to her last child in Blewfields, Mosquito Shore in 1842. He continued his scientific interests and particularly his interest in botany throughout his time on the Mosquito Shore. He collected and illustrated plant material for Sir William Hooker, Director of The Royal Botanical Gardens at Kew while he was resident on the Mosquito Shore.

He did retain a great love and passion for Circassia and its people for the rest of his life. The quote below exemplifies his love of this place and its people.

But I am omitting to insert, in its proper place, an incident of unexpected occurrence, and of surpassing gratification. The greater part of Thursday had been so overcast, that I had ceased hoping for a view of the higher mountains, which continued enveloped in a dense mass of clouds. Shortly before sunset, however, these clouds were somewhat suddenly removed, and the magnificent spectacle was vouchsafed to me, of Elburz, "giant of the eastern star", seated aloft amid his courtier-mountains, whose silvery robes glittered gorgeously in the golden beams of the evening. I could, in the excitement of the moment, almost have fancied that the Guardian-spirit of the land had thus deigned to gratify me, in reward for my humble endeavours for its benefit; and for an hour or so my mind wandered amid reveries over the past, present, and future fate of that land of historical romance, mingled with many glowing recollections of the hospitable hamlets of many friends whom I was parting from, perhaps for ever. Next morning, at sunrise, I was again favoured with a view of these most picturesque mountains—which reduced to insignificance those behind Gaghra I had been accustomed to look on as lofty—but it was but a brief forget-me-not glimpse, when they were again enshrouded in vapour.

Journal of a Residence in Circassia. Vol.2 p. 411

In writing this article I realised that there must be many more such journals and memoirs that have recorded lost monuments and customs that are not readily available to academics. Indeed James Bell, in the quote above, makes this point about earlier literature. So readers, search your attics for old travel diaries, postcards and letters from family and friends for there may just be some treasures among them that record lost places and people that are of wider interest than only to family members. ☐



Bell's drawing of the nearly-destroyed silver bowl unearhed by a farmer near modern Sochi.

Assessing the Role of Migration at Samtavro Cemetery, Georgia.

By Natalie Langowski

Leone Crawford Travel Grant recipient

Samtavro cemetery is a vast necropolis situated in the Southern Caucasus region of the Republic of Georgia. Thousands of burials have been excavated from the 18ha site which was most extensively used during the Roman and Late Antique periods (300 BCE—600 CE). During this time, the nearby town of Mtskheta formed the administrative capital of the Iberian Kingdom, and hosted a dense and multi-cultural human population. Ancient Mtskheta has been described as a cultural melting-pot, with abundant evidence of contact with neighbouring civilisations, including traded goods and gifts, and borrowed architectural technologies.

The Transition

Recent excavations at Samtavro have exposed a cultural transition that occurred between the 4th and 5th centuries CE in the later period of the Iberian Kingdom. Prior to this transition, two of the most common burial types at Samtavro consisted of tile-lined burials, and stone-cists. Tile-lined burials typically contained single articulated interments, while stone-cists frequently contained secondary burials of numerous mingled individuals. Radiocarbon dates from both burial types indicate that tile-lined burials ceased to be used after the 4th century CE, and stone-cist burials came to predominate the burial record. This shift in burial traditions was accompanied by the appearance of adult individuals with artificially modified crania, and new artefact types such as bronze mirrors within stone-cist tombs.

The co-occurrence of these novel cultural features at Samtavro may indicate that a new cultural influence entered the region in the 4th-5th century CE. Archaeologists have tentatively suggested these new traits are consistent with the cultural hallmarks of nomadic tribes from the Eurasian steppes, such as the Huns. Many of these tribes practised artificial cranial modification as a means of distinguishing their group members, and were highly mobile in the Eurasian steppes with the onset of the Migration Period in the 4th-5th centuries CE. It is unclear if the appearance of cranial modification in Mtskheta during the Late Antique period represents a local origin, or if it was introduced to Mtskheta by migrants who used this cultural practice.

