



First season of the UCL – UoK - NCAM Expedition to the Southern Gezira (Sudan): Jebel Moya

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Jebel Moya, the largest known cemetery of pastoralists in sub-Saharan Africa, lies 240km south south east of Khartoum. It was excavated from 1911 to 1914 by Henry Wellcome, the founder of the Wellcome Trust. It is a multi-phase site with deposits dating as far back as *c.* 5000 BC. With more than 3,100 human burials from the third and last phase dating *c.* 100 BC – AD 600, it provides extraordinary scope for exploring the interaction of indigenous pastoral and external traditions on the southern boundary of the contemporary Meroitic state (Brass 2015a; 2015b; 2016). No new comprehensive excavations have occurred until now. The University College London – University of Khartoum – NCAM Expedition to the Southern Gezira, jointly directed by Dr Michael Brass and Professor Ahmed Adam, initiated new excavations from 2nd-18th October 2017. A key aim of this project is the carrying out of targeted sampling and recording using modern methods in the fields of archaeobotany, zooarchaeology and osteoarchaeology, including the potential for ancient DNA and isotope analyses, and AMS radiocarbon dating, alongside artefactual analyses.

A walking survey was undertaken across the valley. Two of Wellcome's field excavators (Dixon and Wainwright) described the geological strata as follows in descending order:

- (a) Top soil dark brown,
- (b) Upper layer grey,
- (c) Black gravel black,
- (d) Black gebel black (Addison 1949).

The gully by Trench 2 confirms this order and description: Stratum A mid-dark brown-grey, Stratum B grey, and C and D different shades of black respectively. The surface

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of Stratum C is 1.1m below the ground surface. Stratum B is the thickest of the strata. The relative association of the pottery assemblages suggested by Brass (2016) was also confirmed by scraping into the exposed gully strata: Assemblage 1 (Mesolithic) with Stratum D, Assemblage 2 (*c.* 1600 – 850 BC) predominantly in Stratum C, and Assemblage 3 (*c.* 1st century BC – mid-first millennium AD) in strata A and B. Friable bone, mostly animal but with a couple potentially human, are visible in the gully's stratigraphy.

Stratum A is denuded not through deflation but through gentle water erosion over the past 2000 years, and it is lost across most of the site. It is only in the west and north west of the valley that Stratum A remains, which correlates with the west → east and north-west → south-east flow of the gullies, something which was observed firsthand during a brief thunderstorm one morning. There is a large knoll in the south centre of the valley; the area directly west of the knoll against the lower western valley edge is dominated by very deep gullies. Only a couple of the remaining gully tops have thick Stratum A, which is the southern-most occurrence of the stratum.

What was unexpected, however, considering that the field archaeologist of Wellcome's second season (Oric Bates) mentions only a series of seven small semi-circular stone structures in the south-east portion of the East sector of the valley, is that there are numerous small stone circles erected across most of the valley floor. The sectors where such circles were not observed were in the north-east corner of the valley, which is where Wellcome erected grass huts for his workers, and squares excavated down to bedrock by Wellcome (Addison 1949). It appears that sometimes his workers excavated around the circles because they are also found in the valley sectors where he did excavate. The age of these circles remains unknown but it is believed (see below) to post-date the Meroitic-era occupation of the site.

In the northern half of the valley, it was observed that Wellcome's north-east sector could be extended further north and northeast. Stratum B is highly visible there in the flat land and it is unexcavated. Also, some areas directly north of the knoll and south of the House of Boulders (at the northern-most edge of the valley) have skeletons visible on the modern ground surface. Most of the west and all of the north-west sectors remain unexcavated. More generally, human skeletal elements protrude from some gullies. In total, although Addison (1949) states that only one-fifth of the valley was excavated by Wellcome, we calculate that two-fifths was excavated and that two-fifths of the remaining three-fifths comprise viable, unexcavated archaeological deposits.

The excavation works

Five trenches were excavated, with the aim of carrying out systematic sampling at different locations on the northern half of the site area where substantial archaeological deposits remain. Trenches 1, 2 and 5 (Plate 1) were in the west. Trenches 3 and 4 (Plate 2) were in the north east. Trenches



Plate 1. The view from the western slope of the valley out towards the east, over trenches 1 and 2, with Trench 5 immediately adjacent to Trench 1.

