

# SUDAN & NUBIA

The Sudan Archaeological Research Society



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Egypt

RED SEA

Sudan

Eritrea

Ethiopia

ASWAN  
1st cataract

Aniba  
Qasr Ibrim

WADI HALFA  
2nd cataract

3rd cataract  
Tombos  
Tabo

Kawa

KARIEMA  
Jebel Barkal  
4th cataract

ABU HAMED

5th cataract

Dangeil

Akad  
ATBARA

6th cataract

OMDURMAN  
KHARTOUM  
Soba East

Botri

WAD MEDANI

KOSTI

SENNAR

KASSALA

GEDAREF

The Sudan Archaeological Research Society Concession

▲ Ancient sites

● MODERN TOWNS



N

0 250 km

# SUDAN & NUBIA

The Sudan Archaeological Research Society



Bulletin No. 11 2007

## Contents

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### Kirwan Memorial Lecture

- Death at Tombos: Pyramids, Iron and the Rise of the Napatan Dynasty 2  
*Stuart Tyson Smith*
- 

### The Merowe Dam Archaeological Salvage Project

- Survey and excavations in the vicinity of ed-Doma (AKSE) and et-Tereif (AKSCW), 2006-2007 15  
*Derek A. Welsby*
- Preliminary Report on the Second Season of Excavations Conducted on Mis Island (AKSC) 20  
*Andrew Ginns*
- The 4<sup>th</sup> Season of the SARS Anglo-German Expedition to the Fourth Nile Cataract 26  
*Pawel Wolf and Ulrike Nowotnick*
- Rock art and archaeology: the Hadiab Survey 34  
*Cornelia Kleimitz*
- The Value and Future Potential of Human Skeletal Remains Excavated at the Fourth Cataract 43  
*Tina Jakob*
- 

### Reports

- A Century of Archaeological Salvage, 1907-2007 48  
*William Y. Adams*
- The Nubian Cemetery at Hierakonpolis, Egypt. Results of the 2007 Season
- The C-Group Cemetery at Locality HK27C 57  
*Renée Friedman*
- Overview of the Hierakonpolis C-Group Palaeopathology 63  
*Margaret Judd*
- Overview of the Hierakonpolis C-Group Dental Remains 66  
*Joel D. Irish*
- The Taharqo wall painting rescue project 72  
*Eric Miller, Pamela Rose and David Singleton*
- Excavations in the Palace of Aspelta at Jebel Barkal, March 2007 82  
*Timothy Kendall and Pawel Wolf*

- Bread Moulds from the Amun Temple at Dangeil, Nile State – an Addendum. 89  
*Julie R. Anderson, A. Catherine D'Andrea, Amanda Logan and Salah Mohamed Ahmed*

- Rescue Excavation of a Late-Meroitic Tomb at Botri, South of Khartoum. Preliminary Report 94  
*Mahmoud Suliman Bashir*

### Akad Excavation Project

- Preliminary report on the 2005 and 2006 Seasons 98  
*Mohamed Faroug, Yassin M. Saeed and Alexandros Tsakos*

- Report on the human skeletal material from Akad 107  
*Husna Taha el-Ata and Hwida Mohamed Adam*

- Archaeological Reconnaissance in the Nuba Mountains, Sudan 112  
*Helen Taylor and Michal Bieniada*

- The Sultan Ali Dinar Museum, el-Fasher. A window on Darfur's history 119  
*Pieter Tesch*

- Victorian Gunboats in the 21<sup>st</sup> Century 122  
*Henry Keonn-Boyd*

- A visit to a traditional leather tannery in Central Sudan 125  
*Lucy Skinner*
- 

### Miscellaneous

#### Obituaries -

- Friedrich Wilhelm Hinkel (1925-2007) 127  
*Janice Yellin and William Y. Adams*

- Patrice Lenoble (1942-2007) 128  
*Jacques Reinold*

- Peter Lewis Shinnie (1915-2007) 129  
*Krzysztof Grzymiski*

- Bruce Graham Trigger (1937-2006) 130  
*Krzysztof Grzymiski*

#### Review -

- Włodzimierz Godlewski 2005. *Pachoras. The Cathedrals of Aetios, Paulos and Petros. The Architecture* 132  
*Julie R. Anderson*
- 

Front cover: Village on the Island of Dirbi in the SARS concession above the Fourth Nile Cataract (photo: D. A. Welsby).

