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Pella in Jordan 2015

Exploring Four Phases in the Urban Life of a Distinctive Jordan Valley Community

by Stephen Bourke

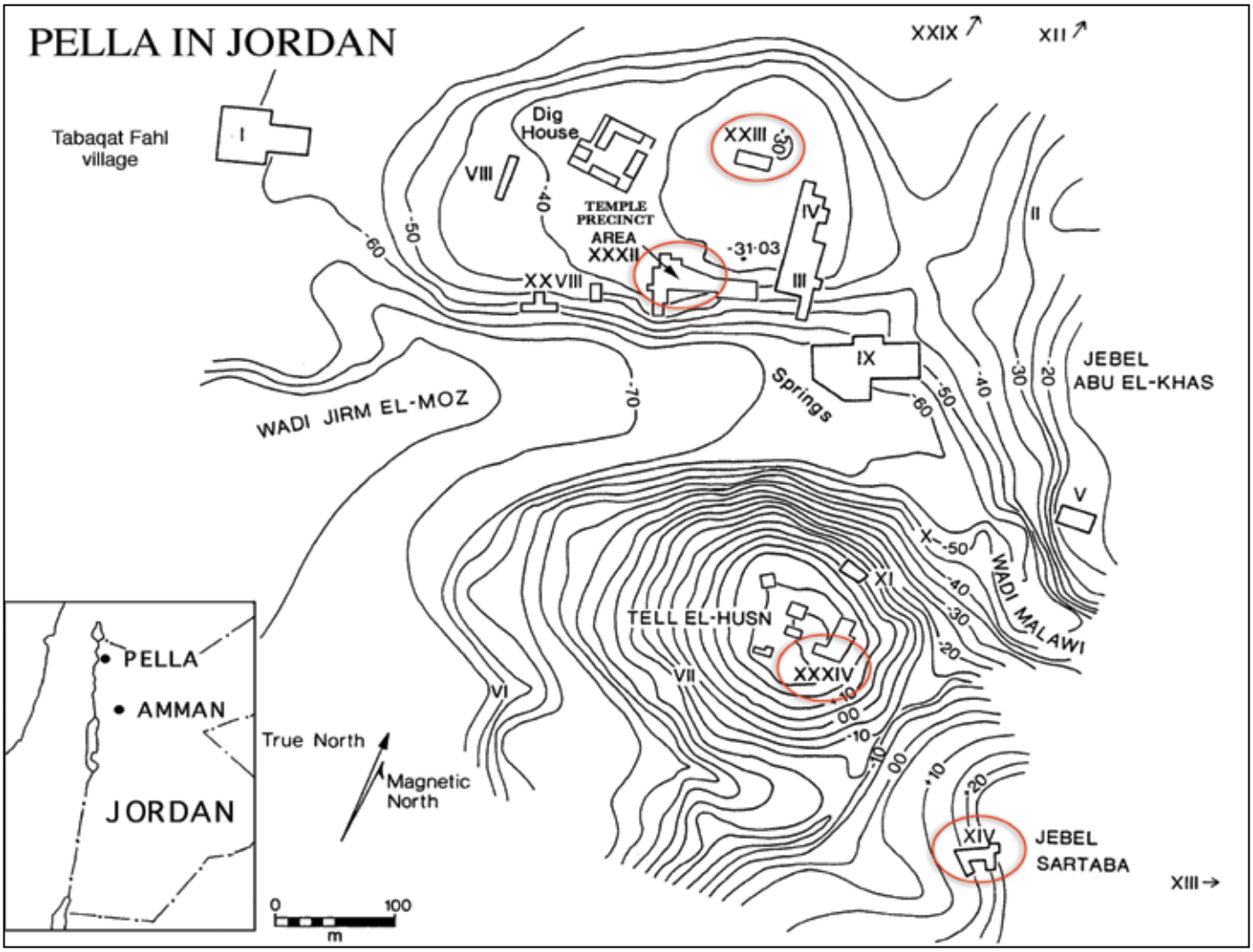
Between 9 January and 17 February 2015, archaeologists from Sydney University and associated centres of higher learning, joined with 34 NEAF-sponsored volunteers and 40 local labourers drawn from Tabaqat Fahl village and its surrounds, for six weeks of successful fieldwork at Pella in Jordan. This season excavations continued in all four areas worked in 2013, the Jebel Sartaba Chalcolithic village site (Area XIV), the Husn east summit Early Bronze Age area exploration (Area XXXIV), the south tell Bronze Age Palace and Iron Age Civic Building excavations (Area XXXII), and the central tell Hellenistic town-house exposure (Area XXIII).

The Jebel Sartaba Chalcolithic Village site (Area XIV)

New work on the high slopes of Jebel Sartaba, about a kilometre southeast (and upslope) from the main mound, began in 2013. We re-opened this Chalcolithic period (ca. 4000 BCE) village excavation area last dug twenty years earlier, to try and better understand evidence previously unearthed in the 1980s. Early work had suggested this was either a small 'village' or a large 'extended farmstead' site, but if so it was one strangely poor in bone of any sort, and very rich in olive, but only in olive. The need to revisit the site became more urgent when previous work (in 2011) on the east slope of Tell Husn found similar Chalcolithic-period assemblages at the base of the Early Bronze Age occupational sequence, strongly implicating this 'village Chalcolithic' horizon in our search for the origins of the Early Bronze Age East Summit 'urban complex'.

In 2015, Peta Seaton (and stoic hill-climbers) opened a series of new areas (Trench XIVQ) east (and upslope) of last year's major exposure (Trench XIVP), to try and link older excavations (Trench XIVN) with recent area excavations carried out in 2013. Peta found a series of neatly delineated rooms (some with pillar bases), along with a dense collection of open-air installations (narrow channels, shallow basins and deeper pits), all associated with numbers of basalt grind-stones. These remains may be viewed as modest dwellings and closely associated outside work areas.

Ten metres downslope Kat McRae (and a noisier crowd) expanded 2013 excavations (Trench XIVM/P) another



Contour plan of Pella in Jordan showing the areas investigated during the 2015 season.

6 x 3m downslope to the west, trying to delimit what was eventually revealed as the largest Chalcolithic-period wall so far excavated at Pella (14.5m long and almost 1.5m high). To the south of this wall, probably the southern wall of a large dwelling, a series of stone-lined pit installations were discovered, each constructed within a carefully built up stone-filled terrace. Several pit-installations still held considerable pieces of very large storage jars, in all likelihood the purpose for their construction. Alas, each of the excavated jars was empty of finds.

Towards the end of the season, Kat opened another new trench 4 x 4m (Trench XIVR) some 10m to the south of the Trench XIVM/P complex, to chart the southern limits of what seemed to be a chain of structures running along the contour line. Another dwelling was detected set into the southern bedrock curve, and much to our surprise, a very fragmentary secondary burial, set below the floor.

Although post-excavational analyses have only just begun, the absence of animal bone is still noteworthy, while botanical remains were poorly preserved across the several trenches. So the nature of the 'settlement' on Jebel Sartaba is still something of an enigma. However, the many installations associated with the use of canalized water, shallow basins, deep pits and many grind-stones, all associated with very large storage jars set into specially-built facilities, makes us suspicious that the site is more than a simple mixed farming community. Hopefully, ongoing zoological/botanical and chemical/radiometric analyses will add to this picture of intense agricultural processing and storage activity, spread across a half-hectare of the lower terraced hill-slopes of Jebel Sartaba.

The Husn East Summit Early Bronze Age fortifications (Area XXXIV)

Excavations on the Husn East Summit concentrated on the northeast corner of the area (Trench XXXIVF), in two adjacent plots, the one (Locus 70) investigating the pre-fortification Early Bronze Age I (ca. 3700-3000 BCE) occupation beside and below the massive 15 x 15m stone platforms and 3.6m wide north circuit wall; the other (Locus 200) charted (as we were to learn) the post-destruction Early Bronze Age II/III (ca. 2800-2600 BCE) history, after the fortifications fell out of use. Our primary aim was to place the monumental EBIB-II (ca. 3000-2800 BCE) fortification complex in a more secure context, by evaluating the occupational-sequence that led up to it (Locus 70), and by learning what happened immediately after its demise (Locus 200).

The 'pre-fortification' excavations (Trench XXXIVF Locus 70)

These early-period excavations were under the control of Jamie Fraser and a bunch of hearties (local and foreign),

Early morning from the summit of Tell Husn (Area XXXIV). Photo by Bob Miller.

that managed to move great mounds of soil while uncovering several phases of neat stone architecture, the most recent a strictly rectilinear phase completely above ground, and an earlier phase featuring rounded wall ends, cut deeply into the underlying stony rubble. These two main phases had been anticipated in smaller soundings executed in 2009-11, but both developed into large well-fashioned architectural horizons, the earliest of which seems to have met its demise in a fiery destruction.

At season's end, a third (and decidedly unexpected) phase of architecture was beginning to peek out from below what we had hoped to be the earliest floor levels, suggesting a longer sequence that hitherto documented in this area. Given the five-phase EB I-II sequence uncovered in the nearby gateway Trench XXXIVE (of which more anon), this should have come as less of a surprise than it did, but then we thought we'd plumbed the stratigraphic depths on the northern exposure in earlier seasons. Evidently not. If the 'gateway sequence' is a reliable guide to occupation across the east summit, then at least two further architectural phases may lie below structures excavated this year.

This only serves to emphasize (yet again) the impressive length and architectural significance of this early EBA sequence. It may well be that it will come to fill much of the Fourth millennium BCE 'gap' that lies between the monumental EB IB-II 'fortification' phase on the Husn East Summit, and the Sartaba Late Chalcolithic, spread extensively across the adjacent hillside to the east. If so, it will fill one of the remaining 'gaps' in Pella's occupational sequence, and go a long way towards grounding the Early Bronze Age rise, in the Chalcolithic achievements of its past.

The post-fortification sequence (Trench XXXIVF Locus 200)

The second (upper) plot in this area, run by Mel Kennedy (and a bevy of yoof), was placed across and inside of the presumed western continuation of the EB II north circuit wall. Here we hoped to better investigate the circumstances of the final EB II destruction of the fortification complex. We thought we had a reliable indicator of the post-fortification sequence from Phil Karsgaard's 2013 efforts in an adjacent trench to the east. Here Phil exposed fully six metres of the 3.6m thick circuit wall, uncovering beautifully preserved brick courses across the wall's width. To get to the wall, he had to remove two phases of MB-LB period domestic (or military?) occupation, and then four metres of stony fill on which these later phases were placed. Given Mel's trench was immediately beside Phil's work, we were confident the new trench would uncover more of the same sequence. That's not quite what happened.

Mel did indeed uncover two phases of MB-LB period domestic/military architecture, aligning nicely with structures uncovered by Phil in 2013. But then things started to get interesting. We had already noted that the four metres of stony fill that underlay Phil's MB-LB

Conserved vessels and a quern from the Iron Age destruction in Trench XXXIIFF. The burning and vitrified wall plaster of the room where these originally shattered vessels were located can be clearly seen. Photo by Bob Miller.

materials did not continue into Mel's trench. This is why we were hopeful of getting a better sample of the final EB II/III destruction-phase, as the deep stony fill had cut away all occupation associated with the EB wall in Phil's trench.

What we found was entirely unexpected. Immediately below the MB-LB strata Mel encountered extensive gravelly wash layers, which had removed much of the central area of an earlier, but very neatly built stone-walled architectural phase. This early structure was positioned well above the EB II/III destruction layer (visible in lower baulks), but nonetheless contained a number of complete EBA ceramic vessels, along with many sherds. It soon became clear that this pottery assemblage had never previously been encountered on Husn, or indeed anywhere on the site of Pella.

Although analyses are at a preliminary stage, it is beginning to look like Mel's stone building is the very first evidence of the hitherto lost EB III (ca. 2800-2500 BCE) horizon at Pella. We had assumed that after the great destruction at the end of the EB II (ca. 2900/2800 BCE) Pella lay deserted for the rest of the third millennium BCE. This is the first evidence (after 35 years digging) that suggests this picture is in error. It may be that what we have is but one additional late EB II/early EB III occupational horizon, which may extend the sequence by no more than a hundred years. The heavy erosion layers that have cut away the bulk of this structure suggests it was abandoned, and is perhaps the final EBA horizon on site. Whatever the exact course of events, we have now demonstrated that there was indeed a post-destruction EBA sequence of some length, and not merely the 'squatters', that previously-excavated scattered scraps of evidence had alluded to. Just how deep into the EB III period this newly discovered sequence extends is unclear. Radiocarbon dates will help to some extent, as will further analysis of the ceramics, both currently underway. Even after 35 years, surprises still occur…

The earliest 'Gateway' excavations (Trench XXXIVE Locus 150)

Towards the end of the season, Kat McRae and her dusty band of Chalcolithic wall chasers closed excavations on Jebel Sartaba, and embarked on a two-week exploration of what soon was revealed as the rectilinear gatehouse tower, external paved roadway and paved/plastered gateway of a third, early EB I (ca. 3400-3200 BCE) entranceway, that ran in under the central stone platform of the later monumental EB IB-II 'fortification' complex.