1, 2 and 4 were excavated in 100mm spits due to a lack of microstratigraphy, and each was sampled by flotation for archaeobotanical remains. None of these trenches reached the bedrock or archaeologically sterile horizons, so stratigraphy was drawn, plastic woven sacks were laid on the lowest level reached and trenches were backfilled to help protect unexcavated deposits and to facilitate further investigation in the future. Trench 3 was located to rescue the skeletal remains of an eroding burial, but was not excavated below the base of this burial. Trench 5 was an unfinished unit started immediately adjacent to the west of Trench 1.



Plate 2. The view from the western slope of the valley out towards the east, over trenches 3 and 4.

Trench 1

It was located 23m to the west of the start of the deep gully with the full visible stratigraphic sequence mentioned above (Plate 3). We originally marked out a 5 x 5m trench which cut a quarter of a surface stone ring (later Trench 5), but excavated a 1.6 x 1.6m unit on the first day to a depth of 100mm. The modern-day topsoil was only 30mm thick. It was effectively sterile with no guarantee that the couple of tiny sherds were *in situ*. It was removed and spits started



Plate 3. Excavation of Trench 1. The 2 x 2m unit is closest to the camera.

from the surface of Stratum A. On the second day, the 1.6 x 1.6m unit was excavated to a depth of 200mm (Spit 2). The excavation was then expanded northwards for a total area of 5m south-north by 1.6m west-east. The extended area (3.4 x 1.6m) was excavated down to the bottom of Spit 1. At the start of the third day, the original 1.6 x 1.6m unit was expanded into a 2 x 2m unit and it was this latter unit which we continued excavating.

Spit 1 (3.4 x 1.6m unit)

Two calcium carbonate features were found in the north of this extension. Consequently, we extended the 100mm spit to determine the features' full extent. The largest feature was at a depth of almost 100mm and started/ends 350mm from the north-east edge of the extended unit. There were also embedded quartz fragments in a fragment of compacted earth, wood with a few Assemblage 3 sherds around it, large land mollusc shell fragments, and a large grinding stone which was at the juncture of spits 1 and 2.

Spit 1 (2 x 2m unit)

The loosely compacted soil comprised dust and sand particles and was mid-dark grey in colour. There was localised burnt stone and bone, Assemblage 3 pottery sherds, shell, a quartz scraper, three seed cups, pieces of wood and animal bone. There was another calcium carbonate feature at the bottom of Spit 2, confirming Brass' (2016) reinterpretation of the occurrences of what Addison and Wellcome's excavators had described as habitation 'white paving'.

Spit 2

The soil was loosely compacted, with its color being mid-dark grey-brown going into light grey. Hard compacted earth was hit from 180mm down for the western half of the square; it extends out of the square to the west and north. It is not a mud floor. The compaction was made by exposure to rain and trampling. The soil around and above is looser. There are no signs of post-holes or a structure. Assemblage 3 sherds were in association with it and with four concentrations of



bones at a depth of 180-200mm, from the same animal with highly degraded bone fragments in-between. There were two large quartz debris very close to the animal deposits as well as another scraper. Land snail shells and a hammerstone were also found.

Spit 3

Stratum B was hit at the start of Spit 3. The soil changed to compact grey at a depth of 200mm and is clay-like in its consistency. This is sooner than in Trench 2; the contrasting thinness of Stratum A may have to do with denuding from rain water or wash-off further up the slope. There was embedded pottery and bone on the surface of Stratum B. Small human bone fragments were found while sieving. In addition, there was charcoal, small animal bone fragments and more Assemblage 3 sherds.

Spit 4

There was an animal deposit at a depth of 350-400mm associated with Assemblage 3 sherds above and beneath it. There were many unidentified body parts but no skull. It was the discarded remains of a meal. Associated charcoal suggests cooking. Remnants of oxidised iron (350mm depth) were by one large bone fragment. Other material remains in this spit include more Assemblage 3 pottery, animal bone, lithics (microlithic arrowheads, with one having two groove markings where twine was used, and a hammerstone), ostrich eggshell beads, an ochre fragment and one natrolite stone bead.