Strontium Studies of Human Mobility

To investigate the origin of this cultural transition, I intend to use strontium stable isotope analyses of human remains from Samtavro to test whether individuals with modified crania originated in Mtskheta, or migrated to the region from elsewhere.

Strontium stable isotope ratios have proven very useful in studies of human mobility. The ratio of Sr87/Sr86 isotopes in tooth enamel is derived from the environment where the person (or animal) spent their childhood. Thus if the Sr87/Sr86 ratio from a tooth differs from the local strontium signature where the person was buried, it can be inferred that the individual migrated to the region at some point during their lives. This comparison can be made once the local range for strontium has been defined, which can be achieved by measuring the isotope ratios in plants, snail shells and faunal tooth enamel from the geographic area near archaeological sites of interest.

Densely packed stone-cist burials at Samtavro cemetery, near the town of Mtskheta, Georgia.

Sample Collection and Analyses

I visited Georgia in the summer months of 2016 to collect research samples, including human and faunal tooth enamel from Samtavro cemetery, as well as plant and snail shell samples from the surrounding region.

Human and faunal tooth samples were collected from the Georgian National Museum collections in Tbilisi and Mtskheta. The skeletal remains of individuals included in this study were also analysed to determine their sex and age-at-death, and species in the case of fauna.

Upon returning to Australia, preparation of the collected samples was completed at the University of Melbourne School of Earth Sciences clean laboratories, and strontium isotope ratios were measured via inductively coupled plasma (ICP) mass spectrometry under the tutelage of Dr Roland Maas.

Emerging results are preliminary, however, the human strontium isotope ratios show very low variance, suggesting that most of the individuals studied originated from the local area, including most of those with modified crania.

Acknowledgements

I would like to express my deepest thanks to NEAF, Dr Varsha Pilbrow, Dr Colin Smith, Prof Tony Sagona and Dr Roland Maas for all their support, time and guidance. In addition, I thank our colleagues from the Georgian National Museum, Batoni Vakhtang Nikolaishvili, Dr Maka Chkadua, Dr Nika Vanishvili, Mzia Rcheulishvili and Nana Kiladze for their help and support in Georgia. ☐

Palmyra in 2001 seen from the public road that divides the ruins.

The New Ruins of Syria

By Ross Burns

Syria is a singular treasure trove of numerous phases of world culture: Bronze and Iron Age, Classical, Byzantine, Early Islam, the Crusades, and the great cultures of the Islamic Middle Ages as well as the Ottoman centuries. It brings together a more representative sample of these cultures than perhaps any other country. Moreover, it shows these cultures interacting in a way that is seen in few other regions.

The present conflict in Syria has since 2011 brought many of the country's great range of monuments and archaeological sites within range of one of the most intense and sustained conflicts the region has ever seen. Much attention has been paid to how much has been lost as a result, perhaps initially stimulated by the world's reaction to the sacking of the Baghdad Museum in 2003. While reports are sometimes exaggerated, and taken out of context, the toll of damage has been considerable. Some of the country's most spectacular remains have been deliberately destroyed while many more have been lost in the heat of battle. Two cities have suffered particularly, but from rather different aspects of the conflict.

Two cities, two fates

In Aleppo, the fact that the initial lines of confrontation between the Assad regime and its rebel opponents centred on the zone in the middle of the historic walled city brought a heavy concentration of damage. As a result, much was lost in the heat of battle, with the government forces occupying the Ayyubid fortifications on top of the citadel and the rebels adopting firing positions deep within the alleyways, mosques, and madrasas of the old city at the foot of the citadel.

A totally different pattern of destruction was visited on Palmyra upon its occupation in mid-2015 by the forces of so-called "Islamic State" (IS). The occupation of the modern town of Tadmor and the extensive classical ruins of ancient Palmyra was intended from the start to enlist monuments as weapons of war. Choosing the most iconic and intact of the remains of the great desert trading centre, once poised between the Roman and Parthian/Sasanian empires, IS explosives experts proceeded systematically around the city destroying all the buildings which were either the most intact, the most richly decorated, or the most offensive to their Salafist ideology.