In 2013, Morgan Wilcox had uncovered the top courses of a large n/s 'double-layer' wall, running under the earlier of our (then) two gates, but cutting into the top of the 'round tower' phase of the earliest EBA in this trench. At the end of the 2013 season, we were rather puzzled as to how this new 'double-wall' element of the 'gateway'

sequence articulated with all other phases.

As can often happen, the previous season's confusions were quickly sorted out by a little more digging. The 'double-layer' wall firmed up as a neatly constructed hollow-rectangular tower. This tower served as the southern flanking buttress to a third, early EB I (ca. 3400-3200 BCE) gateway, paved with neatly laid small stones, and equipped with plastered exterior channels to deflect water run-off, and an obliquely-angled wall flanking and funneling traffic along the northern exterior of the wall.

This paved gate projects out no more than 30 cms from the east face of the later monumental fortifications, but it is quite enough to reveal that the Husn gateway sequence now has three distinctly aligned constructional phases, with the earliest situated about three metres to the north of its successors. A paved roadway perhaps more than 2m wide, can be traced running north/south along the eastern exterior of the mound, before passing by the southern hollow tower, and then turning sharply west in through a roughly 2m wide entranceway. It marked a fine end to a very exciting season on the Husn summit.

The Bronze and Iron Age Civic Structures on the Main Tell (Area XXXII)

Excavations on the southern edge of the main tell, occurred at three distinct steps through the ever-deepening sequence immediately west of the Fortress temple exposure.

The first step (Trench XXXIIHH- Maggie O'Hea and her deep mining brigade), a new 4 x 6m trench excavating from the modern surface down to the Iron Age, aimed to further explore the Late Antique/Late Roman (ca. 350-650 CE) strata encountered in earlier seasons, and in so doing, uncovering yet more glass kilns in what is emerging as a very significant industrial complex, in a radically re-worked urban environment of the Late Byzantine (ca. 550-650 CE) city. Below the Late Byzantine, further scraps of Late Roman (ca. 350 CE) tessellated pavement were encountered, all sealing the latest Iron Age (ca. 750 BCE?) deposits. The key find from this area, in constructional layers below the Late Roman floor, was an exquisite blue glass astarte figurine- perhaps originally a hairpin. Maggie (delving ever deeper into glass lore) suggests this might turn out to be a Hellenistic (ca. 250-50 BCE) product, and perhaps made in Alexandria. Maggie's relationship with glass continues to amaze.

The second step (Trench XXXIIFF-Paul Donnelly and other impeccably attired cognoscenti) explored the huge multi-roomed Iron Age Civic Building (ca. 950-850 BCE) across a wide (15 x 15m) expanse. This structure has been under excavation since 1997, and has been revealed as the largest Iron Age building ever discovered in the Jordan Valley, certainly more than 30 x 30m in extent, now sporting more than 40 rooms, most with their contents preserved below a thick destruction level of the later Ninth Century BCE.

In previous years, we have explored the southern margins of the complex, and have encountered many and

The 'libation basin' and column supports from Trench XXXIIBB.

varied storage rooms (some filled with oil jars, some with grind-stones, some with weaving equipment). This year we moved into a different sector of the building, where food preparation and pantry-style storage was the norm. Instead of the masses of storage jars, this year Paul and his enthusiasts excavated a series of small exquisitely burnished red-slipped jugs, several slightly larger painted buff amphorae, a couple of burnished bowls and a number of grind-stones in basalt and sandstone (for coarse and fine grinding), all scattered through a row of small 2 x 3m buff-plastered rooms connected by a long corridor.

In the final weeks of the season Paul excavated below the Iron Age complex, and began the exploration of a massively constructed stone-paved building first encountered in 2009 in trench XXXIIBB to the south. This is very probably the primary Late Bronze Age (ca. 1400-1200 BCE) building in the area, positioned directly on top of the local Bronze Age Palatial Residence. As this stone-paved structure contained several Egyptianising 'lamp and bowl' deposits, we strongly suspect it to be involved with the Egyptian New Kingdom occupation of Pella. Paul reached the paved floor of the structure across a 10 x 4m area, which turned out to be the rough dimensions of a paved portico, set against the outer wall of what we suspect to be a much larger structure. This we will further explore next season.

The deepest step (Trench XXXIIBB-Ben Churcher/ Amanda Dusting and a vast array of dust and mud-bespattered hearties) delved into the early phases of the Middle Bronze Age (ca. 1850-1550 BCE) Palatial Residence, via a series of small soundings between the walls across the 20 x 20m exposure. This huge structure was first detected in 1999, when Ben put down a 2 x 2m sounding against the western wall of the temple, bottoming out onto the palace. Over the next few seasons we gradually uncovered a 15 x 5m strip of the eastern side of the structure, noting its multiple phases, each contemporary with a major re-building of the Fortress temple itself. By the end of the 2011 season, we had uncovered around 15 x 15m of the central/east of the Late Bronze Age phases of the Palatial Residence, and in 2013 we reached the latest

The excavation at Area XIV with Tell Husn (Area XXXIV) in the background. View to the west across the Jordan Valley.

MBA (ca. 1650 BCE) phase of the structure across a larger 25 x 15m area.

In the first half of the 2015 season Ben Churcher further explored the westernmost exposure of the Residence, close by the deep stone-lined pit/silos explored in 2013. Ben fully exposed the neatly built late MBA (ca. 1650 BCE) Residence, and began to explore an earlier MBA (ca. 1750 BCE) phase of construction. Beneath this early phase, Ben encountered thick black midden deposits, over which the earliest walls of the Residence had been constructed. These midden deposits date within the MB I (ca. 1950-1850 BCE), supplying a first indication of the initial construction date for the Residence, perhaps within the MB I/II interface, around 1800 BCE. Finally, in several other soundings between the beautifully constructed walls (which we hope to preserve), Ben encountered significant amounts of Early Bronze Age I/II (ca. 3000-2800 BCE) materials, suggesting that we are approaching a much earlier era in the life of the city.

In the second half of the 2015 season, under Amanda Dusting's new management, further soundings were placed in various areas across the east/central regions of the Residence. These revealed yet more puzzles. Below the thick MB/LB (ca. 1550 BCE) period plaster floors in the central trench Amanda's willing trowellers exposed two 1 x1m square mudbrick platforms, both with centrally placed pillar-sized postholes. These flank a very odd installation, a neat pit lined with mudbrick, and ringed by seven obliquely positioned individually laid mudbricks. The pit-feature was immediately christened the 'star-gate', although its purpose remains obscure.

It may be a special-purpose (liquid offering?) installation, perhaps flanked by two large pillars. What lies to its immediate north is currently unknowable, as the aforementioned LBA-period stone-paved structure currently occupies this space. But central hearth-like features flanked by columns and set within open courtyards are typical of the audience anterooms of Syrian palaces, so we are hopeful that not too much further to the north, another two column supports, and (perhaps) a formal entranceway may lie in wait. Such entranceways are occasionally flanked by basalt lions. Well, one can hope…

A final sounding to the east of the pit and pillar installation revealed a large patch of beautifully preserved mudbrick pavement. This carefully-laid pavement may well have stretched all the way to the west wall of the temple, although it is cut through by the east exterior wall of the Late Bronze Age extension to the Residence, and by large Iron Age pits at both its north and south ends. The 4 x 2m undisturbed patch was lovingly trowelled up by Amanda and her crew, and it rewarded their attention with some lovely finds - a scarab seal, and a seal impression among the most precious, underlining the administrative function of the MBA-phase of the Residence.

The deeper soundings across the area are now producing quantities of Early Bronze Age pottery (ca. 3400-2800 BCE), suggesting we are coming to the

end of the MBA sequence, and will soon drop back a millennium into the Early Bronze Age.

The Hellenistic Townhouse Excavations (Area XXIIID)

Renewed work on the central tell in the Hellenistic 'townhouse' excavation area (Area XXIII), has been ongoing since 2011 under the gnarled supervision of Bob Stone and his rock-crushing gang. In that year, a 10 x 5m plot (Trench XXIIID) laid out along the western side of the original 10 x 15m plot (Trench XXIIIA), exposed a series of long corridor-like rooms featuring storage niches, stone-paved courtyards, sub-floor drains and stone thresholds. Among standard ceramic finds within the thick destruction debris, several shattered (but largely complete) Rhodian amphorae were recovered. In 2013, we extended the trench another 5 x 5m to the south of the 2011 plot, and by season's end had exposed the tops of series of Hellenistic period rooms, all sealed below a monumental Byzantine/Umayyad (ca. 550-750 CE) complex, itself featuring patches of mudstone paving, and what appear to be the debris of several collapsed archways.

In 2015, the previous season's 5 x 5m extension was excavated down to Late Hellenistic floors, bringing the entire 15 x 5m area into one phase. Further in situ ceramics (small bowls, a funnel, grey-ware lamps), another two shattered Rhodian amphorae (both in baulks!), and several datable coins were recovered.

In addition, another 5 x 5m extension (immediately east of the 2013 plot) was explored in 2015. Although much cut about by recent pitting in its northern half, excavations proceeded through further Byzantine/Umayyad structural fragments and patches of a Late Roman (ca. 350 CE) phase, before uncovering several further rooms of the Late Hellenistic townhouse phase. A highlight of this new exposure was the discovery of a small kiln-like installation, which proved to be full of iron nails and other iron tool fragments. It would appear that this installation formed a part of what might be a working forge. Excavations ended before the eastern continuation of this installation could be further explored, but it promises much for the future.

The 1980s excavations uncovered evidence for elaborate wall painting and life-size bronze statuary, underlining the elite status of at least some parts of the townhouse complex. That said, evidence accruing from more recent excavations in the southerly rooms, located across a cobbled courtyard (?) from the living quarters, include previously discovered in situ loom debris, and now evidence for a small forge, suggesting the presence of considerable light industrial activity within the bounds of this 'townhouse' complex. It underlines the variety of the activities that took place under one roof, not all to be classed as 'elite'. This townhouse excavation becomes more interesting every year.

General Conclusions

Work this year has sampled elements of the first four urban phases in the life of Pella in Jordan. The origins of the first urban pulse of the Chalcolithic/Early Bronze Age was investigated through the work on Chalcolithic Jebel Sartaba (Area XIV), and the monumental first urban expression by work on the east summit of Tell Husn (Area XXXIV). One aspect of the origins of the second urban pulse of the Middle/Late Bronze Ages was explored via the constructional and first occupational phases of the MBA Palatial Residence (Area XXXIIBB). The floruit of the third urban pulse of the Iron Age II was further revealed in the excavation of the northern rooms of the huge Iron Age Civic Building (Area XXXIIFF), while the highpoint of the fourth Hellenistic (c. 150-80 BCE) urban phase was investigated in the central tell region (Area XXIII), in the town-house excavations.

In all these areas of work, and across each distinctive 'pulse' in Pella's rich urban history, we have revealed new aspects of each horizon in the urban life of one of the Middle East's longest-lived cities. In so doing we have uncovered yet more evidence for both occupational tenacity and cultural riches that is the hallmark of the sequence at Pella. Long may we be able to continue its exploration. ❐

Hasmonaean grey pottery lamp from Area XXIIID.

Hellenistic pottery bowl from Area XXIIID.

Research on the Hellenistic *polis* in Asia Minor

by Simon Young
Sam Eames Travel Grant Recipient

The primary objective of my second field work expedition was to return to the cities that I had visited in 2014, and to answer questions that had arisen from the first trip, and to add to my existing photographic and GIS record of features such as city walls, streets, agoras, bouleuterions, odeons, nymphaeums, stoas and so on. My research concentrates specifically on the remains of architecture and smaller representations of architecture and city life that are either located on site or in local museums. On this trip, a careful firsthand examination and a photographic record of these elements was significantly expanded and their position recorded with a GPS device.