## Bread Moulds from the Amun Temple at Dangeil, Nile State – an Addendum

Julie R. Anderson, A. Catherine D'Andrea, Amanda Logan and Salah Mohamed Ahmed

As discussed recently by Anderson and Salah in *Sudan & Nubia* 10 (2006), approximately 77,000 cone-shaped ceramic moulds were excavated from Kom K, a low mound situated behind the Amun temple at Dangeil (Plate 1). Ceramic cones of this type have been discovered at numerous Amun temple sites in Sudan and identified as moulds for temple bread offerings. In Sudan, Jebel Barkal, Sanam, Kawa, Tabo and Kerma Dokki Gel are among the sites where such moulds have been noted (Bonnet 2005, 233-4, figs 13, 14; Jacquet-Gordon 1981, 21; Ruffieux 2005, 259) and their use appears restricted to temples dedicated to the god Amun. In Egypt, they have been found in cemeteries, habitation and temple sites. H. Jacquet-Gordon created a typological series of such moulds, originating from Egyptian and Sudanese sites, dating from the Egyptian Pre-Dynastic period through to the 25<sup>th</sup> Dynasty and Kushite period (Jacquet-Gordon 1981).

The initial assumption, largely based upon Egyptian models, was that the grain used in the Dangeil moulds to make the offerings was either emmer wheat (*Triticum turgidum* ssp. *dicoccum*) or a free-threshing wheat (i.e., *Triticum durum/aestivum*). Free-threshing wheats were introduced during the late Kushite period (Rowley-Conwy 1989, 135) and have been identified in Lower Nubia at Qasr Ibrim and from a medieval context at Nauri in Upper Nubia (Fuller 2004, 70; Fuller and Edwards 2001, 98-100).

Emmer wheat and barley were cultivated in Egypt from as early as the 6<sup>th</sup> millennium BC. They were the staple



Plate 1. Ceramic moulds from Kom K.

grains used for the production of beer and bread until the introduction of free-threshing wheat which was widely adopted after 332BC and the conquest of Alexander (Murray 2000, 511-13). The cultivation of these cereals and the production of bread and beer are depicted in numerous private Egyptian tomb paintings and reliefs of various periods,<sup>1</sup> wooden models of the Middle Kingdom (cf. Winlock 1955; Vandier 1978) and discussed in Pharaonic texts including administrative documents, household accounts, and letters such as the Hekanakhte Letters (James 1962; Baer 1963) and Wilbour Papyrus (Gardiner 1948; Adams 1997). It is also mentioned in classical sources such as Herodotus and Strabo.<sup>2</sup>

Archaeobotanical evidence of emmer and barley usage has been gathered from several hundred surviving Egyptian bread loaves and residues remaining on ceramic vessels and sherds.<sup>3</sup> For example, several ancient Egyptian samples of barley mash (EA 35976) and bread loaves, usually round, oblong, or triangular in shape (i.e. EA 5391, 36192, 5359, 5397), may be found in the collections of the British Museum.

Further, that these grains were used to make bread in Lower Nubia, at least to some extent, as late as the X-Group period (4<sup>th</sup> - 6<sup>th</sup> century AD) is certain, as five round loaves of bread were discovered during the West Bank Survey from Faras to Gemai in grave 1 at site 5-T-27, a Ballana culture cemetery (Adams 2004, 130, pl. 24, e). It should be noted that these loaves were not mould-made, came from a cemetery context and better resemble those depicted on Kushite offering trays.<sup>4</sup> Regrettably, extremely few examples of bread survive from Sudanese sites and archaeobotanical research has been limited until recently.

Archaeobotanical analyses of macrofossils, phytolith and starch grain studies, were conducted on mould sherds, grinding stones and soil samples from the Dangeil Kom K excavations by Dr A. Catherine D'Andrea, Simon Fraser University, Canada and Amanda Logan, University of Michigan. Upon receiving the results of the archaeobotanical analyses, it became readily apparent that the preconceived assumptions concerning both the grain and cooking methods used at Dangeil were incorrect. Sorghum phytoliths were found on the bread moulds, grinding stones and associated ceramic fragments analysed. Sorghum starch grains were also identified. This indicates that sorghum was the grain used for offerings at Dangeil, rather than wheat or barley as was the case in Egypt, and perhaps further north in Sudan. Based upon the starch and phytoliths alone, it was not

<sup>1</sup> Cf. Kenamun in Thebes (Davies 1930, pl. 58), *Tjj* (Wreszinski 1936) and Mereruka (Duell 1938) at Saqqara, and *Ssm-nfr* at Giza (Junker 1953).