The IS rampage began with two Islamic saints' tombs and proceeded to destroy two of the city's most spectacular temples of the Roman period: the Temple of Baalshamin and the central shrine of the great Temple of Bel. In later stages, the IS experts detonated most of the structure of the city's Monumental Arch and some twelve or more of the most intact of the beautiful tower tombs, which had stood like sentinels on the fringes of the Roman-era city.

This campaign of obliteration was accompanied by other measures to drive home the message of IS's "s*top at nothing*" campaign of destruction, which extended to the staged execution of Syrian officials, of recalcitrant townspeople, and of the notable Syrian scholar Khalid al-Assad, who had spent his career of fifty years in the city. Khalid al-Assad had been responsible for the presentation of what had once been assumed to be a 'one-period' (Classical) site as part of a continuum of cultures extending well into the Islamic Middle Ages. This message of a mingling of cultures across millennia was clearly not what IS wanted to hear, and al-Assad was brutally executed by IS's favoured method, beheading. IS's final gesture was to ransack the beautiful archaeological museum in Palmyra. Though much was rescued before IS's arrival by the dedicated staff of the museum and the Directorate General of Antiquities and Museums in Damascus, a range of larger pieces fastened to the walls could not be removed in time and some of the most precious of the museum's sculptural finds were subsequently defaced or smashed.

The sacking of Palmyra and the imposition of a Salafist code on its citizens were gleefully signalled in IS propaganda as a demonstration of their ruthlessness. After the site was regained by Syrian forces in March 2016, it was adopted by the Syrian and Russian propaganda machinery as a symbol of the country's expected regeneration, but little could be achieved in the light of a continued IS presence in the region. IS forces retook the largely depopulated city again in December 2016. This time they have not exploited the ruins to launch a renewed propaganda offensive, but satellite imagery has revealed a resumed pattern of quiet destruction targeting the Roman theatre and a magnificent Tetrapylon structure that marked a flexing of the city's great colonnaded axis. It too had been restored under Polish supervision in the 1960s.

Whether IS consciously sought to destroy as much of the city's blend of Roman and Eastern influences as could readily be reduced to rubble or simply wanted to develop a spectacular example of their methods to terrify Syrian and international audiences into backing off any campaign to defeat them is not clear.

Clearly, however, the ruins of Palmyra were seen as weapons of war not in any physical sense but in terms of a psychological battle which IS saw as one of its chief fronts in the conflict. The Salafist mind clearly sees any depiction of human or animal figures, any commemoration of the dead with monuments to their memory, and any shrines of "pagan" origin as fair game—as seen by the pattern of destruction they have left in their wake across Syria.

Aleppo, too, suffered from the inclination of other Islamist forces to use spectacular acts of destruction as a measure of their supposed prowess. Central Aleppo was not occupied by IS, but other Islamist forces joined in the 'Islamic Front', a grouping sponsored by Gulf interest groups, which set to work to reduce a section of the most symbolic buildings of central Aleppo to ruins in late 2014. Their methods were even more effective than IS's bombing experts' repertoire.

At the foot of the entrance gate to the Aleppo Citadel stood an array of buildings that dated back to the great works of the city's Ayyubid rulers at the peak of the Islamic confrontation with the Crusaders. Other buildings in the area commemorated the early Ottoman presence in the city, which they sought to promote as the first stepping stone on the route of the Hajj pilgrimage. In this zone, nine or more "tunnel bombs" were set using cavities excavated to secrete huge explosive caches under selected buildings. The effect of these massive detonations was usually enough not only to reduce a building to rubble but also to pulverise its remains into a heap of powder. One of the first targets was the Ayyubid madrasa, used as a burial place of a son of Saladin, al-Zahir Ghazi.