Another focus of this field trip was to record the public buildings' interdependent relationship within a cityscape from ground view. At times this is difficult to achieve in ruined cities, especially in the case of Balboura, where much of the site is overgrown with trees. However, many photos and GPS points were taken from a critical juncture in the city's street, which were then matched to the city plan utilising a GIS program, elucidating the importance of street corners.

Another particularly successful visit was to Pisidian Antioch. Despite the snow, in late January I set out from Pisidian Antioch (modern Yalvaç) in central Anatolia and attempted to locate the path of the sacred way to the city's Sanctuary of Mên, which I had visited during summer. By following the natural topography of the site, I stumbled upon the sacred way, which is marked with votive carvings in the rock. Although M. Hardie had noted some of these in 1912, I was able to record the location of many votive markers with a GPS device. I also tested an alternative approach to the temple that followed the topography of the site as opposed to the one suggested by Raff. Surprisingly, although arduous at times, the journey from Pisidian Antioch to the mountain sanctuary would have taken only 1.5 to 2 hours in summer on foot.

I was also able to add some further observations that will be important to consider in my thesis. Among the most important, and most easily overlooked feature when examining plans of cities, is the topographical contours of the sites and their impact. Two clear examples, but by no means the only ones, are Kremna and Balboura. One reads about the dramatic cliffs of Kremna, but this does not prepare the visitor for the sense of vertigo when contemplating the sheer distance of the drop from the precipitous cliff edge. The topography at the top of the acropolis at Kremna was far more dramatic than expected, and played a central role in the placement of buildings, not always clearly evident from site plans. A good example is the theatre, which was built beside a large hilltop on the acropolis and overlooked the city. Balboura's acropolis was much steeper and difficult to climb. Conquering the hilltop took a great deal of energy and courage, while descending it on the eastern slope—a slope which appears to be the most gradual—proved difficult not to slip and slide from the edge of the cliffs. The increasing use of 3D technology was also interesting to note, particularly at Hierapolis and Pergamon where there have been attempts to create 'on site' virtual reality way points. This trend of modern observation and desire to reconstruct was also noted and will be discussed in my thesis.

Thanks to NEAF's support, I was able to significantly expand on earlier research of my case study cities as well as make new observations that will enhance our understanding of development of these cities and the important role that observers, both modern and ancient, played. For that, I am extremely grateful for NEAF's support in my endeavour. □

Votive carving on the processional way to the Sanctuary of Mên at Pisidian Antioch.

On the Tiles in Central Asia

by David Thomas

Fabulous tales and dreams of exotic riches have lured travellers along the Silk Routes to central Asia for centuries. As the poet James Elroy Flecker wrote in 1913:

"We travel not for trafficking alone,
By hotter wind our fiery hearts are fanned.
For lust of knowing what should not be known
We take the Golden Road to Samarkand."

Gone are the days when merchants trudged through the sands leading camel caravans laden with tea, cotton, silk and spices, but intrepid travellers still meander through the region marvelling at its barren landscapes and the beauty of the (largely restored) medieval Islamic architecture. Glossy coffee-table books burgeon with breathtaking photographs of needle-like minarets piercing deep blue skies and cavernous domes seemingly defying gravity above soaring arches. And yet, impressive as these structures are, they would be drab were it not for the glazed tiles adorning them.

A glaze is a thin glassy layer applied to ceramics, which renders them impermeable and thus weather-proof. Alkaline glazes originated in ancient Egypt and the Near East – the word alkali is itself derived from Arabic, as are the words alchemist and, of course somewhat ironically, alcohol. Alkaline glazes were made from a mixture of ground quartz, sodium or potassium carbonate (both made from plant ash), and sometimes salt. They were initially transparent but could be coloured – the addition of iron oxide to lead glazes resulted in yellow or orange hues, while cobalt produced blue and copper oxide turquoise blue; manganese turned purple or black, and tin oxide gave both alkaline and lead glazes a creamy-white appearance.

The Assyrians and Babylonians were the first to use coloured and glazed tiles and bricks in their architecture, from the thirteenth century BCE onwards. The practice, however, largely fell out of use from the time of Alexander the Great until the Islamic period, when glazed bricks again supplemented ceramic tiling as an important decorative element. The Seljuks (c. 1070-1308 CE) invented the tile mosaic, in which pieces of glazed tile were cut and fitted together like a jigsaw in whitish mortar.

The tile mosaic technique was greatly developed in Iran in the Il-Khanid period (1256-1353) – turquoise, azure, black, pistachio-green, violet and brick red coloured tiles were put together in a denser manner to form motifs with smaller designs but which lacked visible jointing and thus looked like tile panels (Fig. 1). From this developed the "cuerda seca" technique in which large tiles were painted with different colours of glaze. To prevent the coloured glazes running together, they were separated by a greasy substance mixed with manganese, which left a matt black line between the colours after firing (Fig. 2). This technique was obviously faster than making tile mosaics,

Fig. 1 – Tiles from the Gawhar Shad mausoleum in Herat, Afghanistan.

but the colours are not as brilliant because they were all fired at the same temperature.

Glazed tile decoration reached its apogee in the Timurid period (1370-1507) – as Robert Byron wrote of the Gawhar Shad mosque in Herat in 1933:

> "... no photograph, nor any description can convey their colour of grape-blue with an azure bloom, or the intricate convolutions that make it so deep and luminous".

Unfortunately, neglect and the ravages of war mean that many once magnificently tiled structures now require painstaking restoration (Figs 1, 3). The skill of the original artisans, however, persists, along with many of the fabulous tales that enrich the history of the region. What follows is a taste of the different decorative techniques and structures that mesmerized me whilst working in Afghanistan, on the Minaret of Jam Archaeological Project, and in Uzbekistan on Prof. Alison Betts' University of Sydney Central Asia Project, in 2003.

Fig. 2 – Pahlavon Mahmud Mausoleum, Khiva; Pahlavon Mahmud was a poet, philosopher and wrestler who died in 1326.

Fig. 3 – Gawhar Shad (d. 1457) mausoleum in Herat, Afghanistan.

Fig. 4 – The Minaret of Jam in central Afghanistan, dating to 1174-75.

Few buildings survive intact from pre-Mongol era, but the twelfth-century Minaret of Jam in central Afghanistan illustrates the nascent use of glazed bricks. Most of the buff brick decoration consists of intertwined bands of calligraphy (including, rather intriguingly, Sura XIX from the holy Qur'an – the chapter about Maryam, mother of Jesus). The texts enclose geometric patterns of baked bricks and stucco, but a section of turquoise-glazed inscription commemorates the Ghurid sultan Ghiyath al-Din, who commissioned the minaret (Fig. 4). Chemical analyses of broken glazed tiles and ceramics from the site suggest that the minaret's glazed tiles were probably made locally (they have a similar composition to a piece of slag found nearby), whereas another glazed tile found in a robber hole is distinct from all other samples tested and so was probably imported.

Over 600km to the north, in modern Uzbekistan, the fourteenth-fifteenth century Shah-i Zindeh (literally the 'Living King') funerary complex in Samarkand centres round the grave of Qussam ibn 'Abbas. Qussam ibn 'Abbas was the cousin of the Prophet Mohammed and is said to have brought Islam to central Asia in 676. He was beheaded by irate fire-worshippers, but reputedly picked up his head and descended into a deep well leading to an underground garden, where he continues to live. Appropriately, the Arabic inscription above the entrance to his mausoleum reads: "The gates of Paradise are open to everyone" (Fig. 5). Part of the significance of Shah-i Zindeh is that its buildings were mostly financed by lesser members of the aristocracy and thus illustrate a more private type of religious architecture (Fig. 6), with greater emphasis on piety than the self-glorification of the Amir's more ostentatious public buildings.

Legend has it that the architect of the massive Bibi Khanym Mosque in Samarkand, which was opened in 1404, became so besotted with the Amir's wife that he refused to complete the building until he was permitted a kiss. Tragically, the smooch left a mark on her cheek. The infidelity infuriated Timur, who was volatile at the best of times; he had the architect executed and decreed that all women should henceforth wear a veil, so as not to tempt men! The fifteenth-century chronicler al-Yazdi, however, enthused about the building that "If it were not for the sky and the Milky Way, its dome and entrance arch would be unique".

Fig. 5 – Entrance to the mausoleum of Qussam ibn 'Abbas, Samarkand

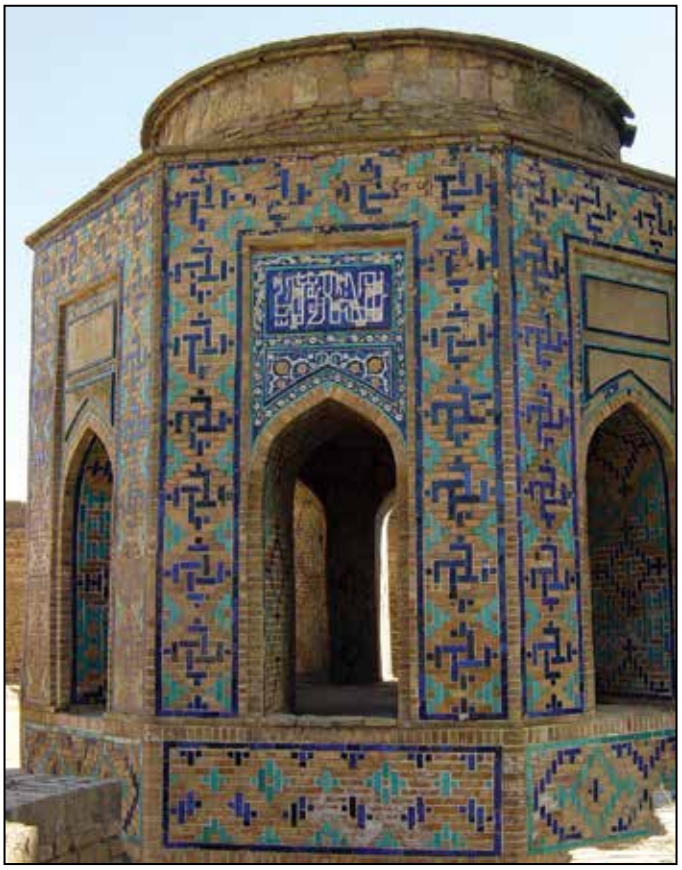


Fig. 6 – Anonymous octagonal tomb, Shah-i Zindeh, Samarkand.

Fig. 7 – Gur-i Amir Mausoleum in Samarkand.

Timur, whose military exploits are second only to those of Genghis Khan, died in 1404, at the age of 71. He was buried in the magnificently tiled and gilded Gur-i Amir Mausoleum in Samarkand, which also went on to house the tombs of two of his sons, and two of his grandsons (including the remarkable astronomer and scholar Ulugh Beg – Fig. 7).

As is evident from this small sample of photographs, most Islamic tile decorations focus on geometric and floral patterns, and religious inscriptions. Orthodox Islam, like early Christianity and Buddhism, was iconoclastic and discouraged the depiction of living creatures. The Nadir Divanbegi Madrasa in Bukhara (built between 1622-1630) and the Sher Dor Madrasa in Samarkand are unusual in that their pishtaqs (monumental entrances) illustrate fantastic golden animals (tigers or lions), simurgh (mythical dragon-peacocks), white doe deer and human-faced suns (Fig. 8). This apparently heretical behaviour merely confirms what Ulugh Beg, the ruler of Samarkand, wrote in the fifteenth century:

> "Empires perish, religions dissipate like a fog, but the work of learned men lasts forever". ☐

Fig. 8 – Sher Dor Madrasa pishtak, Samarkand, completed in 1636.

Battlefield Gallipoli

by Sarah Midford

NEAF Grant-in-Aid Recipient

The Joint Historical and Archaeological Survey (JHAS) of the Anzac battlefield on the Gallipoli peninsula is a tri-nation project between Turkey, Australia and New Zealand. It is a collaborative project with team members from the University of Melbourne, Çanakkale Onsekiz Mart Universitesi, La Trobe University, the New Zealand Ministry for Culture and Heritage, and the Australian Department of Veterans' Affairs. The project brings together classicists, historians, archaeologists and spatial scientists to examine what remains of the battlefield landscape as well as its modern status as an internationally protected commemorative site. The team is also interested in contextualising the Great War conflict into the landscape's more ancient human history. The JHAS project was conceived in 2005 and commenced in 2010. The area being surveyed is the 'Anzac area', demarcated by the Treaty of Lausanne, within which the Commonwealth War Graves Commission (CWGC) has limited rights over Allied graves and memorials. Professor Antonio Sagona, University of Melbourne, directs archaeological fieldwork and Professor Mithat Atabay, Çanakkale Onsekiz Mart Universitesi, holds the project permit.