<sup>2</sup> Cf. Murray 2000, 508 for an extensive list of references.

<sup>3</sup> For a detailed discussion of the analyses of residues and bread loaves see Samuel 2000, 542-44.

<sup>4</sup> Cf. Kushite offering trays EA 1541 and EA 1587 from Faras in the British Museum collection.



possible to distinguish wild from domesticated sorghum; however, charred grains of domesticated sorghum were also recovered indicating that the grain used was domesticated *Sorghum bicolor*. It is hoped that further identification of the sorghum variety will be possible with additional analyses.<sup>5</sup> Of note, domesticated sorghum dating to the 1<sup>st</sup> century BC has been identified at Meroe. The Meroe samples were sieved and largely taken from various domestic deposits in the 50-metre trench. One came from the destruction and final floor level within temple M720. None of the samples came directly from bread moulds, other ceramics or grinding stones (Shinnie and Anderson 2004, 366; Stemler and Falk 1981). Further to the south, carbonised sorghum grains were also discovered at Jebel Tomat dating to the 3<sup>rd</sup> century BC (Anwar 1989, 105).

It appears that the Kushites, at least those in the Meroitic heartland, adopted the Egyptian practice of using moulds for offerings made to the god Amun, but modified their usage to suit their own needs, local rituals and traditions. The victory relief of King Sherekaror (AD 20-30), carved at Jebel Geili, bears silent witness to indigenous belief in the connection between the god(s), late Kushite royal power and the food grain sorghum, as the god depicted gives the king the bounty of all of these things.<sup>6</sup>

D. Edwards has noted the strong connection between the late Kushite rulers (Meroitic) and sorghum. He suggests, likely correctly, that this bond forms part of the ritual role of kingship in the region, perhaps as part of the king guaranteeing fertility, successful harvests etc. (Edwards 1996, 76).

Such modification of Egyptian practices has been discussed by L. Török with regard to the incorporation of non-Egyptian scenes into Meroitic pyramid chapel reliefs. “The inclusion into the chapel relief program of non-Egyptian scenes, such as the funerary dance of Nubian women accompanied by drum players, also suggests a Meroitic reinterpretation of borrowed rites” (Török 1997, 514). Further, while Török suggests that “the cults of the Nubian deities Apedemak, Arensnuphis, and Sebiuwerker indicate a syncretism in which indigenous traditions were interpreted and articulated in Egyptian terms” (1997, 504), it seems that the converse was also true with Egyptian cultic traditions being interpreted and practiced by the Kushites using indigenous Kushite idioms.

It might be suggested that following its introduction, initially, this type of mould offering was restricted to the region north of Jebel Barkal. It is notable that few remains of early Kushite (Napatan) religious buildings, particularly Amun temples, have been discovered south of Jebel Barkal. A couple of datable blocks have been discovered at Meroe (cf. Grzymski 2004, 168, no. 148) in the Amun temple and

Sun temple for example, but considering the amount of archaeological work conducted in the Butana region, and recently in the Fourth Cataract, this absence is striking. Religious structures certainly existed but might have been constructed of a material less durable than stone. They were also not necessarily dedicated to Amun. It is as yet uncertain as to how widely Amun was worshipped south of Jebel Barkal prior to the late Kushite (Meroitic) period, and in what incarnation or form.