The minaret of the Aleppo Great Mosque

If there is one building, though, that shows how some of the most precious of Aleppo's symbols as a great centre of Islam have been lost, it is the minaret of the Aleppo Great Mosque. The mosque itself had already been seriously damaged in intense clashes that resulted from rebel forces occupying positions in this area, seeking to challenge the official forces in the Citadel. One of the rebels' most prominent firing points was the Great Mosque's exceptionally beautiful 45m-high minaret. The only

A marvellous depiction of veiled women once found in the Temple of Bel at Palmyra.

building in Syria that dates from the years of Seljuk rule in the late eleventh century, the minaret fell, probably as a result of heavy artillery or tank fire, in April 2013. Though many other minarets of the city centre also suffered partial damage, the total collapse of this building has left a singular gap in the country's architectural record. Gone is a building representing a stunning blend of the influences that played across northern Syria over the centuries, from Byzantium to the Crusades.

It would be wrong to give the impression that these two cities suffered immeasurably greater physical damage than others. They do, however, represent a particularly harsh concentration of destruction of buildings of great historical significance and a demonstration of the determination of the conflict's participants to let nothing stop them achieving their ends. Across Syria, much of the pattern of destruction, though, represents the haphazard choice of historic sites as zones of conflict, not necessarily as targets chosen for specific ideological reasons. Given the country's dense network of sites of all periods and the arbitrary way in which the conflict has spread across Syria, few areas (except those firmly held by the government throughout the conflict) have been spared. It should be remembered, however, that the civilian population and housing have been much more directly targeted for destruction. It would therefore be unfortunate to see Syria's monuments as treasures that should be selectively protected when virtually the whole population of the country finds itself at risk.

Looking to the future

However, it can be said that the preservation and restoration of historic sites and buildings will be an important element in the country's eventual reconstruction, reviving an important revenue-generating asset and as a means of reminding the world of the complexity of Syria's many faiths and ethnicities. Only by embracing this complex vision again, instead of the "year zero" that IS would encourage, can a viable Syria be restored.

Meanwhile, we can only be patient. Archaeological zones can't be ring-fenced from the rest of Syria and preserved. The best role for outsiders is to preserve for dissemination as much of the records of Syria's past as has been acquired in foreign reserves and museums. Nothing should be held back as a revenue stream on the pretext of copyright.

Syria has recovered from comparable disasters over many centuries (though none was waged with quite the same intensity and spread as this one). Reconstruction should be part of the challenge of regenerating the whole society. The beauty of Palmyra, its temples, tombs, Arab fortress, and colonnades, cannot be conjured up in 3D models or expensive vanity projects dreamt up by foreigners. Those who can best restore its monuments are the very artisans who aided numerous restoration projects over the years using the same quarries exploited by the ancients just beyond, for example, Palmyra's city limits. Virtually all the monuments IS destroyed in Palmyra were

The Seljuk period minaret at the Great Mosque of Aleppo photographed in 2008.

carefully recorded in recent decades by Syrian, Polish, and French researchers. Their publications and records exist. We don't need 'virtual' reconstructions whose authenticity will soon wear thin.

Perhaps the wisest words come from the great Polish expert who spent much of his long career exploring Palmyra, Michal Gawlikowski:

The restoration of ancient buildings must come later, when the war is over. Even then, the [priority] will be to save the people, not the monuments. That's why the discussion around restoring Palmyra is futile; nothing should be done before the city's inhabitants are able to return. The architecture and the monuments can wait; they're already broken, nothing will happen to them.

The Art Newspaper, October 21, 2016

And finally, let's hope for truth in the words of the celebrated Islamic scholar Ibn Jubayr who visited the city of Aleppo nine centuries ago:

The town is as old as eternity yet it has never ceased to renew itself.… When its kings depart, this wondrous city remains; they perish but the city survives. □

This article first appeared in The Iris, published by the Getty Museum, February 2017.

The Intention and Function of Ushebtis

By Sharyn Volk

NEAF Grant-in-Aid recipient

The 2016 Grant-in-Aid supported my recent travel to Vienna to present a paper at ICAANE. The trip also provided an opportunity for me to conduct research at the Kunsthistorisches Museum.