Spit 5

The soil remained grey compact for the first 60mm but became a rich brown-grey with fine loose particles which was sterile for the remainder of the spit. Animal bones were found in the north wall at the start of Spit 5 and unconnected with the earlier animal deposit in Spit 4. We made a 0.5 x 0.5m incision in the wall and retrieved the bones. There were also a couple of fragments of burnt earth, an iron fragmented bead, two arrowheads and a limited number of sherds.

Spits 6 and 7

The soil remained loose and fine, and a rich dark brown, indicative of prior organic matter. Spit 6 has the odd animal bone, lithics and sherds, while Spit 7 had just a few sherds.

Spit 8

The soil started off compacted and quite hard, but sandy when broken and turning to fine loose sand particles at 0.77m depth. The colour is a rich dark brown turning grey with a little brown. The grey is the result of intense anthropogenic (human). There were burnt animal bones, two pottery lip studs, one wooden fragment (lip stud), shell, lithics, one faience fragment and some pottery sherds. There was also a horizon of scattered large stones (including one quern) at c. 800mm, which was planned but of no clear pattern.

Spit 9

The soil is the same as Spit 8, turning mid-grey. It was moderately compacted with dust particles. There were animal bones

and teeth, burnt animal bone, shell, pottery, a bone tool and a lip stud. Phase 3 occupational activities end in this spit and the square was closed.

Trench 2

It was situated on a high point in the preserved site sediment 5m from the side of the eroded gully with the complete stratigraphy and 20m south east from its start. It was started as a 5 x 2.5m trench; it was later changed into 2 x 2.5m unit (Plate 4) at the start of the third day which comprised the northern section of the original trench, in order to excavate down deep within the fieldwork season and because it was the section closest to the gully.



Plate 4. Trench 2, with the 2 x 2.5m unit closest to the camera.

This was the deepest trench excavated, down to a depth of 1.5m. We did not reach sterile deposits and excavation will continue down to bedrock in the next field season in order to sample the lower temporal phases 1 and 2. The trench was the richest in finds of all kinds and charcoal recovered through flotation. Sediment samples for phytoliths were taken from the strata in this trench.

Finds of note included a diminutive groundstone axe and a clay animal figurine (Plate 5), probably of a goat. Both of these were from lower levels (below 1m), and these were either from the start of the Meroitic-era occupation or from the end of the previous phase of occupation, pending further analysis. A quern, animal bones and charcoal concentration as well as abundant pottery suggest that the Meroitic-period of occupation resulted in a long duration occupational stratigraphy.

Spit 1

The soil in Spit 1 was mid-dark grey in colour, loosely compacted with dusty/sandy particles. There were a few (13) Assemblage 3 sherds, some small animal bones, a natrolite bead and a worked flint.



Plate 5. A goat figurine from the lower levels of Trench 2.

Spits 2 and 3

The soil for Spits 2 and 3 were similar, but there was a large increase in the number of sherds (93). Also present in Spit 2 were animal bones, a grinding stone, a ceramic necklace and a charcoal deposit at the base of the spit in the western section of the trench wall. Spit 3's remains comprised of lithics, a grinding stone, animal bone fragment and Assemblage 3 pottery sherds.

Spit 4

The soil was loosely compacted with sandy particles, brown-mid grey tending to light grey in colour at 380mm depth. We hit the surface of Stratum B at 380mm below. There was a large number of sherds, plus animal bone, half of a stone bead, natrolite beads, lithics, shell, ear studs and lip studs. The lithics comprised both cores and tools including five scrapers. There was no associated debitage to indicate *in situ* flaking. Animal bones suggest butchery and/or consumption.

Spits 5 and 6

The soil of Spit 5, the start of Stratum B, was loosely compacted with dust particle composition and light grey in colour. Finds from Spit 5 included Assemblage 3 sherds, animal bone and a human finger bone (0.65m from east, 1.95m from north). There was also one Mesolithic (Assemblage 1) sherd 2.03m south of north-section wall, 2.4m west of east wall and at 490mm depth.

In Spit 6, the soil started off loosely compacted but became heavily compacted. The finds included half of one ostrich eggshell bead, half of one bone shell, Assemblage 3 pottery, lithics, a thick lip stud, a thick ear stud, animal bones, and a grinding base and a rubber.