Further, pending future archaeobotanical investigations, it may be hypothesised that the usage of wheat or barley for Amun temple offerings was determined by geographic proximity to Egypt and that this may have been restricted to the early Kushite (Napatan) phase. Archaeobotanical analyses conducted at Qasr Ibrim indicated that emmer wheat (*Triticum turgidum* L. ssp. *dicoccon*) and hulled barley (*Hordeum vulgare* L.) were the prevalent crops there during the early Kushite (Napatan) period. A major transition occurs at Ibrim during the late Kushite period around the mid-1<sup>st</sup> century AD, wherein domesticated sorghum (*Sorghum bicolor* [L.] Moench. race *bicolor*) becomes the main grain crop in evidence, though barley remained in frequent use as well (Clapham and Rowley-Conwy 2006, 7; Rowley-Conwy 1989, 134). Currently, it is unknown if sorghum was used specifically for moulded offerings in Amun temples north of Jebel Barkal during the late Kushite (Meroitic) period. Were this the case, it likely followed the widespread adoption of domesticated sorghum and the accompanying irrigation technology required to facilitate such an expansion into that region.<sup>7</sup>

So the question then arises, what sort of bread product can be made in a mould with sorghum, or is bread being made at all? With this in mind, a series of ethnoarchaeological inquiries and experiments were conducted at Dangeil with the assistance of Toma Hamid, whose time, culinary skill and insight we gratefully acknowledge. Sorghum is essentially gluten-free and does not rise.<sup>8</sup> The modern bread-type products made with sorghum are flat, thin, unleavened and usually cooked on a hot griddle, such as *keisra* (Hamid 1993, 169-186; Lyons and D’Andrea 2003, 523) (Plate 2). The only sorghum foodstuff currently produced in Sudan in a mould is a firm stiff porridge, called *aceda*.<sup>9</sup>

At its simplest, to make *aceda*, sorghum flour is mixed

<sup>7</sup> It is further noted that the widespread cultivation of sorghum in an arid area such as Lower Nubia would have to be accompanied by the adoption of saqia irrigation, because as a summer crop additional water would be required to compensate for the low Nile level. Emmer wheat and barley, being winter crops, have no such similar requirements [if they were grown exclusively on *seluka* land (ed.)] (Clapham and Rowley-Conwy 2006, 7).

<sup>8</sup> For a discussion concerning the botanical and chemical characteristics and behaviour of various East African grains, including sorghum, cf. Lyons and D’Andrea 2003, 523-524.

<sup>9</sup> Some confusion exists over the terminology used to describe porridges and breads made of sorghum within different regions of Sudan and between rural and urban settings. Cf. Hamid 1993, 113.

<sup>5</sup> Cf. De Wet *et al.* 1979, for a discussion of variability in *Sorghum bicolor* and the characteristics of wild, versus domesticated sorghum.

<sup>6</sup> Cf. Haaland 2006, concerning the cosmology of food.



Plate 2. Cooking kissra on a hot griddle.

with water and is often left over night to ferment, though in some places in Sudan (i.e. western Sudan), *aceda* is made from unfermented dough (Hamid 1993, 113-4). The following morning, the mixture is strained and heated over a fire in a pot (Plate 3). The mixture is continuously stirred and during the process of cooking the dough becomes pro-



Plate 3. The initial heating of the aceda.

gressively thicker (Plate 4). When it is done, the top is somewhat elastic. If it is overcooked or overheated, the product becomes inedible to the modern tongue, though this may not reflect ancient preferences. This particular aspect was amply illustrated during our experiments. Moulds, such as bowls, are lubricated with water or sometimes with a little oil then the cooked sorghum porridge is added (Plate 5). At this point, the porridge is ready to eat. When the thick stiff porridge is removed from the mould, it maintains its shape

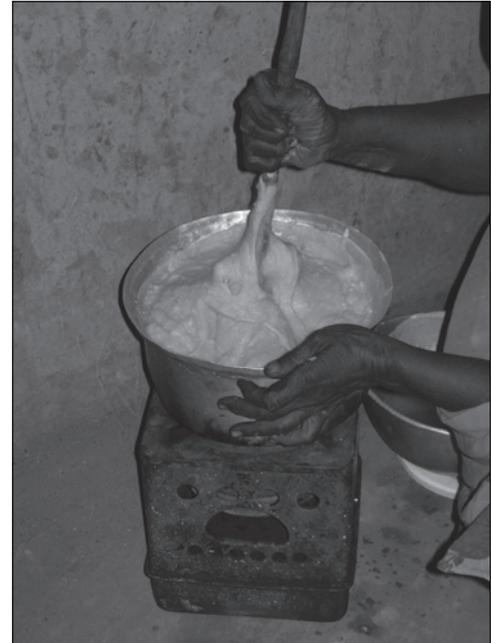


Plate 4. Progressive thickening of the aceda sorghum dough.