Methodology

Gallipoli is a sensitive landscape, in terms of its physical preservation and natural characteristics and with regard to the reverence held for this place. In view of the area's status as a war grave—an open cemetery for the many missing soldiers—the JHAS fieldwork on the Gallipoli peninsula is entirely non-invasive. The project integrates historical documents with archaeological field survey and, while we have used ground-penetrating radar to look beneath the surface in defined areas, excavation is not part of the project methodology. The dense vegetation in many parts of the battlefield means that conventional intensive survey techniques must be adapted to the terrain. The JHAS operates a feature-based survey, following strategic transects across the rugged terrain. The use of DGPS ensures that accurate position information is attached to each feature recorded in the field survey. The locations and dimensions of trenches, dugouts, artefacts and other features are imported into a GIS, in which survey data is layered and interrelated with other spatial data using a shared coordinate system.

The 2014 Field Season

While undertaking fieldwork, the Australian and New Zealand members of the team stay in the small village of Koca Dere, located less than five kilometres from Anzac Cove on the Gallipoli Peninsula. During the war this village was host to a field hospital and was where countless wounded Turkish soldiers were taken for medical attention.

2014 was the final field season of the JHAS project. The

Recording artefacts in the field (Left: Michelle Negus-Cleary, Right: Sarah Midford).

2014 survey focused on areas that had yet to be recorded by the team including No. 1 and No. 2 Outposts, Maori Pah, North Beach and Ari Burnu Point. As in previous years, the team surveyed earthwork features including lines of combat and communication trenches. Individual artefacts were also recorded. The artefacts found in 2014 included fragments of glass bottles, metal food containers, barbed wire, ceramic rum jars, Ottoman bricks and expended ammunition as well as Roman and Ottoman ceramics near the site of the Lone Pine memorial. Only the most significant and/or unique artefacts were collected. They included British barbed wire, cutlery, communications cabling and four buttons from Allied soldiers' uniforms, which were given to Çanakkale Naval Museum for preservation and safekeeping. This museum is home to an extensive collection of artefacts from the Gallipoli Campaign, some of which will be brought to Australia as part of an exhibition about the JHAS project to be held in Melbourne in 2015.

During the survey all recorded features were entered into a database, which will eventually be available to the public online. The database holds information on the location of each feature, its dimensions, significance, state of preservation and also includes a detailed description of the feature. After each day of survey, all the data collected in the field was added to this database, which allows information to be exported easily for analysis. During the field season the team also collaborated on the final touches to the book on the project – Battlefield Gallipoli: Landscape of War and Memory, which will be published by Cambridge University Press in 2015. Having all the authors of this collaborative publication together was incredibly productive at this final stage of the writing process.

My participation in the JHAS at Gallipoli in 2014 facilitated access to new and unpublished material information that will contribute to my PhD research as well as the opportunity to grow my professional network. The 2014 field season was a productive end to a unique and cutting-edge archaeological project. I am incredibly grateful to the NEAF for their award of the Grant-in-Aid, which was a welcome contribution to this successful final field season. □

The Archaeology of the Desert Cults and the Origins of Israel's God

by Juan Manuel Tebes

The Midianite-Kenite Hypothesis

Despite of over a hundred years of biblical scholarship, the place where the worship of Yahweh originated is not totally solved. Yahweh did not belong originally to the Levantine pantheon of gods, and attempts to locate the cult of Yahweh in the Semitic epigraphy have proved to be futile. One of the scholarly formulations that stood the test of time is the so-called Midianite-Kenite hypothesis, the idea that the pre-Israelite roots of Yahwism can be traced back to the tribes living in the arid belt to the south and south-east of Palestine—the Negev, southern Transjordan (ancient Edom) and northern Hejaz (ancient Midian).

Scholars supporting this hypothesis normally assume that the influence of the southern cults on Yahwism occurred during a restricted period of time. Because of its association with the Exodus and/or due to the dating of the archaeological evidence of the early Israelite settlement in central Canaan, this process is traditionally dated to the Early Iron Age (late twelfth-eleventh centuries BCE). Also, scholars tend to see the origins of Yahwism through the lenses of diffusionist perspectives, characterizing this process as a movement or migration of one or a few determined groups, being them Israelites migrating from Egypt to Canaan or Midianite-Kenite lineages moving from the northern Hejaz to Canaan, carrying with them the belief in Yahweh that was later to be adopted in the central hill country of Palestine.

Most biblical scholars clearly portray Yahwism as if it arose in a vacuum in the southern arid areas to the south of Palestine, with no previous history and no geographical links with neighboring areas. To the contrary, the Iron Age phenomena are only one chain, and a continuation, of a long sequence of cultic practices with a history of thousands of years over a large area extending from the Arabian Peninsula to northern Africa.

The Southern Desert Cults

The semi-pastoral groups moving and settling along the arid belt comprising the Arabian Desert, Negev, Sinai and northern Africa, at least during the four millennia BCE if not afterwards, shared a set of similar cultic practices, and indeed a common substratum of material culture. Open air sanctuaries are the most common type of cultic places in the southern desert regions, born from and adapted to the mobile nature of the semi-pastoral peoples. The most significant components of the material culture that can be related to cultic practices are the standing stones (mazzeboth), open courtyard shrines, cairns, high-places, rock-shelter spaces, rock art, and the iconography in pottery.

The culture of the desert peoples did not exist in isolation, rather, it coexisted with the cultural elements coming from neighboring powerful states. The imported cultural elements evolved and changed at their own pace following the ups and downs of the outside sociopolitical developments. Parallely, the desert substratum extended through time with gradual variations in its cultural heritage, in a long-dureé process in which changes, at times triggered by outside factors, always retained core cultural constituents. The relationship between the local and the imported traditions was always complex, while the reciprocal contacts led to incessant two-way flows of beliefs and practices.

Fig. 1 – Temple of Hathor, Timna Valley (Site 200).

Our main source of data comes from the Late Roman/Byzantine and the Early Islamic periods. Literary and material evidences suggest that, while Christianity and Islam swiftly penetrated into these areas, most of their influence was limited to the few local towns, places where the newcomers rapidly built churches and mosques based on Byzantine and Syrian models respectively. The advent of the two faiths had no immediate impact on the existing cultic practices and the replacement of the old desert religions was not a clear cut event, but rather a slow, long-term process that could take centuries. This was most clear in the countryside, where the new religions had to content to exist side-by-side with the traditional practices of the desert. Even when locals formally converted to Christianity or Islam, they frequently modified in one way or the other their new faiths' cultural elements, adapting them to their millennia-old heritage.

The Origin of Yahweh's Cult in its Southern Setting

Most previous scholarship on the Midianite-Kenite hypothesis did not take into account that the archaeological evidence of cultic activities in the southern fringes of the Levant during the Late Bronze and Iron Ages is not monolithic. Although there existed a similar substratum of ritual practices over the whole period, considerable

Fig. 2 – Open courtyard shrine, Timna Valley (Site 2).

changes are discernible in the material culture. If our chronological understanding of this period is correct, it is possible to divide it into three main phases.

The Formative Period, ranging from the thirteenth to the eleventh centuries BCE, is characterized by the persistence of the same cultic elements that had been in vogue for centuries, now accompanied by the introduction of Egyptian or Egyptianizing cultic centers. Two of these cultic centers, established at Serabit el-Khadem in southwestern Sinai and Timna Valley in the southern Negev (Fig. 1), were dedicated to the Egyptian goddess Hathor. These structures were intended for the worship of Egyptian deities and built according to plans imported from Egypt; however, they accommodated to the desert traditions, taking architectural elements and cultic paraphernalia from the local cultural heritage. They did not operate in a vacuum, but cohabited with smaller open air sanctuaries established by the local peoples with designs, concepts and functions that were several millennia old. Open air sanctuaries were found particularly in Timna Valley and adjacent regions; they included open courtyard shrines (Fig. 2), high-places and rock shelters.

The earliest epigraphic evidence that with high probabilities refers to the name of Yahweh, if not the existence of his cult, are two New Kingdom topographical lists depicting Shasu people living in the arid lands to the east of the Sinai Peninsula. During this period there is

Fig. 3 – Reconstruction of the small cultic cell of the temple at Tel 'Arad.

Fig. 4 – Reconstruction of the 'En Hazeva shrine.

built within the northern Negev sites, such as Tel Masos, Tel 'Arad (Fig. 3), Beersheba, and Kuntillet 'Ajrud in the northeastern Sinai.

Even if Yahwism was the main focus of worship at these sites, the rituals performed there seem to have been influenced by the southern practices. This is best illustrated by the finding at 'Arad of a mazzebah originally standing on a platform in the back chamber, probably as an aniconic representation of the deity. Most famously, inscriptions on a large storage jar from Kuntillet 'Ajrud mention "Yahweh of Teman and his Asherah". Yahweh is here clearly associated with, if not being a local deity of, the southern site of Teman. The same jar depicts five figures standing in one line, identified as worshippers in procession, which closely resemble the representation of "adorant" figures so popular in the Arabian rock art and the Hejazi Qurayyah pottery.

The overall archaeological evidence indicates that this is the earliest period in which continuous contact and two-way flows of cultic beliefs between the Israelite newcomers and the peoples living in the Negev occurred. It is in this moment, not before, that we should date the beginning of the transference of southern elements to the Israelites, if not the worship of Yahweh itself. The Late Contact Period, from the late eighth to the mid-sixth centuries BCE, was characterized by the central role of the local semi-pastoral groups and the more secure trade routes. This new scenario encouraged the establishment of cultic centers outside settlements, such as the open sanctuaries at Horvat Qitmit and 'En Hazeva (Fig. 4) in the northern Negev. These structures, while following the local tradition of open courtyard shrines, incorporated architectural elements and cultic paraphernalia imported from the sedentary societies of the southern Levant.

A related development was the immigration of southern Transjordanian population in the Beersheba Valley and probably in areas further north. The archaeological evidence demonstrates an accelerating process of hybridization of the Negev society since the late eighth century, giving the Judaean population full access to the southern Transjordanian "Edomite" folklore. This is most obvious in the epigraphic record and the material culture showing the cult of Qos, a deity generally associated with the Edomites and their monarchy.

In sum, we should not persist on the old paradigm that saw the cult of Yahweh as adopted in a totally formed, closed form in the Early Iron Age from Midianite-Kenite groups; contrary to what is usually imagined, the embracing of southern cultic practices was a long duration process spanning the entire Iron Age. These events should not be seen as separate from other periods in the history of the lands to the south of Palestine and as disconnected from neighboring arid areas. □

The Heritage of Palmyra

Lectures in honour of Khalid al Asa'ad

by Ross Burns

NEAF held an afternoon of talks at the University of Sydney on Saturday 19 September 2105 to commemorate the former Director of Antiquities in Palmyra, Dr Khalid al-As`ad, who was brutally murdered by 'Islamic State' (IS) during their occupation of Palmyra the previous month. The afternoon sought to keep alive the memories of Palmyra and Dr al-As`ad's contribution to the research and presentation of the site over many decades.

The presentations gave a wide range of perspectives on the site which preserves not only the better-known remains of the Roman-era 'caravan city' but a rich store of later occupations including in the Byzantine and Islamic centuries. Palmyra is a 'caravan city' of the Roman eastern trade and thus a meeting place of influences as diverse as Persian, Roman, Greek and Mesopotamian mixed with the traditions of the native Arab community of the oasis itself. Dr al-As`ad's own excavations, publications and reconstructions brought all these traditions alive, complemented by the work over decades of foreign research teams including Polish, French, German and Swiss expeditions.

The scene was set with a paper by Peter Edwell (Senior Lecturer, Macquarie University) who provided the wider context in which this meeting place of East and West operated—an extraordinarily successful economy which commanded trade from as far afield as India and the Mediterranean. (Peter's paper was read by one of his PhD student specialising in the operation of this trade, Deborah Hope.)

Kate da Costa (Sydney University) followed through with a survey of the remains of the city of Palmyra as seen by visitors before 2011. Ina Kehrberg (also Sydney University) added a personal account by talking of the work of her late husband, the Polish architect Antoni Ostrasz, who participated in the 1960s in the Polish mission which advised on major reconstruction work along the central section of the cross-city colonnade, notably the great Tetrapylon. Antoni's painstaking study of the fragmentary remains formed the basis of a striking reconstruction of the sixteen columns standing in four clusters which mark the meeting point of two important routes.