Spit 7

The grey soil was heavily compacted with dust/sand particles. It was a productive spit with numerous finds inclusive of stone balls, shells, animal bones, one half of a stone bead, an ostrich eggshell bead fragment, iron oxidised soil in three patches and a partial infant cranium. One Assemblage 2 and one Assemblage 2 sherd were anomalies amongst numerous Assemblage 3 sherds. The oxidised soil is along the south of the trench.

The partial top of the cranium is rounded, remains to be examined, and could be animal or human. It was at a depth of 610mm in the west wall, 1.1m from the south and oriented

to the west. There was no mandible or maxilla. In the same layer was a collection of land snail shells, ochre and one Assemblage 1 sherd. There were also lip studs in the same layer and in the same half of the square. There were no visible cuts in the trench walls, which would have been suggestive of intrusive deposition by human activity. Nearby was a red painted ostrich eggshell bead fragment as well as Assemblage 3 sherds and two lip studs. The third oxidation mark from an iron implement is at the same level as the cranium.

The aforementioned land snail collection was 110mm thick. It was 380mm from the west wall and 280mm from the north wall. A small number of animal bones, worn flat hammerstone or grinder as well as a microlithic quartz blade were also present alongside some animal bone fragments by the shells.

At almost the same level (630mm depth) as the partial cranium but further eastwards are more animal bones. The first two are 450mm and 500mm from north wall, and 820mm from east wall. The third is long and was at an angle, 580mm from north and 550mm from east. There are also parts of vertebrae, disarticulated. The bones include left scapula, partial vertebrae and partial ribs. The position of the scapula to vertebrae suggests a northward orientation. There was some blackening on the bones. Ochre-stained soil was also present near a long bone sticking upwards. In addition, there was a tooth (non-human) and a stone tool; the tooth was 5mm below the other remains. There were no indications of a cut and backfill. A soil sample was taken.

Spits 8 and 9

The soil remained the same as the previous spit. In Spit 8, the finds were shell, Assemblage 3 sherds, animal bone fragments, burnt piece of wood, lip studs, one natrolite bead and lithics (microliths). In Spit 9, there were unknown wood implements and lithics (microliths), animal teeth and bones, a lip stud and shell.

Spit 10

The soil changed to moderately compacted with dust/sand particles. Its colour was light to mid-grey. There were two lip studs, shells, lithics (including one microlithic arrowhead), animal bone, half a pottery bead, a groundstone, sherds and burnt soil 1.01m south of the north section. A clump of soil containing a high amount of charcoal was found 1.01m south of the north section and 420mm east of the west section. Finally, there was a beautiful polished stone handaxe found 200mm from the north section, 360mm from the west wall at a depth of 1m.

Spits 11 - 13

The soil is completely compacted and light grey in colour. There are animal bones and teeth, charcoal, sherds, lithics, shell, lip studs and a bone tool. Two bags of sample charcoal were taken.

In Spit 12, the soil remained compacted but the colour tended sometimes to light brown with light brown gravel. It is believed that we are on the bottom portion of Stratum B.



There were Assemblage 3 sherds, lithics, charcoal, two half beads, shell and more animal bones. This is identical to Spit 13 where lithics, animal bone, sherds and a goat figurine were uncovered.

Spits 14 - 15

The soil remained the same consistency and was light brown in colour. In Spit 14, there were animal bones and teeth, shell, bird bones, lip studs, beads, burnt animal bones, lithics and Assemblage 3 sherds. In Spit 15, there were lithics, shells and sherds. We expect to hit the surface of Stratum C within the next 1-2 spits, as the trench is on a higher ridge than the ground surface at the top of the gully where the surface of Stratum C begins *c.* 1.1m below the modern ground surface.

Trench 3

This 1.5 x 1.5m trench was laid out around a partially exposed burial eroding from Stratum C on a gentle slope running down to a minor gully (Plate 6). Its co-ordinates were 13° 29' 33" N and 33° 18' 57" E, its orientation was 316° and its elevation was 490m asl. It is directly south of the left side of the House of Boulders, when facing the House from the gully. It is to the west of the main gully running northwards. To the east of the main gully are the East and North-East cemeteries. The area has not been previously excavated.



Plate 6. The in situ human skeleton from the top of the cranium to the end of the eroded femur.