(Plate 6). The moulds themselves are not baked or cooked and consequently display no evidence of burning.

An experiment was conducted wherein some of the sorghum *aceda* mixture was added to a Kushite bread mould that was nearly complete. Were the mould complete, it would have been necessary to break it to remove the contents, but in this case, it was not required. The *aceda* took the shape of the mould, becoming somewhat cone-shaped. The production of *aceda* or an *aceda*-type firm porridge may be suggested as one possibility for the use of the bread moulds. However, due to the small size of the majority of the moulds



Plate 5. The thick stiff aceda porridge is placed in the moulds.



Plate 6. The *aceda* is removed from the mould maintaining the mould shape.

(c. 99ml capacity), it may not be a particularly practical suggestion and it should be noted that *aceda* may be consumed directly from the pot, when cooked, without the need for any post-cooking shaping.

Although copious quantities of ash and charcoal were mixed with the Dangeil mould sherd deposit, no ovens were discovered, unlike the sites of Kerma Dokki Gel and Tabo further to the north, where numerous ovens were unearthed (Bonnet 2005; Jacquet-Gordon 1981, 21; Ruffieux 2005). The apparent lack of ovens at Dangeil might be attributed to the small size of the excavation unit and some may indeed await future excavation. It was also noted that, although the Dangeil moulds display ample evidence of cracking, warping and vitrification from firing (a process which occurs at a substantially higher temperature than cooking), no apparent signs of secondary burning, or charring from baking or cooking, were evident. This might indicate that the moulds were not actually cooked, but perhaps used in the fashion described above. Alternatively, were the moulds to be set in sand while being baked in ovens, large amounts of charcoal would be found in the rubbish deposits, while the moulds would not necessarily exhibit signs of charring. It is then possible that an *aceda*-type mixture was poured directly into the moulds, after which they were heated in an oven.

A second possibility is that a bread, or a firm porridge, is not being made at all, but rather a sorghum beverage or beer, similar to modern day *merissa* or *assaliya*. According to Hamid Dirar (1993, 30) there are between 30 and 50 different kinds of *merissa*. Consumption of a beverage might not account for the extensive number of broken ceramics, but the breaking of the moulds could have fulfilled some sort of ritual purpose. Ritualistic breakage of ceramics including Meroitic and Post-Meroitic jars, libation vessels, and small bowls has been noted at several sites in the Butana near Meroe including Jebel Ab Amera and Jebel Ardeb (Lenoble 1992).

There is evidence to suggest that the Kushites consumed beer, although direct archaeobotanical evidence is lacking. For example, the classical geographer Strabo mentions that the Ethiopians [Kushites] consumed millet [sorghum] and made a drink from it (Strabo XVII, II, 2). A Kushite graffito from Musawwarat es-Sufra, situated in the Meroitic heartland of the Keraba, depicts two people, identified by the excavators as ‘happy beer drinkers’, drinking out of a jar through a straw (Hintze 1979, 140-141, fig. 16). Lines are drawn around the drinker’s head and it has been suggested that these are to indicate that the drink is intoxicating. The method of consumption shown in the graffito is one currently used by beer drinkers in the region of the southern Blue Nile (Hamid 1993, 22, fig. 1.3) and in parts of central Africa such as Uganda (Haaland 2006, 6, fig. 5). Later, during the 10<sup>th</sup> century AD, an Egyptian official from the Fatimid court Ibn Selim el-Aswani (as related in the geography of Ahmad ben Ali Maqrizi) recorded that ‘white dhurra’ was used by the inhabitants of Soba to make beer (*miẓr*) and during the 12<sup>th</sup> century AD, the Arab geographer Al-Idrisi noted that millet [*dhurra*] was used for making beer (*miẓr*) in the kingdom of Makuria (Vantini 1975, 274, 613).

At this point, it remains uncertain whether a sorghum beer or a firm porridge was produced in the Dangeil moulds. It is hoped further archaeobotanical study of the sorghum phytolith signature and starch grains will be able to determine which of these possibilities the Kushites chose to offer to their god Amun.

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