The last paper (by Ross Burns, Macquarie University) introduced the sad postscript to Palmyra's emergence from the sand over the past two centuries, following its initial 're-discovery' by the outside world through European neo-Classical artists intent on finding in the ruins new ideas for the revival of the Classical tradition in eighteenth century Europe. Ross' paper catalogued the senseless destruction wrought by IS including the central shrines of the two major Palmyrene temples, of Baalshamin and of Bel. The paper moved on to the striking remains of the

Dr Ross Burns and Dr Kate da Costa answering questions during the afternoon.

'Valley of the Tombs', a burial area on the northwestern edge of the city. Here IS's 'experts' carefully selected the seven tower tombs which provided the most memorable structures of this unique necropolis. Their choice of the tallest, most substantial and most highly decorated of the tombs showed a determination to achieve the greatest shock effect through their otherwise senseless operation.

IS's program of destruction at Palmyra deprives the world of one of the most memorable sites of the Roman era, certainly in the Middle East. It also, however, has introduced a savage new reality to the people of Palmyra who depended on the flow of visitors to the ruins as one of their major sources of income. Ross' presentation concluded by looking at the record of destruction at Palmyra against the pattern of damage across the country. He argued that the seizure of Palmyra has brought a new and even more dangerous threat to Syria's archaeology.

Given IS's apparent program of destroying all religious sites and images associated with Palmyra, it is probably fortunate that some scores of the portrait busts used to close off the burial slots in Palmyra's ancient tombs, have found their way abroad over the past century. A fine example is held at the Australian War Memorial. Although not currently on display, images of the fine bust of a woman, Hagar, daughter of Zebida, presented to Gen Chauvel in 1918 by the sheikh of Palmyra, can be seen on the AWM's website at https://www.awm.gov.au/collection/ART00484/.

Ross Burns is the author of Monuments of Syria and a member of the NEAF Council. He maintains on his website (http://www.monumentsofsyria.com) a tally of damage done to monuments in Syria in the current conflict. ☐

Drawn into the Star

Recreating the Ghassulian Wall Paintings

by Bernadette Drabsch

Archaeology is a world full of mysteries and sometimes we need to put on our archaeological detective hat and collect whatever clues remain available. Sometimes these clues are revealed through analysing texts, sometimes through fieldwork, sometimes through scientific or comparative analysis and sometimes through more imaginative methods of enquiry. We use whatever skills we have to ferret out evidence, with the ultimate goal of achieving clearer insights into the lives of people who lived long ago.

I began my doctorate research 'Contextualising the Ancient Wall Paintings from Teleilat Ghassul, Jordan' in 2010 and the 6000 year old frescoes soon became a frustrating yet enjoyable obsession. My PhD was an unusual one from the very beginning, being both cross institutional and trans-disciplinary - I used all the skills gained studying Ancient History and Natural History Illustration to obtain a better understanding of these still mysterious wall paintings. Whilst a large portion of my PhD employed traditional comparative research methodology, I also utilised less traditional approaches. To complement the empirical and interpretive approaches I conducted a relatively new style of investigation termed practice-led research or studio-based enquiry, more prosaically described as learning by doing. It is a methodology in which knowledge is generated through action and reflection.

Data was gathered whilst conducting experimental replication of the wall paintings in my studio. I had two main questions to investigate:

Drawn into the 'Star'.

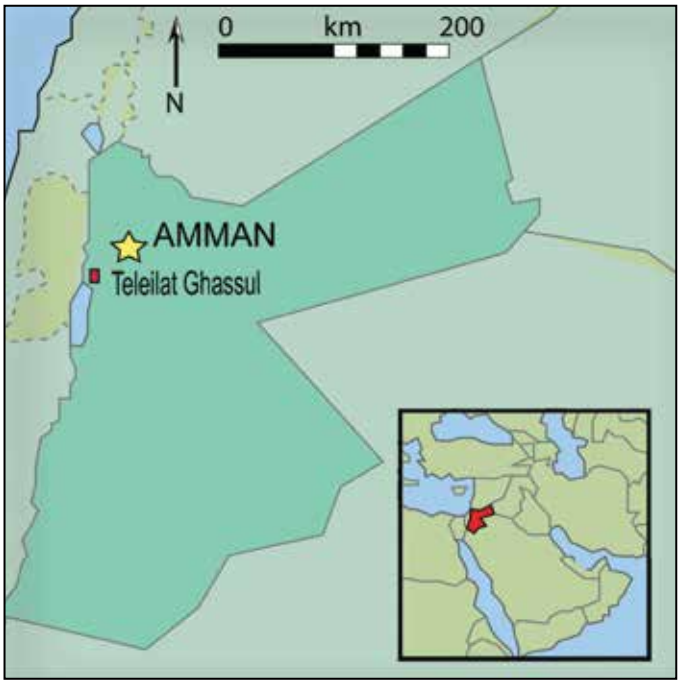
1. How hard can it be to make a fresco? Can a novice, with some artistic ability but no specialised training, produce a fresco of a high standard?
2. How long does it take to create a wall fresco?

The first question was chosen to explore who made the original frescoes. If the experiments indicated that fresco production was a simple process then it would imply that the average Ghassulian could have produced their own murals with little or no training. However, if the experiments revealed that a high degree of specialised training was required to produce a satisfactory result then we might suggest that the murals were created by experts with a considerable amount of technical knowledge and skill.

The second question explored how much time and effort went in to producing one of the murals and also to gain a better impression of the importance and potential value of these artworks within their original context.

Putting the final touches on Hennessy's 'Procession'.

Prior to beginning the experiments a close examination of the surviving frescoes clearly showed impressed lines and indentations, revealing that the plaster was still damp when the paintings were produced. As well, the scientific analyses concluded that the white surface of the murals was created out of lime plaster made from local limestone, which was high in minerals such as calcite, aragonite and quartz. An important factor of the pigment analyses was the apparent lack of any form of binder, either organic or inorganic, which also suggests that the pigments were applied to the fresh surface, with the lime plaster itself providing the binding medium. This method of



Map showing Teleilat Ghassul.

applying pigments to a wet plaster surface is known as 'buon fresco' and the final result is usually a permanent and long lasting decoration. The permanence of this method is due to a chemical reaction that takes place upon the drying of the plaster, when a hard crust of calcium carbonate is formed after combination of calcium hydroxide with the atmospheric carbon dioxide, which fixes the pigment into the wall itself.

The pigments used in the Ghassulian frescoes were prepared from commonly occurring minerals with the palette not particularly wide in terms of basic colours, although this was broadened by laying washes of primary colours to achieve additional secondary colours, such as an unusual orange hue. Most of the mineral pigments would have been readily obtained from raw materials collected within the surrounding environment and neighbouring foothills, which to this day show an amazing array of coloured ores rich in iron oxides.

Once the original manufacturing techniques were established it was decided that replicas would be produced at half-life size to explore the research questions. I decided to follow the accepted guidelines as set forth by experimental archaeologist Karen Harry:

1. A clear definition of the research questions.
2. An idea of what needs to be recreated.
3. Materials, tools and a safe working environment.
4. An experimental design strategy, including parameters, variables and guidelines of how to perform the experiment.
5. An agent(s) who will recreate and an observer who will document each step.
6. Evaluation of the expectations and the experiment.
7. Communication of the result.

These parameters were acknowledged and adhered to as far as possible and although it would have been wonderful to make my own mud brick walls, process my own lime plaster and collect my own mineral pigments, due to the lack of space, time and money some compromise was necessary. After preliminary experiments were conducted it was decided that the best way to produce the frescoes was to use matured lime putty from Western Australia mixed with cleaned and sifted sand applied in three layers to galvanised metal lath over 15mm Plywood with raised wooden borders!

Eleven reproduction frescoes were completed over a full year of work and the results of the investigative project were evaluated and presented within my thesis. They were:

How hard can it be to make a fresco? Can a novice with some artistic ability but no specialised training produce a fresco of high standard?

The simple answer is: surprisingly hard! The answer to this inquiry became obvious even before the process of creating the reproduction frescoes began, as it was clear that some sort of research needed to be undertaken to gain the required technical knowledge. This knowledge was essential to obtain the correct materials, the ratios, consistency and correct timing for the mixes. Without this information there would have been many more failures whilst trying to learn the basics of fresco construction.

As the experiments progressed it also became clear that the application of the lime plaster required a considerable amount of skill to achieve a smooth, glossy result. Although the 'buon fresco' painting process did not appear difficult at first, it became disappointingly evident upon drying that some of the pigments had not bonded properly with the lime on the surface or formed the permanent crust with the pigments that was desired. This was possibly due to the paint being applied too thickly or the pigment granules that I had ground in the mortar and pestle being too coarse and not easily absorbed during the carbonation process. A true specialist in the field of fresco construction would most likely have evaded this issue, however this problem is commonly observed in both ancient and modern frescoes

After producing satisfactory (but less than perfect!) results in some of the experimental reproductions, it was very clear that specialist knowledge and a high degree of technical skill would have been required to produce the stunning, long-lasting and technically flawless frescoes of Teleilat Ghassul. These intricately painted murals must have been created by experts who had already progressed through the trial and error stages of discovery and perfected their skills and were certainly not the casual creations of the local farmers.

How long does it take to create a wall fresco?

The process of creating the wall frescoes really begins with the collection and preparation of the raw materials before the actual painting begins. The following steps and approximate times are listed below:

- The mineral pigments would most likely have been collected in the hinterlands surrounding Ghassul and then painstakingly ground as fine as possible to ensure adhesion. This process possibly took several days.
- The limestone would need to be collected, broken into manageable pieces, carried to a kiln, firewood collected and the stones burnt at a very high temperature (approximately 900°) for several days. The highly caustic and dangerous quicklime produced from the burning would then have to be handled very carefully and mixed with water in a slaking pit where it would be covered and left to mature for as long as possible. This process could take up to a month or more depending on the quality of the slaked lime required.
- The slaked lime putty would then be mixed, most likely with crushed un-burnt limestone or fine sand, to produce a workable lime plaster. To manufacture enough plaster mixture for a base coat to cover a 4 x 2 metre wall (the approximate size of the wall containing the remaining portion of the 'Star' fresco) it would have taken approximately 8 litres of lime putty to 24 litres of filler (ie. double the amount of material needed to make my experimental fresco) and the mixing of this amount would have taken approximately 2 hours. The application of this coat would most likely have taken approximately 1.5 hours.
- A topcoat for the 4 x 2 metre wall would have required 10 litres of lime putty and 10 litres of filler, which was most likely crushed unburnt limestone. The mixing and application process would have taken approximately an hour or two to complete.
- In the half-size replication experiment of the 'Star' fresco I took approximately 7.5 hours to paint the intricate scene, while the Hennessy 'Procession' took approximately 10 hours. The original frescoes would most likely have taken at least double this amount of time, being produced over 20 hours or more, depending on how many people were working on the scene. If the design needed to be established with the use of string lines and string compasses, the painting process would undoubtedly have taken much longer.

In summary, my experimental reproductions demonstrated that the process of creating a fresco is extremely time-consuming, labour intensive and quite difficult (I hope I never have to pudge again). The collection and preparation of the materials would most likely have taken up to a month and the process of covering the wall with plaster and painting the design could have taken up to a week. Therefore the value placed on these artworks, due to the time, effort and materials involved in their creation must have been considerably high. The fact that these murals were often repainted, with similar or often quite different designs, suggests that each was not considered untouchable artworks like our museum pieces today. It is possible that their greatest value derived from the recording of significant events symbolically as artworks - such representation possibly a ritual act in itself.

It would appear that the Ghassulian frescoes were most likely produced by a group of people who had an extremely high level of technical skill, specialist knowledge and much available time, suggesting in turn that these ritual artists played a significant role in the Ghassulian community. The scenes were probably very important to the owners and clan-members of the decorated houses and/or sanctuary buildings, and the artworks most likely served to recall significant rites of passage and ritual performances, or ceremonial events. It is likely that the ritual artists repainted these scenes when another significant event occurred, with slight alterations made to reflect the latest noteworthy occasion. The disappearance of this knowledge at the end of the Chalcolithic period implies that fresco production was either a closely guarded secret known to a select few, with such knowledge managed by the ruling elite, lost when this group ceased to function.

By 'learning through doing' it was possible to generate new insights into the manufacture and significance of the ancient wall paintings of Teleilat Ghassul, with the experimental reproductions providing yet more evidence in the as yet unsolved mystery that still surrounds the Ghassulian Chalcolithic. □

Pudging the lime putty and sand.