This was a rescue excavation but yielded important osteo-archaeological data. The examination by Iwona Kozieradzka-Ogunmakin at the end of January 2018 at NCAM, where the skeleton is curated, aimed to (a) assess the preservation and completeness of the skeleton, (b) estimate the sex and age-at-death of the individual, and (c) physical health at the time of death. The top soil and Stratum B were eroded away. The bones were heavily weathered and off-white in colour. The bones of the right side of the skeleton were better preserved than those of the left side, which could be due to the body's depositional position and subsequent exposure of the part closer to the ground surface.

The overall completeness of the skeleton was approximately 60-75%. In general, the bones were gracile. The upper

part of the skeleton was much better preserved and complete compared to the lower part, of which only fragments of the right femur and long bone shafts (very fragmented) were preserved. The individual was supine, facing left with the hands placed below the pubis. The right innominate and the sacrum were almost complete but only a few small fragments of the left innominate (including the auricular surface) were preserved. Present overall were the cranium, right humerus, left clavicle, partial maxilla and partial mandible, vertebrae, ribs, parts of left arm, right radius and ulna, innominate, sacrum, fingers from both hands, and the right femur. The feet were not present. The length of the skeleton *in situ* was 1.09m from the top of the cranium to the end of the eroded femur.

Assemblage 3-only sherds were in direct association, as were lithics (backed quartz scrapers, microlithic flakes, cores and debris), ostrich eggshell (on the upper right chest) and freshwater shells. Fragmented animal bones were found to the right of the cranium *c.* 80mm from it at the same level. The fingers were bagged separately for transport to the UK for aDNA analysis.

The individual's sex and age-at-death estimations were based on current standards (Brothwell 1981; Buikstra and Ubelaker 1994; Cunningham *et al.* 2016; Miles 1962; Schwartz 2006; Steele and Bramblett 1988). The individual's sex estimation was based on the morphological features of the right innominate and the mandible, being the best preserved in the skeleton. The observed morphological features of these bones were characteristic of a female individual (innominate: wide sciatic notch, small ischial tuberosity and acetabulum; mandible: wide angle and small anterior mandible/protuberance). In the cranium, the right mastoid process was typical of a female individual. In addition, the right femoral head diameter ($38.4\text{mm} < 45\text{mm} = \text{F}$) was also suggestive of a female individual. However, due to the fragmentation of the bones and their incompleteness, many of the morphological features usually used in sex estimation were not observable (both in the pelvis and the skull), and for that reason the sex estimation should be considered cautiously "possible female".

Based on dental eruption, degenerative changes to the auricular surface, and epiphyseal and sacral elements fusion, the age of the individual was likely 20-30 years at the time of death (possibly closer to 24-28 years). Due to the severe fragmentation of the long bones and their incompleteness, it was not possible to measure their maximum length for stature estimation.

No pathological changes were observed in the preserved skeletal elements. The dentition was complete, except for the lower central incisors that were lost ante-mortem most likely due to deliberate dental extraction or ablation, which reinforces the conclusion previously reached by dental examination of the skeletons at the Duckworth Laboratory by Hutton MacDonald (1999). Dental attrition was minimal, affecting mostly the molar cusps. The upper and lower incisors demonstrated advanced labial attrition and surface polishing, which could be related to the use of the teeth

as a tool. Calculus deposit was observed on several teeth, mostly (maxillary) premolars and molars. Caries lesions were observed on the interproximal aspects of the right maxillary canine and 1st premolar (interproximal). Samples were collected by Kozieradzka-Ogunmakin for carbon, nitrogen and strontium isotope and C¹⁴ analyses, and by Brass for aDNA.

Trench 4

This 1.5 x 1.5m trench was placed near the eastern edge of the site area 200mm from the southern side of an erosional gully, which had exposed bones (animal) and a large quern (Plate 7). It is *c.* 15m north of where Wellcome ended his excavations. The ashy sediments, with fairly abundant ceramics



Plate 7. Trench 4 in the north-east sector. A large quern for cereal processing is visible in the bottom left corner.

and charcoal, suggest that this was an occupational sequence. Lithics and beads were also found in this sequence. Sediment samples for phytoliths were taken from the natural strata in this trench and from a possible residue on the quern surface.