My research as a doctoral candidate at the University of Melbourne is investigating the intention and function of ancient Egyptian funerary figurines, more often described as shabtis/shawabtis or ushebtis. Within the framework of examination of the nature of depictions on the containers used to house the figurines, the ICAANE presentation addressed the notion of the figurines being actors in the offering rite. Examination of the decorative elements evidenced on a corpus of containers designed to protect funerary figurines reveals a disconnection between the meanings attributed to these elements and the current understanding of the intention and function of the figurine. Examining the nature of the representations on these containers contributes to a contextual understanding of what they were protecting. A wide range of decorative elements represented on funerary figurine containers supports a relationship between the figurines and the offering rite. The paper explored the potential of the funerary figurine being an actor in that rite, and it will be published in the proceedings of the conference.

The presentation was attended by Dr. Vera Müller, the head of the Institute for Oriental and European Archaeology of the Austrian Academy of Sciences. Dr. Müller provided very positive feedback in support of my contentions at the conference, and has since corresponded with me confirming she considers my '*interpretation as a real advance in the interpretation of these objects*'. As I am approaching the completion of my doctoral research the opportunity to garner this support was invaluable.

Although ancient Egyptian scholars represented the minority of attendees at the conference I was very fortunate to meet Dr. David Aston, a faculty member of the Austrian Academy of Sciences, Egypt and Levant, and author of the most extensive typological analysis of 'shabti' boxes which was referenced in my paper. Prof. Manfred Bietak was the joint organiser of a workshop examining palaces in the Near East and Egypt, and one of the highlights of the conference was my attendance at this workshop during the section when four speakers, including Prof. Bietak, presented papers considering Egyptian palaces.

Dr. Regina Hölzl, the Director of the Egyptian and Near Eastern Collection at the Kunsthistorisches Museum, and a member of the 10th ICAANE organising committee was very kind in facilitating my visit to the museum to examine and photograph a selection of New Kingdom funerary figurines held in their collection. The ancient Egyptian galleries in the museum include a room devoted

Funerary figurine of Sennedjem. New Kingdom.
© Kunsthistorisches Museum Vienna.

to funerary figurines and their associated containers and implements. The highlight of this collection is a beautiful figurine of Sennedjem, whose tomb complex is located at Deir el-Medina (TT 1). The wall decorations on this tomb include a depiction of Spell 110 from the Book of the Dead, considered in my thesis within the context of the portrayal of workers in the Field of Reeds. I was most grateful for the generosity of Dr. Hölzl in removing this figurine from exhibition so that I could photograph it.

During my visit to the museum I was also able to examine a number of figurine boxes inside their display cases. Included in this selection was the funerary figurine box of the prophet Montu Neseramun, dated to the Third Intermediate Period (TIP) and mentioned in my ICAANE presentation as an example of a box depicting decorative elements which allude to its contents. During the TIP Book of the Dead Spell 6, often described as the shabti spell, frequently appears on the figurine boxes. On this example the inscription is seen on three sides of the box, and the long side portrays a representation of the deceased making an offering of a funerary figurine to a mummiform seated god holding an ankh. □

Iran is a sumptuous country of gardens and cool retreats from the heat outside. In this case, the Dowlat Abad Garden in Yazd.

Iran: In Depth

May 2017

Tour Leader: Ben Churcher

In April/May 2017 21 NEAF members, in conjunction with Academy Travel, travelled to Iran to explore this extraordinary country so often misrepresented in the western press.

This tour began in Tehran, Iran's capital: a busy, often smoggy city but with some fantastic museums to help us prepare for the trip ahead. Leaving Tehran we headed to the Caspian Sea and the very different world of Iranian Azerbaijan. Here rice paddies dominate the landscape framed by wooded mountains to the west and the Caspian to the east. Next, making Tabriz our base, we explored this unvisited but important city and journeyed out to Maragheh: home to a Mongol Period observatory and some fine Seljuk Period tower tombs. From Tabriz we then travelled to Zanjan visiting the incomparable Mausoleum of Oljeitu along the way. This towering edifice dates to the Mongol Period and demonstrates the 'Persianisation' of the conquering Mongols superbly. From Zanjan we travelled up into the Zagros Mountains on a beautiful Spring day to visit one of my favourite sites, Takht-e Soleiman, once the home of one of the four imperial fires of the Zoroastrian religion.