Sheikh Muftah and Old Kingdom Interaction at Mut al-Kharab

The Lithic Evidence

Sarah Ricketts

Sam Eames Travel Grant Recipient

An example of a pressure flaked projectile point.

My current research is interested in Late Holocene lithic assemblages from the Dakhleh Oasis, located in the Western Desert of Egypt, from a techno-morphological point of view. More specifically, I'm interested in developing an understanding of the nature of cultural interaction and the effects of external stimuli on material culture, particularly between the indigenous Sheikh Muftah people and incoming Nile Valley Egyptian populations during the early Old Kingdom. Evidence suggests that these two cultures co-existed side by side in the oasis until the latter part of the Old Kingdom, however neither the nature of this relationship, nor whether the Sheikh Muftah were eventually acculturated into Old Kingdom settlements, is currently understood. The site of Mut al-Kharab is located in the south of the oasis, and has been continuously occupied since Sheikh Muftah times. In sealed contexts below later demolition layers, intermixed ceramic and lithic material dated to the early Old Kingdom, and containing both Sheikh Muftah and occasional Early Dynastic sherds, can be found and represent some of the earliest in situ evidence for cultural interaction. Due to this, it represents a logical palimpsest in which to study the cultural interaction between these two cultures over time in this region, and is the focus of my Master of Arts research. More specifically, whether evidence for cultural interaction is visible within patterns of lithic manufacture in this context.

The main objectives of the most recent field season was to undertake a detailed technological analysis of the entire lithic assemblage from the site of Mut al-Kharab, in order to gain a deeper understanding of the cultural behaviours involved in the manufacture of lithic artefacts at the site. This data will be analysed to investigate specific site activity, and explore whether or not lithic manufacture is idiosyncratic enough in this context to be culturally differentiated, or whether there are distinctive patterns of cultural exchange.

Lithic Analysis in Mut al-Kharab:

Technological analysis involves the study of knapped stone industries through identifiable elements, such as tools, raw materials, physical actions, and human agency. While undertaking a lithic study, analysis occurs on two levels: the first is that of observation, which is the initial reading of knapping scars, and the second is that of inference, where the interpretation of artefacts in relation to their place in the chaine operatoire is considered. All artefacts in the Mut al-Kharab assemblage were classified and analysed in relation to their raw material, lithic class, morphological measurements, and location and type of retouch. All tools were photographed and selected artefacts were drawn. This data will eventually be compared to other Sheikh Muftah and Old Kingdom assemblages from the Dakhleh region (also collected during this field season), in order to facilitate understanding of lithic manufacture and site activity, to contextualise the artefacts within the wider Dakhleh region, and to shed light on the nature of interaction between indigenous and incoming Nile Valley populations. Particularly, the nature of interaction and exchange of ideas and concepts related to lithic manufacture.

Brief Results of Research:

Preliminary results of the Mut al-Kharab data indicates an assemblage manufactured predominately by hard hammer percussion, with occasionally more complex pressure retouch applied to artefacts such as fine scrapers, denticulated sickles and projectile points. Overall, the assemblage is dominated by informal tool categories, such as retouched flakes and pieces which show utilisation at macro-level, but no obvious retouch. In terms of the more formalised categories, scrapers, combination tools and piercers dominate, but even these are not homogenous or easily classified. The raw material of choice is definitively chert, and approximately 98% of the tools are manufactured from this material. Over half of the entire assemblage (55%) are classified as chips, (pieces which measure under 15mm^2), which strongly suggests that artefacts were retouched on site.

The next stage of research for this project will be the separation of artefacts into their definitive contexts, to investigate whether any distinctive patterns can be differentiated between different occupation layers. As well as this, the assemblage will be compared to data collected from the pure Sheikh Muftah site Locality 108A, as well as Old Kingdom material from Ayn el-Gazareen, in order to compare and contextualise the stone artefacts being excavated from Mut al-Kharab.

I would like to thank the Near Eastern Archaeological Foundation at the University of Sydney for awarding me the Sam Eames Grant-In-Aid for 2014. It is in part because of this funding that I was able to travel to Egypt and visit the excavated collections stored on site, and collect vital research data needed for my Master of Arts project. ☐

Interconnections between Lebanon and Cyprus during the Middle and Late Bronze Age

by Hanan Charaf

As one of the two recipients of the 2014 Apollo Fellowship generously funded by NEAF, I was able to spend the month of September at the University of Sydney doing research on Cypriot pottery from two important Lebanese sites - Sidon in the south and Tell Arqa in the north near the border with Syria. During my stay in Sydney I benefitted from the library at CCANESA and was able to examine of the rich ceramic material found in the 1950s by Basil Hennessy at Stephania in Cyprus. This material, housed at the Nicholson Museum at the University, helped me assess the same type of material found in Lebanon. Fruitful discussions with Kathryn Eriksson and Stephen Bourke helped contextualize my research within the Cypriot and southern Levantine realms.

Economic trade relations between cities of ancient Lebanon and other regions of the Levant flourished considerably during the Middle and Late Bronze Ages (2000-1150 BCE), two periods known for their extensive political and trade relations. One aspect of this flourishing trade concerns the pottery imports from Cyprus. This type of pottery has been found on many sites in Lebanon, but in my research I focused on two important coastal sites - Tell Arqa in the North and Sidon in the South - because they have yielded large amounts of Cypriot material all falling within the typical range of Cypriot imports to the Levant at the time: White Slip II, Monochrome Ware, Base-Ring I and II, Bichrome Wheelmade Ware, White Shaved and White Painted V and VI.

Tell Arqa

Archaeological excavations at Tell Arqa produced a total of 414 Cypriot ceramic vessels from the Middle and Late Bronze Age periods representing more than 86% of the Western foreign assemblage at Arqa during these periods. Out of the 414 Cypriot items, 269 belong to the Middle Cypriot period and 145 to the Late Cypriot period. During the Middle Bronze Age (Level 13), the Cypriot vessels were found in houses dated to the latest occupation level of this period, as well as in a pond that covered a large surface of the area excavated. Additionally, eight tombs yielded complete or near complete Cypriot jugs belonging to the Cross Line Style, the Tangent Line Style, the Pendent Line Style, and the White Painted V Ware (Fig. 1). The chart of distribution of Cypriot imports from Level 13 shows a predominance of the White Painted (33%), the Cross Line Style (24%) and the Pendent Line Style (21%) wares. It is important to note that not a single locus from Level 13 produced any Base Ring, Monochrome or Bichrome Wheelmade wares.

The dwellings of the last phase of Level 13 were dismantled by the inhabitants and reused in the early phase of Level 12 (Late Bronze Age I) that followed. Level 12 yielded a domestic architecture made of houses set on terraces and built against the inner face of a rampart. Towards the end of Level 12, these dwellings were destroyed entirely by fire, possibly by Thutmose III who mentions destroying the town of ancient Irqata in the year 42 of his reign (1437 BCE according to the Egyptian middle chronology). In all, 97 Cypriot fragments were collected from Level 12 belonging to 17 different Cypriot fabrics. The number of Cypriot fabrics jumped from 6 in Level 13 to 17 in Level 12 attesting to a diversification of imports obtained directly from Cyprus or via a regional center. White Painted still occupies, though, the first place with 34% of the imports followed by the Monochrome and the Base Ring I wares. Curiously, Arqa did not yield any White Slip I vessels, even in residual loci. The reasons for the absence of this fabric at Arqa is still unknown for the time being and need to be further investigated when other areas on the tell are excavated. A micro-regional phenomenon is to be ruled out since Tell Kazel has produced White Slip I.

Level 11 is dated on the basis of the local ceramics to Late Bronze Age II, mostly to the 13th century BCE. This level is badly attested throughout the area excavated. Flimsy remains of a settlement include scattered floors, stone-built silos, mudbrick basins, and a deep cistern. Cypriot objects were mostly found in the pits and silos. Level 11 witnesses the first appearances of White Slip II, Late White Slip II, and White Shaved. All in all, 126 Cypriot

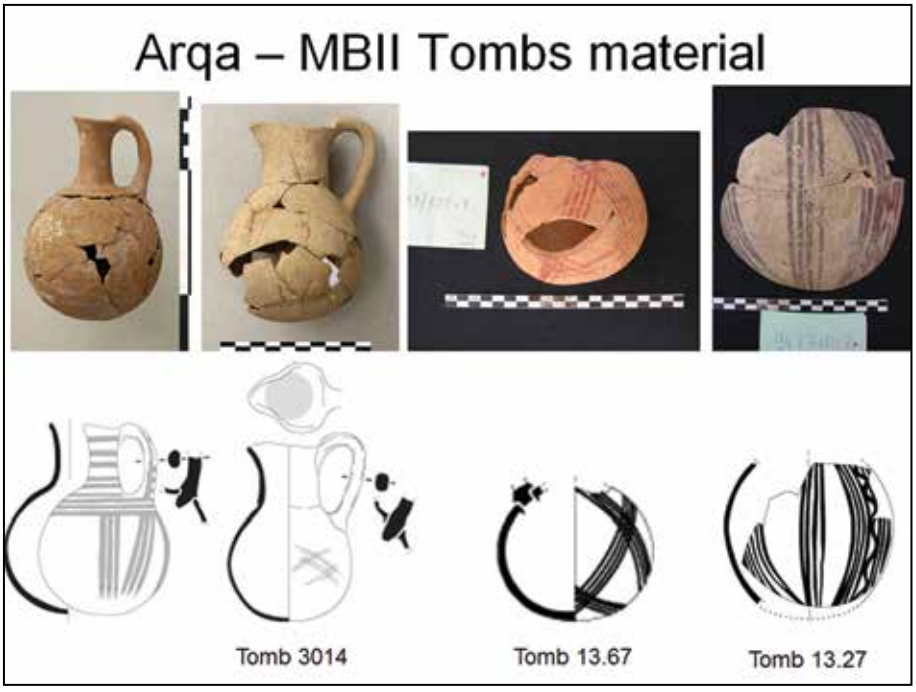


Fig. 1 – Cypriot vases belonging to the White Painted V, Cross Line Style and Pendent Line Style found in Middle Bronze Age tombs at Tell Arqa.

pots were found in Level 11.

The most popular Cypriot import to Arqa is the White Painted V/VI wares with 118 objects, all belonging to jars and jugs. White Slip II and II wares are second and are represented with 47 sherds from the WSI/II transitional (3), WSII (34) and WSIII (10). These numbers are pretty modest when considering that this commodity was widely distributed in the Levant. Tyre (201 sherds) and Sarepta (132 sherds) are the two sites that have yielded the largest amounts of White Slip in Lebanon. Pendent Line Style and Base Ring Ware are very present at Arqa respectively with 45 and 43 pieces. Monochrome Ware, very popular at Arqa and Byblos, appears only in Level 12 and consisted of a modest 23 bowls.

Sidon

Archaeological excavations at the College Site in Sidon began in 1998. Since that time, seventeen seasons of excavations have uncovered more than 128 burials, a large feasting area dated to the Middle Bronze Age, and parts of an adjacent temple dating to the Middle and Late Bronze Age - all together yielding a total of 547 Cypriot imports from the Middle and Late Cypriot periods. The links with Cyprus started during the 18th century BCE and continued uninterrupted to the end of the Archaic Period. The types of Bronze Age Cypriot imports from Sidon are similar to those found at Arqa and the rest of the Levant with White Painted handmade wares predominating in the corpus.

Four of the Middle Bronze Age tombs yielded Pendent Line Style, Cross Line Style, and White Painted V jugs (Fig. 2). One of the rooms of the Middle Bronze Age temple is of particular importance because against one of the walls were found large amounts of ceramics and animal bones deliberately smashed in what is believed to be part of a ritual ceremony. More than 598 lamps and 121 platter bowls were counted as well as a large number of Cypriot Monochrome bowls. Adjacent Room 3 yielded a floor covered with ceramics and fallen carbonized ceiling beams.

A few remains were found of the Late Bronze Age II that belong to the time of the Amarna period when Sidon was mentioned in sixteen tablets. The occupation, though apparently not very extensive, is presently limited to the 13th century and continues into the early 12th century BCE. Remains of the 13th century include a subterranean cella of a temple and a perfectly preserved room found during the winter of 2015. The cella was fiercely destroyed by fire and C14 analysis of the carbonized wooden beams showed that the trees were felled around 1300 BCE. This room yielded Cypriot imports of the White Shaved, White Slip II, and Late White Slip II styles together with a trove of Mycenaean vases such LH IIIB stirrup jars, lentoid flasks, and bell kraters; thus confirming the 13th century BCE date of this room. Examination of the pottery corpus from a structure dubbed the Tawosret Building didn't yield any Cypriot material. The lack of Cypriot imports at the beginning of the 12th century is also attested at Tell Kazel (ancient Sumur) in coastal Syria.