Spits 1 - 3

Spit 1 was sterile. Here, a mistake was made in the initial recording and the spits start from the modern ground surface instead of from the start of stratum A after the removal of the top soil. Stratum A started 80mm below the ground surface as measured from the south-west corner, which was retained as the marker for all subsequent depth measurements due to the sloping ground. In Spit 2, Assemblage 3 sherds, wood, animal bone and lithics were uncovered.

The surface of Stratum B was found at the bottom of Spit 3 at 300mm depth. The consistency of Stratum B is the same as in the other trenches. Sherds, wood, animal bone and lithics (both cores and microliths) were present.

Spits 4 - 8

The soil in these Spits is the same until Spit 8: compacted grey-like clay with loose dust/sand particles. Spit 4 has animal bone, wood, lithics including a stone axe, one lip stud and plant materials. Given the proximity to where Wellcome's 4th season of excavations had ended, with recorded burials,

we are wondering if the lip stud is indicative of an as yet undiscovered, *in situ* burial nearby given that lip studs are personal items.

In Spit 5, there were more Assemblage 3 sherds, animal bones, lithics, ostrich eggshell and charcoal, while animal bones, beads, shells, lithics and sherds came from Spit 6.

There was a slight change in the soil at the start of Spit 7 to a dark grey mottle colour. The finds became rarer but there were still Assemblage 3 sherds, a few animal bones, and many shells and stones (both some microliths and ordinary unworked stone). It was an old living ground surface.

At Spit 8, the soil colour changed to a yellow mottle hue, not yet encountered elsewhere, and the consistency changed to loose particles. The rare finds are Assemblage 3 sherds, animal bones, lithics and shells. This soil colour is normally regarded as having been due to poor drainage, with the iron compounds in the soil being in a hydrated form and there being moderate phosphorus fixation and low plant availability (and thereby little organic decomposition). A possibility for investigation in the next field season is that we are hitting the bottom of Stratum B and here we may be seeing the first signals of an occupational break between the times of pottery assemblages 2 and 3, or the very start of the Assemblage 3 occupation.

Trench 5

It is located 2m to the west of Trench 1 at an elevation of 540m (Plate 8). The aim was to investigate a stone-ringed tumulus. The stone ring itself measured 4.5 x 4.2m. It comprised of *in situ* medium-sized stones all around. There are no openings, and no stones inside laying on the surface. A 2 x 2m unit was opened in the south-east corner of this tumulus and taken down to the first compacted surface. A further metre square north of this towards the centre of the mound was laid out, but time was insufficient to excavate this down to the same level. No below ground features or cut was yet exposed to confirm that this is indeed a burial. What can be



Plate 8. Trench 5 immediately to the west of Trench 1 and cutting into the stone-ringed tumulus.



determined at this stage is that an earth mound was built on the ground surface, after the formation of Layer 1 in Trench 1 had begun. A ring of stones was then laid around this mound. Two querns were reused in the eastern part of the stone ring. There were a couple of Assemblage 3 sherds and the odd fragmented animal bone on the surface, but neither can be related to the tumulus.

Flotation and wet-sieving program

Systematic flotation was carried out, using a wash over bucket method through 250 micro mesh size (Plate 9). This returned charcoal and hopefully small seed/fruit remains. Samples were taken through the entire sequences of Trench 1 and Trench 4 and the lower parts of Trench 2.



Plate 9. Flotation in progress at the nearby lake.

Each spit was sampled by two replicate samples of 20 litres each (i.e. 40 L per spit), except for one smaller context sample that was not of the same volume. In total 40 flotation samples were processed. It is hoped that light fractions (charcoal) can be exported for analysis at the archaeobotany laboratory of the Institute of Archaeology, (University College London) by Chris Stevens and Dorian Fuller. Heavy fractions that did not float were then wet sieved on 3mm mesh and sorted for any potential lithics, animal remains, beads or other finds. This produced five small beads, on calcite or of ostrich eggshell.