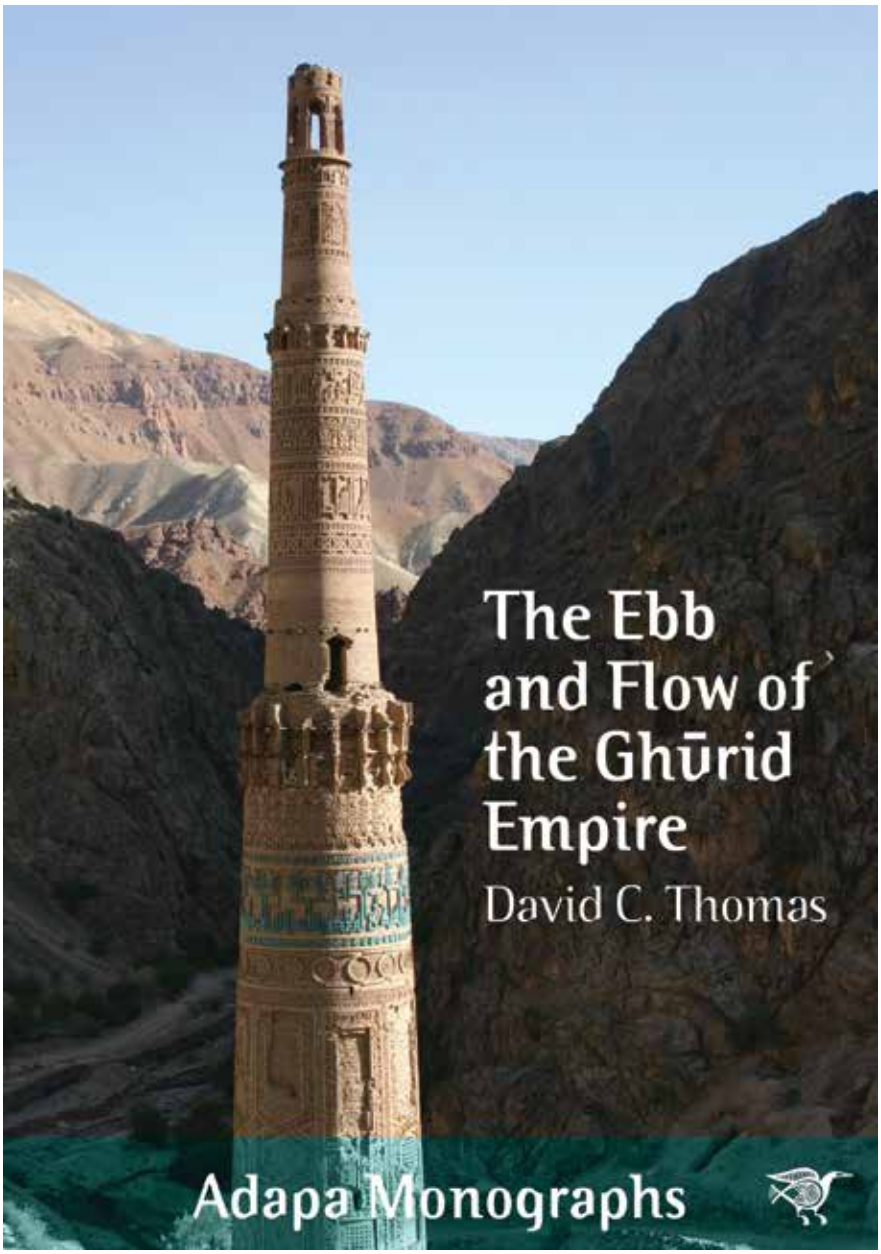
Returning to Tehran we flew to Shiraz to complete the triangle of Shiraz-Yazd-Isfahan. We were now back on the tourist route - but with good reason as some of Iran's most famous sites and cities are in this area: Sassanian Bishapur and Firuzabad, Achaemenid Persepolis and Pasargadae, Timurid Yazd, Safavid Isfahan and some very early mosque complexes at Fahraj and Na'in. In between we wandered the bazaars in Shiraz and Isfahan, explored Yazd's old city and even got to see some of the sand dunes that typify Iran's desert regions.