A quick review of the Cypriot wares present at Sidon show that the 547 vases found so far at Sidon are distributed in 24 styles covering the Middle and Late Cypriot periods. White Slip is the most popular import to Sidon with 118 vases. Sidon didn't yield any Proto White Slip, but unlike Tell Arqa where White Slip I is totally absent, Sidon has yielded four White Slip I bowls. White Slip II is the second most popular import to Sidon with 75 sherds. Nearly all belonged to bowls with the exception of three tankards. It is also the most imported Late Cypriot ware to the site. As expected, the White Painted V/VI handmade ranks second among the imports with 105 objects forming almost 20% of the total Cypriot imports, nearly all belonging to jars and jugs. Monochome Ware is also attested with 78 bowls with a majority of them found in rooms attached to the Middle Bronze Age temple. Bichrome Wheelmade Ware manufactured in Cyprus is well represented at Sidon with more than 49 vessels, all belonging to kraters and tankards.

As seen from the Cypriot material, Sidon has no Proto White Slip, Proto Base Ring, or Soft Triglyphic Styles. But the major wares exported to the Levant are all present, albeit in different percentages. Comparison between Sidon and Arqa show the same pattern of imports to both sites, except for the absence of White Slip I at Arqa, which is present at Sidon. The reasons for the absence of these four fabrics at Sidon and/or Arqa are still unknown and must perhaps be sought within the trade patterns of the Cypriot imports or export to the Levant.

Research on Cypriot imports to Sidon and Arqa is part of a global project aimed at studying the types and frequencies of occurrences of Cypriot ceramics to Lebanon during the Bronze Age, with the hope of isolating on one hand, the trade patterns that governed the exchange of these commodities between the major regions in the eastern Mediterranean, and on the other the social values that local Canaanites attributed to these foreign goods. ☐

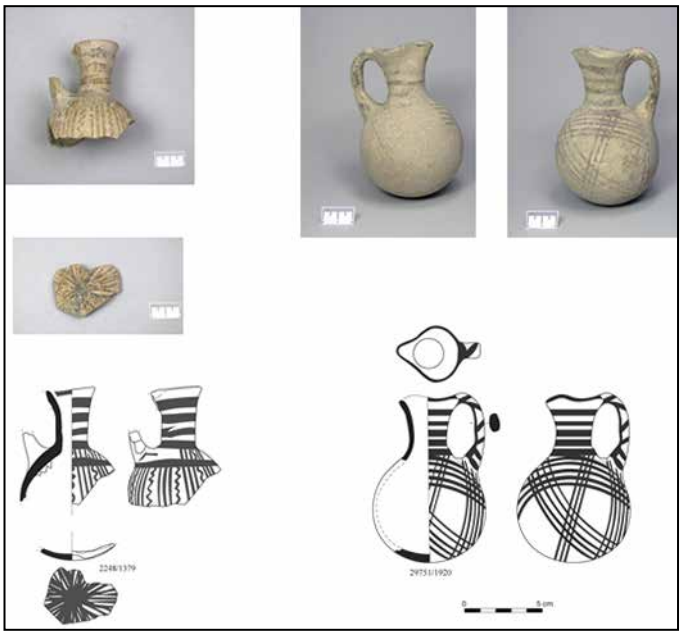


Fig. 2 – Two Cypriot juglets of the Pendent Line Style (left) and Cross Line Style (right) found in two Middle Bronze Age tombs at Sidon.

"For the Temple-bells are callin', an' it's there that I would be"

Working at the Kuthodaw Pagoda in Mandalay

by Wendy Reade

The Kuthodaw Pagoda in Mandalay, Myanmar (Burma) is not just a large golden pagoda pointing majestically to the heavens: it is the central monument of the Buddhist site inscribed in 2013 to the UNESCO Memory of the World list.

UNESCO established the Memory of the World programme in 1992 with the aim of preserving the world's precious documentary heritage from destruction. For the Australian Buddhist scholars with whom I am working, the significance of the site lies within each of the 729 little whitewashed buildings, called 'caves', arranged in seven concentric squares around this central golden monument. The rows of caves (or small pagodas) are divided by leafy avenues of star-flower trees that provide shade in a hot climate.

Each cave contains a large, polished stela of local gray-streaked, white marble, inscribed on both sides with text from the Tipitaka, the recension of the entire Pali canon of Theravada Buddhism. Together these stelae form the so-called 'Biggest Book in the World' whose importance has been acknowledged by UNESCO, and around which a project to conserve, record and study these inscriptions in a digital photographic archive has been developed by the Buddhist scholars from the University of Sydney and the Nan Tien Institute in Wollongong. (sydney.edu.au/arts/buddhist_studies/research/current_projects.shtml)

The central pagoda at Kuthodaw.

Map of Myanmar showing Mandalay (from myanmar.threeland.com).

The inscriptions on the marble stelae were carved between 1860 and 1868 by decree of the Burmese King Mindon as part of the religious duties of Myanmar kings to preserve Buddhist teachings in a changing world - the British had annexed lower Myanmar in 1852. It is said that 2,400 monks from around the country authenticated the texts, copied from palm leaf manuscripts. They constructed the encasing caves, the protective covers for this stone book.

When the British took Mandalay in 1885, during the third Anglo-Burmese war, they occupied the site and stripped it of its riches, including, so it is said, the temple bells and the gilding with which the inscriptions were finished. A plea to Queen Victoria resulted in the withdrawal of the English troops from the site. In more recent times, the inscriptions were repainted in black and the temple bell rings again with a deep and sombre gong.

Despite their importance, there has been no comprehensive study of this site and its texts, nor are the inscriptions being adequately conserved. Before both sides of each of the 729 slabs can be photographed and studied, they need to be cleaned of disfiguring whitewash spatter from the periodic repainting of the caves; liquid paper graffiti left by visitors who thought to embellish the

inscriptions; and acid attack from the urine of small bats who find shelter by hanging from the ceilings of the caves, right above the stone slabs. Shady avenues and open access to the pagoda-caves have seen this become a favourite spot for picnickers and for lovers to laze, leaning up against the inscribed stones, writing on them and leaving their rubbish behind. In one of these small buildings a synthetic blanket draped over the marble inscription had been burnt, leaving a sticky melted mass over the smoke-darkened stone. And then there are the encroaching trees, planted as part of the original design of the site, that now cause problems with damp.

It was my job to document and assess the conservation issues of these stone texts and their caves in just six days in November 2014, and it is fair to say I had my work cut out for me. I had never been to Myanmar before and I knew nothing of the language, for a start. Thankfully my friendly retinue from the Department of Archaeology spoke some English, and with added sign language and laughter we managed to communicate. I had to learn to read Burmese numbers, rapidly. Each cave was numbered in Burmese script above the door, and I had a large printed plan of the site, all in Burmese. It was the only way to navigate my way around, pagoda after pagoda, row after row of identical caves, a maze of blinding, iced-white cupcakes in never-ending rings around the golden centre. Without the pagoda numbers, I may as well have been an ant lost in a forest of sugar lumps.

After learning how to read the numbers, I needed to learn the site layout, to identify and map the conservation problems, and then to select different areas around the site that would provide a representative picture of the conservation issues in what time we had left. There's only so much that can be documented in six days – especially when those six days also included two press conferences, one with the Director General of Archaeology, and the other with the Deputy Minister for Culture. They were keenly interested in, and concerned for, the welfare of the site. And they wanted to know what my assessment was, and what I proposed to do about it – all within the first couple of days of my short visit. I had to work fast, so I used my smartphone to dictate my observations, while my colleague, Chris Clark, took photographs of the front and back of each stone, as well as close-ups to document condition and damage. As long as I had voice memos and photos, I could transcribe all the information into the conservation report later.

But these weren't my only challenges. Because this is a Buddhist religious site, all who enter must remove their footwear. I thought I could avoid the dirt and discomfort of climbing in and out of dusty pagodas and walking the site all day on hot paving stones, by devising some way of protecting at least the soles of my feet in a way that would not offend. I had heard that wearing socks might be all right, so I brought several pairs of white ankle socks with black soles (perfect for not showing the dirt). I also had some tough thin plastic that I thought, if cut to shape, would make ingenious disposable soles when somehow invisibly taped onto my feet. I needn't have bothered.

Despite the best-laid plans of the dirt-averse conservator, the rule is simply that nothing at all is to be worn on the feet. So I walked the site barefoot, and kept as much to the shade as I could. The local custodians of Kuthodaw and the Department of Archaeology staff, who accompanied me every day, swept out the caves of their rubbish, leaf litter and bat droppings before I entered. What I didn't expect was the long grass that grew between the caves in the outer three rows – no stone paving here, just spiky grass crawling with ants and strewn with broken glass, building rubble, rusty nails, rubbish, and other nasties. I stood on the edge of this overgrown zone, weighing the hazards of no-man's land against the need to continue documenting a good sample of the site on a very tight schedule. Fortunately, the custodians were able to arrange for the grass to be slashed. I noticed with some small pang of envy that the workman who wielded the whipper snipper wore gum boots. But they must have been very hot…

I realised how quickly I had adapted to working barefoot when I was waiting one afternoon for my companions outside the entrance. I was sitting near some idle temple dogs, slumped in the shade like slender, tawny dingos. With languid amusement, the dogs and I observed the fervent foot-cleaning ritual of departing tourists. They tottered awkwardly, trying not to overbalance as they cleaned the soles of their feet with vigorous disdain for unfamiliar eastern dust, anxious to slip damp feet into the comfort of western shoes. It was too much effort in the heat, and had to be repeated several times in a day of temple touring. I winked at the indifferent dogs as I slipped my dusty feet into plastic thongs. I would return to the heat and dust tomorrow, but in the meantime a welcome shower waited in our little hotel. Then sleep came quickly in the gale of an electric fan.

Recollections

Every morning outside the pagoda site, the flower seller fills her plastic buckets with bright purple-blue waterlilies and pink lotus blossoms. Worshippers buy them to place in vases before the statue of the Buddha. When the vases fill, the flowers are recycled to the next buyer. Sometimes the flower seller is helped by her sweet little daughter, an irresistible coquette in pretty dress, hair beribboned and her face painted with the traditional creamy yellow paste of pounded wood that protects the skin from the sun.

As we enter Kuthodaw, there are stalls along the walkway that leads to the centre of the site. They sell jade in shades from white to dark green, some mottled and opaque, some streaked purple or orange – pretty, but of lesser quality than the luminous translucent variety of stone. There is also clothing, like the traditional sarong-style lunghi worn by men and women, hand-beaded cloths, gilded buddhas, carved teak, painted wooden puppets and the prized lacquerware, for which Myanmar is famous.

Once past the sellers, we arrive at the serenely seated Buddha with his vases of flowers and kneeling faithful. Around his impassive face, flashing patterns of brightly coloured lights radiate like Vegas billboard glitz: an unexpected 21st century embellishment.

One day we visit the great Mahamouni temple in Mandalay. Here I learn the tradition of perambulating in a clockwise direction around the temple, with its giant Buddha at its centre. We stop for a while to watch men buy gold leaf to apply to the huge Buddha. After years of constant but haphazard gilding by the faithful, Buddha's skin appears to have grown warty nuggets of golden flesh so that now his whole body is misshapen.

In the streets around Mahamouni, we wander amongst the many workshops where likenesses of the Buddha are fashioned endlessly from white marble. Electric saws shriek as they bite the stone, the air thick with marble dust. And from this crystalline mist emerges a petrified forest of hundreds of Buddhas: stock for sale. In the middle of this, a hip young barber plies his trade under the shade of an awning, orange-dyed hair a beacon against the brilliant white.

Nearby, we find the inscription painters sitting cross-legged on the ground beside piles of marble tablets for carving, and carved tablets for painting. I take note of their technique and the kind of paint they use, as I try to learn about the methods that would have been used at Kuthodaw. We have no records of how the first restoration work was done and what materials were used. We have been told that soot would have been mixed with shellac to make the black ink, but we know that the Kuthodaw inscriptions have been more recently repainted and now I observe that a modern, commercial black lacquer paint is used instead. This gives me hope that what I have to do to remove whitewash and liquid paper from the Kuthodaw inscriptions will not damage the tougher black paint beneath, a delicate operation of removing one layer to reveal and preserve the underlying inscription.