Brief discussion

The first season of new excavations at Jebel Moya have confirmed the stratigraphic layering at the site as described by the geologists and field archaeologists on Wellcome's teams. The locations for the trenches were chosen on the basis of being either outside or on the periphery of Wellcome's excavated areas. Eroding, weathered skeletons are visible in most parts of the unexcavated portions of the valley. However, although Wellcome's excavators mentioned the presence of habitation remains, it was only for the south-west sector of the valley that photographic data and contextual information remained. Our excavation confirms that occupational

activity other than burial deposition did indeed occur across the valley and that such activity was sustained. These were not visits as part of extended mortuary rituals to bury and honour the dead which could go on for months; a portion of the population actively lived in the valley. It confirms the stratigraphic integrity of the site. It has yielded a skeleton whose examination has significant potential, more so when taken alongside the remains from Wellcome's expedition curated in the Duckworth Laboratory in Cambridge. It has yielded viable botanical samples being studied by Professor Fuller and Dr Stevens, which will assist in environmental and dietary determinations, as will isotopic analysis on the skeleton should the sample prove to be viable. Of the other remains, attribute analysis of the pottery was undertaken on site, petrography will be conducted by a Masters student at the Institute of Archaeology (UCL) in the 2019-2020 academic year, faunal analysis will be undertaken by Professor Kevin MacDonald (Institute of Archaeology, UCL) and lithic analysis will be conducted by Rayan Mahjoub Jarelnabi Abdallah, Osman Khalil Alawad and Ammar Awad Mohamed Abdalla. Furthermore, a fourth previously unknown occupation or use of the site has been confirmed, although no data is yet available as to when the stone circles were constructed except that it would have been either during the Christian and Islamic periods. Forthcoming publications are planned and new field seasons will be undertaken, funding permitting.

Acknowledgements

Brass and Adam, as co-directors of the University College London – University of Khartoum – NCAM Expedition to the Southern Gezira mission, wish to thank the Society for Libyan Studies for its generous grant which made possible this research and the 2017 field season at Jebel Moya. Brass and Adam also thank Dorian Fuller and Chris Stevens for their on-site support and work; Joss Wellings, who was the supervisor of Trench 2; Osman who filled in as a trench supervisor as required; and to Ammar, Osman and Rayan for their excavation work, discussions and thought-provoking ideas. We are also grateful to Sue Hamilton (Director of the Institute of Archaeology, UCL), Kevin MacDonald, Andy Bevan and Scott MacEachern for their expertise and unstinting support, and to the British Museum, Dr Abdelrahman (Director-General of NCAM) and our NCAM Inspector Fakhri Hassan Abdallah. Finally, Brass wishes to thank Isabelle Vella Gregory for her support and advice. Any errors are the responsibility of the authors.

Dr Fuller and Dr Steven's archaeobotanical study was funded by the European Research Council advanced investigator grant on 'Comparative Pathways to Agriculture' awarded to DF (no. 323842). Dr Kozieradzka-Ogunmakin's bioarchaeological study was funded from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No. 665778. National Research Centre, Poland, Programme POLONEZ: 2016/21/P/HS3/00893.

Bibliography

- Addison, F. 1949. *Wellcome excavations in the Sudan: II, Jebel Moya, 1910-1914*. Oxford.
- Brass, M. 2015a. *Reinterpreting chronology and society at the mortuary complex of Jebel Moya (Sudan)*. University College London. Unpublished Ph.D dissertation.
- Brass, M. 2015b. 'Results from the re-investigation of Henry Wellcome's 1911-14 Excavations at Jebel Moya', *Sudan & Nubia* 19, 170-180.
- Brass, M. 2016. *Reinterpreting chronology and society at the mortuary complex of Jebel Moya (Sudan)*. Oxford.
- Hutton MacDonald, R. 1999. *In the teeth of the problem: Dental anthropology and the reconstruction of Africa dietary regimes*. University College London. Unpublished Ph.D. dissertation.
- Brothwell, D. R. 1981. *Digging up bones: the excavation, treatment, and study of human skeletal remains*. Cornell.
- Buikstra, J. E. and D. Ubelaker 1994. *Standards for data collection from human skeletal remains*. Research series no. 44. Fayetteville.
- Cunnigham, C., L. Scheuer and S. Black 2016. *Developmental juvenile osteology*. 2nd Edition. London.
- Miles, A. 1962. 'Assessment of age from the dentition', *Proceedings of the Royal Society of Medicine* 51, 1057-1060.
- Schwartz, J. H. 2006. *Skeleton keys: An introduction to human skeletal morphology, development and analysis*. 2nd Edition. Oxford.
- Steele, D. G. and C. A. Bramblett 1988. *The anatomy and biology of the human skeleton*. Texas.