By the time we returned to Tehran we felt we had seen a lot of what this amazing country and its friendly, cosmopolitan people have to offer. □

From Pit to Page

A short tale of a long book

By David Thomas



The great British archaeologist Sir Mortimer Wheeler once famously observed: "*All excavation is destruction*". What most people don't know is that he went on to state that "*Excavation without publication is wanton destruction*". So, why does it take archaeologists so long to publish our work?

Firstly, digging is fun—the excitement of uncovering palaces and temples, pits and humble abodes nobody else has seen for centuries—the buzz of the dig-house, exotic locations and adventures. It's a collaborative, shared, exhilarating experience. By contrast, writing up the results of a dig is often quite a come-down from those highs: a solitary, tedious, sobering experience. Tucked away in your office, you curse as you try to make sense of someone's unintelligible dig-book, only to realise it's your own; the interminable wait for other contributors to finish their reports; deliberations over which samples you can afford to send off for dating because you used the last of the dig budget to pay for the excess baggage charges on the flight home.

And then there are other 'complicating factors'. When I started working at Jam, in central Afghanistan, in 2003, I envisaged three field seasons. The 2004 season was cancelled at the last moment due to a rebellion, and by the time 2005 came around, I found out that UNESCO had re-allocated its funding for the project, so we had to scramble to raise our own money. Fund-raising went well and the 2005 season was very successful, but plans to return with a bigger team in 2006 had to be shelved 24 hours before I was due to get on a plane to Afghanistan because of permit wrangles. In 2007, the kidnapping of some South Korean missionaries and the death of the former king left us stranded in Kabul for the whole season.

By that stage, I'd embarked on a PhD on Jam and the Ghurids. I became a dad for the first time and needed to earn money to supplement the scholarship from La Trobe University. By the time my thesis had finally been completed and passed in 2012, I'd been approached by a publisher but I was unable to re-format the book to meet their style requirements within the stipulated three weeks. A second child and earning a living took priority. The last thing I wanted, or was able, to do was spend long evenings revising the thesis I'd spent six years (on and off) researching and writing.

Towards the end of 2014, the allure of Jam called again and I decided to have another go at publishing my thesis. I contacted NEAF to see if they'd be interested and received great encouragement from Stephen Bourke and John Tidmarsh. I re-edited the thesis, to cut out the overly academic bits, and nervously awaited the comments of four referees. Fortunately, their eventual responses were largely favourable and contained numerous insights into how the manuscript could be improved (even if that wasn't quite what I wanted to hear). Then, further revisions at the behest of the editor at Sydney University Press, and the realisation that I needed to reference some recent studies.

But finally the manuscript is with the copyeditors. The dustcover has been designed (see illustration), and a short video about the dig is being edited by the wonderful Diana Gentu. Wrapping up the project almost feels done, even if formatting and proof-reading mean publication of the book is still a few months away. It's only been 14 years since I started on the fun bit of digging at Jam… ☐

The Pazyryk Carpet

Hermitage Museum

by Kate da Costa

The Pazyryk Carpet: the world's oldest surviving knotted carpet. Image from Hermitage Museum.