The following days pass in a happy routine of driving across Mandalay to pick up the Department staff for the day's work assessing and recording condition. I test a range of methods to clean and preserve the stelae with my Burmese companions as willing helpers. They are good-natured and keen to learn as we work in the airless little pagodas, occasionally amusing ourselves by photographing one another.

Each lunch-time we frequent the local restaurants, 'The Green Elephant' or the 'I Bar'. The food is a delicious fusion of Indian, Thai, Chinese and Burmese: spicy, fresh and flavoursome. At our last lunch, the restaurant staff are happy to arrange a table for us outside under a shady tree. I kick off my thongs to rest my tired feet in the soothing softness of cool, velvet grass. A little fountain bubbles near us as I sip the juice of the fresh-squeezed citrus called sunkist. I close my eyes to enjoy the moment. When I open them, the department ladies are looking at me and giggling shyly as they push a little parcel across the table. It is a farewell present, a beautiful painted Myanmar puppet. "It is a happy lady," they say, grinning, "like you".

Department of Archaeology staff learning how to conserve the stelae.

After lunch, I buy oil to loosen stiff gate hinges on the caves, and wire to lock them all to avoid further human damage – the bats are another problem. We hurriedly finish testing treatments and recording notes. In all, we covered 35% of the site, enough to write the conservation report for the Ministry, including recommendations for the future work plan. The Ministry has granted permission for the conservation work to begin so, to paraphrase Kipling, we will be on the road to Mandalay again in July this year (2015) to begin training and supervising a team of local conservators. They will undertake the work with a local manager, under my general supervision, working ahead of the photographer who will make the digital archive.

This work will be carried out over the next two years and is most generously funded by the Chuo Academic Research Institute of Rissho Kosei-kai (CARI/RKK), Japan. I am personally grateful to Dr Mark Allon, Director of the Buddhist Studies Program at the University of Sydney, for entrusting me with the care of this significant monument, and for affording me the wonderful opportunity to be involved in this exciting project. I'd also like to thank my new friends in the Department of Archaeology, and the Custodians of the Kuthodaw Pagoda, whose happy disposition made work easier, and my anticipated return something to look forward to. ☐

Elamite funerary practices

by Yasmina Wicks

Leone Crawford Travel Grant Recipient

The primary focus of my research was a small corpus of inscribed objects obtained from late Neo-Elamite (c.600-550 BCE) burial contexts, which were analysed together with a handful of complementary funerary-related Elamite texts. Since I lack training in Elamite language and Australia has yet to attract an Elamologist to its shores, I decided to seek an opportunity to work on my material in Italy where a number of scholars are now actively engaged in the study of Elamite language, history and culture. I was fortunate to obtain an agreement with Assoc. Prof. Gian Pietro Basello of the Università degli Studi di Napoli L'Orientale to collaborate on a project involving the translation of the inscriptions and study of the material from both textual and archaeological perspectives. It was hoped that our combined viewpoints would enable a more thorough assessment of the significance of the objects and burial assemblages, and the implications of these results for Elamite funerary practices more broadly. Also at the forefront of the investigation of this material would be the clarification of the specific social and historical circumstances of its deposition.

I doubt that a jaunt to Italy to sit in a library entitles me to describe myself as an intrepid archaeologist on par with those who are usually awarded these grants. Nonetheless, an adventure of sorts awaited me the first time I disembarked the Frecciarossa train from Roma (where I was to be safely ensconced during my downtime). Stepping tentatively out into the hive of noise and activity at Napoli Centrale, I immediately recalled the warnings of well-meaning Roman acquaintances: "be careful in Naples!"; "don't carry anything valuable!"; "a thief pulled poor Nonna's pearls right off her neck!". Bracing myself against any would-be pickpockets and pearl-grabbers who might wish to extend their scope to laptops and portable hard drives, I gripped my life's work tightly in both arms and undertook nothing short of a pedestrian odyssey to the university.

After half an hour of assault on the senses, I was greeted by my hosts Gian Pietro and Prof. Adriano Rossi at the entrance to the delightfully distinctive salmon-pink building of l'Orientale. I would later be informed that this is the oldest school of Oriental Studies in Europe; a college founded in the early 1700s by the missionary priest Matteo Ripa who served in the Manchu court as a painter and engraver, and the five Chinese Christians who returned with him to Naples. In 1861 several more languages including Persian, Arabic, Urdu and Hindi were added to the curriculum and this "Chinese Institute" became the "Royal Asian College".

I came to this first meeting armed with a series of photographs of my material. Each inscription was shot from every angle and light applied from different directions to minimise the possibility of shadows creating

Delivering a presentation at L'Orientale.

some imaginary stroke that might thwart our translation efforts. In the course of our work Gian Pietro scrutinised each cuneiform character, painstakingly drawing and redrawing as the arrangement of the wedges became gradually clearer. We examined the engraving technique and the angle of the tool's approach to the surface, seeking the smallest of signs that might indicate the inscription had been added as part of the original manufacture of the object, or that it had instead been added later, perhaps upon the person's death for their journey to the netherworld.

With the characters reasonably well-established it was time for Elamite language lesson 101. I was introduced to the most indispensable tools of the trade: Walther Hinz and Heidemarie Koch's (1987) Elamisches Wörterbuch and M.–J. Steve's (1992) Syllabaire Elamite. In consultation with these volumes, I learned how to navigate my way around the basics of palaeography and the simpler aspects of the grammar. Elamite is an extremely difficult and poorly understood language that takes many years of study to come to terms with. I am very fortunate to have had the opportunity to work with Gian Pietro whose skill with the language and approach to our challenging material never ceased to impress me. As work progressed we were fascinated by the discoveries we made. The appearance of a (probable) reference to a sheep (or goat) in an Elamite tablet found near a burial sparked as much excitement and deliberation as an 800 year old inscribed "heirloom" eyestone from a tomb. I was fortunate to have the opportunity to present some of my work on funerary practices in a lecture format while I was at the University of Naples, and the complete findings from my project will eventually be included in my thesis, in which I hope to challenge the prevailing assumption that virtually nothing can be ascertained about Elamite funerary practices.

I wish to express my gratitude to the NEAF for believing in the value of this project and for providing the financial means for Australian students like myself to connect with the rest of the scholarly world, which often feels so far away and inaccessible. ☐

Sweet Boy Dear Wife

Jane Dieulafoy in Persia 1881–1886

Review by Ben Churcher

Jane Dieulafoy dressed as she was for her journey through nineteenth century Persia.

The author, Heather Rossiter, is a long-time NEAF member who has recently published *Sweet Boy Dear Wife* with Wakefield Press (ISBN: 978 1 74305 378 2). Heather is an accomplished academic, traveller and scientist who can justifiably add 'author' to her long list of life achievements. Heather's previous books have chronicled Australian efforts to explore the wilderness of Antarctica: *Mawson's Forgotten Men: The 1911-1913 Antarctic Diary of Charles Turnbull Harrisson* and *Lady Spy, Gentleman Explorer: The double life of Herbert Dyce Murphy*.

In her latest book, Heather leaves the freezing wastes of Antarctica and moves instead to the burning deserts of Iran; again using as her guide a fascinating individual: in this case Jane Dieulafoy, the wife and travelling companion of Marcel-Auguste Dieulafoy. Showing true grit, Jane, in order to avoid unwanted attention in nineteenth century Persia, dressed as a man throughout their journey.

> 'What! That sweet boy is a woman?' asked the Shah.
>
> 'Indeed, your Majesty,' replied Colonel Dieulafoy, 'she is Madame Dieulafoy, my dear wife.'

Arriving in Tehran via Athens and Constantinople, the Dieulafoys embarked on an expedition to the ancient site of Susa located near the Persian Gulf in one of the hottest provinces of Iran. This fabled city, in turn Elamite, Persian and Hellenistic, was a major administrative centre controlling access from the Mesopotamian lowlands to the Iranian plateau. At Susa, Marcel and Jane explored the remains of the palace first uncovered by William Loftus some thirty years previously. During this visit, Jane took numerous photographs and made copious notes.

This brief journey to Susa made a lasting impression on the Dieulafoys. Returning to France, they started to organise the publication of the first volume of Marcel's magnum opus, *L'Art antique de la Perse*, the first volume of which appeared in 1884. That year Marcel obtained a grant from the newly founded Department of Antiquities at the Louvre and from the Ministère de l'Instruction publique as well as logistical support from the French army and navy in order to fund further study.

The Dieulafoys returned to Iran in 1884, accompanied by a young engineer, Charles Babin and by the naturalist Frédéric Houssay. The official physician to the Qajar court, Tholozan, who had treated Marcel when he had fallen ill during their first visit, intervened on the Dieulafoys' behalf with the Persian authorities to obtain permission to explore Susa further. Their major condition to do so was that the Tomb of Daniel, still standing not far from ancient Susa in the nearby town of Shush, was not be disturbed. Agreement was also reached which allowed any discoveries made at the site, except for those of precious metals, to be split equally between the French and Persian governments. Further work at Susa took place between the winters of 1885 and 1886.

The excavations took place under arduous conditions. The team lived in tents and were exposed to the harshness of the elements. There was little government control in the region, meaning that roving bands of thieves operated quite freely. Nonetheless, Dieulafoy's expedition succeeded in discovering numerous objects, most of which ended up in the Louvre Museum since the Persian government, uninterested in the largely brick and stone mortar fragments that were unearthed, waived its right to share in the discoveries. Today at the Louvre when you see the Frieze of Lions, a decorative glazed-brick frieze from the first court of Darius I's palace at Susa, you have the Dieulafoys to thank.

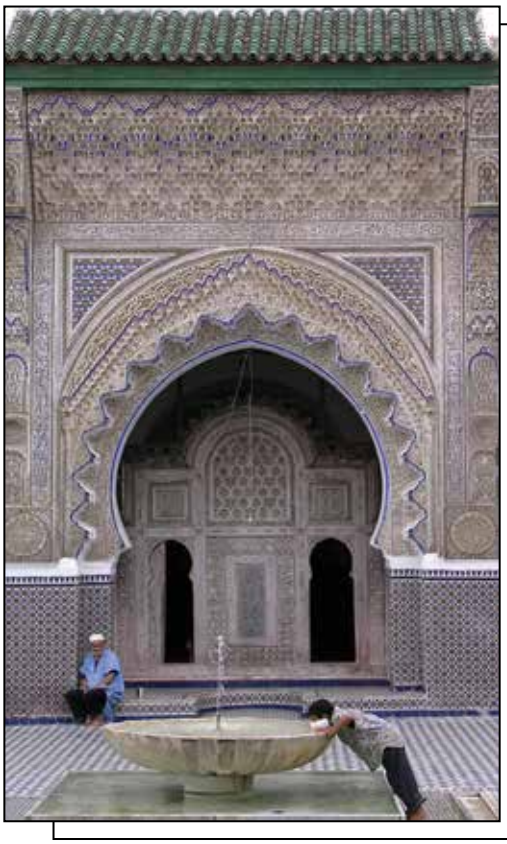
These 'museum pieces', however, were of secondary importance to Marcel, whose primary interest remained the architecture of the site. He succeeded in partially excavating the great central columned hall (the Apadana), originally identified by Loftus as having been originally built by Darius and then restored by Artaxerxes II. Today, this structure is one of the few intelligible remains at the site of Susa which is otherwise a vast undulating ruin field with few built structures interrupting the hills and gullies that one knows contains the buried remains of the city.

Jane Dieulafoy documented the pair's explorations in photographs, illustrations, and writing. She took daily notes during her travels, which were later published in two volumes. It is from these volumes that Heather Rossiter draws upon to weave her eminently readable account. From the everyday world of Persians living under the crumbling Qajar Kingdom to the excitement of archaeological and architectural discoveries, this book vividly brings the world of late nineteenth century Iran into focus. Never straying too far from Jane's writings, the book avoids long digressions yet gives the reader enough contextual information on the society and religion of the day so that reader not only learns about Marcel and Jane, but also the wider world of Persia as it staggered into the twentieth century which was to witness such incredible changes for the country.

For NEAF members who have been to Iran, or are planning to, this book is highly recommended. While the world today has changed somewhat, the sights and smells that assailed Jane in the markets of Isfahan and Shiraz are still there: giving the modern reader some empathy for the world Jane travelled through looking to most bystanders as a 'Sweet Boy'. ☐

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 Morocco will be departing in 2016 although they are filling fast. NEAF has several other tours in the pipeline for 2017. Please refer to the NEAF website for further details.



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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.

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