Sometime in the 4th or 3rd century BCE, a nomadic steppe tribe, related in some way to the Scythians, buried their tattooed chief with some ceremony in a kurgan near Novosibirsk, in the Pazyryk Valley of the Altai mountains. He was buried with horses, textiles and a single pot in a wooden chamber, covered with a mound of soil and stones. Surrounding his burial were another four kurgans. All of the contents were preserved to a certain extent by the permafrost, but in some of the tombs, access by robbers had allowed water to penetrate and then freeze solid around objects the raiders did not value. Amongst Chinese silks and local felts, one of the earliest known knotted pile carpets survived. Not only did the weavers produce a density of 4294 knots per square decimetre (= 277 knots per square inch), but they had the technical skills to adjust the warp and weft so that their Turkish knotting technique did not distort the motifs on the carpet, as usually occurs.

The outer border of the carpet is of lion sphinx heads. The inner section is of geometric rosette designs, but there are two figured bands. The inner shows elk or fallow deer. The outer band depicts horses, either ridden or with their handler walking beside them. There are many parallels with the depictions of Chorasmians on the Achaemenid palaces at Pasargadae, and originally the carpet was thought to have been imported into the Altai from Iran. But testing of the wool fibres, and the source of the red dye, show clearly that it was made from similar material to the felted objects found in the kurgans. However, it is also clear that the carpet was made by weavers who were copying a pattern guide – almost certainly not a knotting cartoon – and so we believe that the carpet was produced in an urban workshop in Central Asia, using traditional motifs inherited from earlier exposure to the Achaemenid world.

The Pazyryk burial finds are now in the Hermitage museum, St Petersburg.

https://www.hermitagemuseum.org/wps/portal/hermitage/digital-collection/25.+Archaeological+Artifacts/879870/?lng=en □

NEAF ARCHAEOLOGICAL TOURS

NEAF, in conjunction with the Academy Travel and Alumni Travel, run study tours to places that would be of interest to all people interested in archaeology and history. Our tours to Iran and China have, or will be, departing in 2017 and all have sold-out. However, NEAF has several other tours in the pipeline for 2018. Please refer to the NEAF website for further details.

MOROCCO
26 March - 13 April 2018
with Ben Churcher

From stunning scenery in the Atlas Mountains to Islamic architecture, ancient cities and lonely Kasbahs, this tour has something for every traveller. Please contact Academy Travel (02) 9235 0023 or 1800 639 699 for further information.

ESSENTIAL IRAN
15 April - 2 May 2018
with John Tidmarsh

Combining the wonders of ancient Persia with the vibrancy of modern day Iran this 23-day journey is an enticing mix of culture, history and archaeology. Please contact Academy Travel (02) 9235 0023 or 1800 639 699 for further information.

GREECE: Agamemnon to Alexander
5 - 22 May 2018
with John Tidmarsh

Explore Ancient Greece's rich history on this 17-day tour focussing on two of the most remarkable eras, the Aegean Bronze Age and Macedonian ruler Philip and his son Alexander the Great.

PELLA VOLUNTEER PROGRAM
January-February 2019

Pella in Jordan is not only one of the longest running excavations in Jordan but, if you ask us, it is also one of the more fascinating sites in the Levant and certainly one that is set in a truely wonderful landscape.

With over 26 years experience at running the Pella Volunteer Program we are confident that we can provide a 'full-immersion' experience for anyone who has ever wondered what it would be like to part of a major Middle Eastern excavation. Working alongside professional archaeologists, conservators, illustrators and photographers, participants of the volunteer program are included in all facets of life at Pella while they live and work at the site.

In addition, excursions to some other gems of Jordanian archaeology are part of a volunteer's time at Pella as weekly trips are taken to nearby sites in the company of archaeologists who have broad experience in both Jordanian culture and its long, fascinating history.

Further information on Pella is available at the NEAF website. Please join us by registering your interest using the form available at the NEAF website.

THE UNIVERSITY OF SYDNEY

The Near Eastern Archaeology Foundation was established at the University of Sydney in 1986 to promote research into the archaeology of the Middle East and North Africa. Activities include the annual production of the NEAF Bulletin, a lecture program and study tours. Support for research is through travel grants, fellowships, publication subsidies and field program finance.

Editor & Layout: Mr Ben Churcher

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