Karol Piasecki, Bogdan T. Żurawski, Dorota Moryto-Naumiuk, Lucyna Piekacz

Banganarti: Archaeological Excavation on the Site in 2007

Polish Archaeology in the Mediterranean 19, 327-341

2010

BANGANARTI
ARCHAEOLOGICAL EXCAVATION OF THE SITE IN 2007

Bogdan T. Żurawski

*In 2007, the season lasted from January 5 to February 25. The archaeological part of the program included testing of the structures of the Lower Church at Banganarti (eight trial pits uncovering more murals) and large-scale excavation of the outer fortifications aimed at a general reconstruction of the layout and chronology in relation to the churches and other structures intra muros. This was coupled with air photography of the outer fortifications and the site surroundings. Newly excavated parts of the curtain wall were surveyed topographically. The topographer also took time to prepare a contour map, which includes the Nile paleochannel [**Fig. 1**].*

The conservation effort was centered on taking down the murals of the 'Anastasis' and 'St. Sisinnios trampling a female demon' from the Lower Church and general conservation of the plastered walls, both inside and outside the church (see below, Appendix B). Modern roofing over the western part of the church complex was introduced to protect murals and graffiti recorded in the previous season. Work also proceeded on preparing the building of the Raphaelion for covering with a 1:1 replica of the vaulting (central dome included) constructed of iron piping. This framework model (designed by architect P. Malec in 2004) will be installed over the actual roof made of corrugated steel sheets riveted to a welded iron frame.

In addition to the regular work, the team excavated a probe on the central kom at Selib, a site nine kilometers upriver from Banganarti, and undertook salvage excavations of a post-Meroitic tumulus found by local clay diggers in Tanqasi village.

1 The mission was headed by Dr. Bogdan T. Żurawski, archaeologist, and comprised: Dr. Tomasz Stępnik; Mariusz Drzewiecki, Magdalena Woźniak, Elżbieta Szewczyk (pottery documentation), archaeologists; Anna Błaszczyk, archaeologist-documentalist; Dr. Magdalena Łaptaś, iconologist; Dorota Moryto-Naumiuk, Lucyna Piekacz, conservators. After completing their work withthe mission at Shemkhiya, the team from the Fourth Cataract: Roman Łopaciuk, topographer; Anastazja Stupko, archaeologist-documentalist; Magdalena Włodarska, Alicja Pląskowska, archaeologists, joined the mission. The National Corporation for Antiquities and Museums was represented by El Montser Dafaala Mohammed Elamin, conservator.

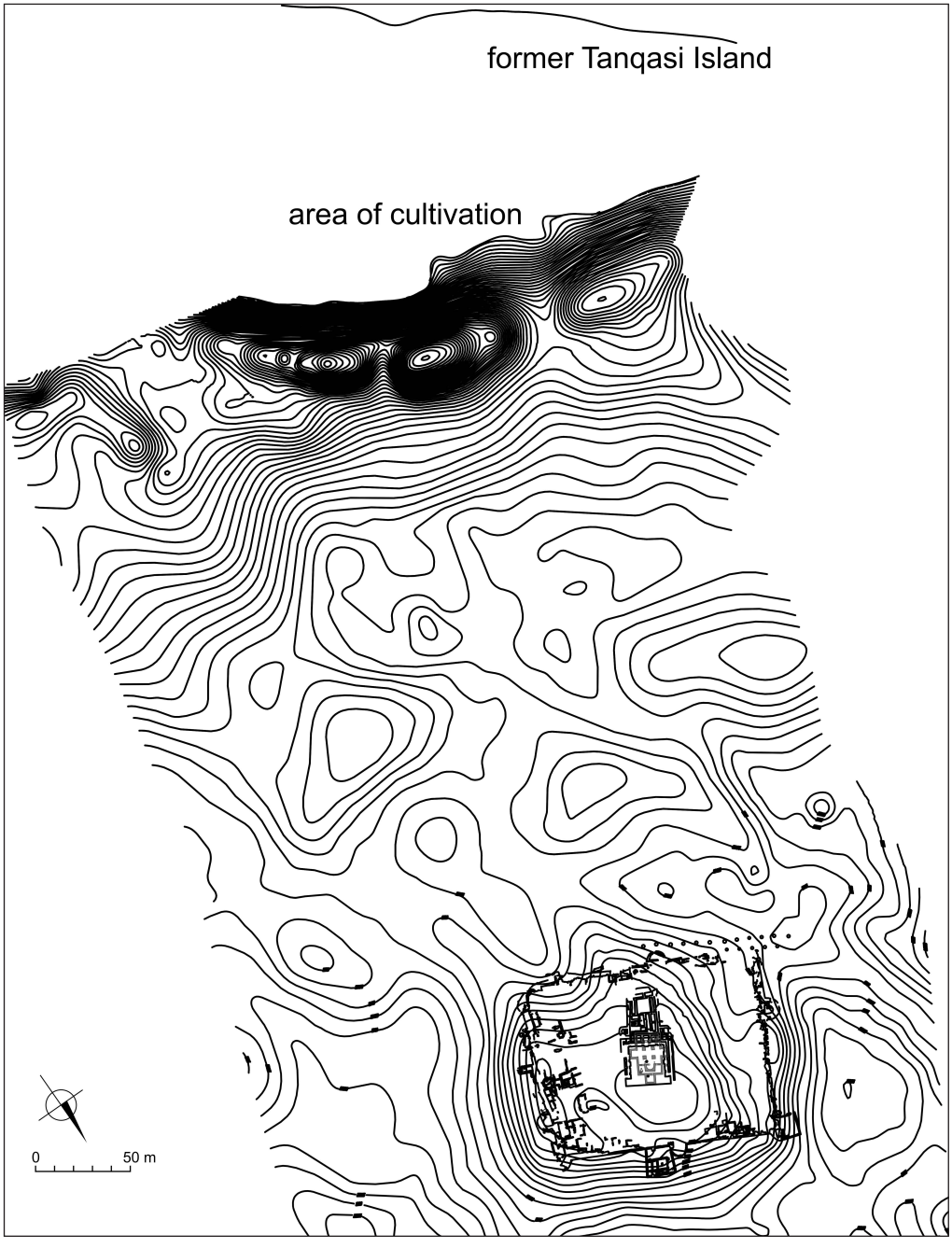

Fig. 1. Geodesic plan of the archaeological site of Banganarti and the region between the site and the Nile by the former island of Tanqasi; plan of the fortifications and sacral complex at Banganarti (site 1) after fieldwork in 2007 (Mapping R. Łopaciuk)

EXCAVATION OF THE CURTAIN WALL AND STRUCTURES INSIDE THE WALLS

Investigation of the curtain wall[2] was topmost on the agenda and included some of the structures found *intra muros*, abutting the inside face of the defenses. In the southern part (Sector S) there was a round structure of mud brick, which the builders of the defense wall apparently had to bypass. To the west of it, explorations covered a series of kitchen, domestic and habitational units built alongside the enclosure wall [***Fig. 2***].

Excavations concentrated on the south-western corner of the curtain wall (for details, see below, contribution by M. Drzewiecki in this volume), which could not be traced on previously made aerial photos of the site, nor did it appear in surface brushing of the area and in the shallow trenches. Considering the known extent of

Fig. 2. Aerial (kite) photo of the site after the end of excavations in 2007 (north is as in Fig. 1) (Photo B. Żurawski)

2 Supervised by Mariusz Drzewiecki and Magdalena Woźniak.

the damages, it is only natural that the former village of Sinada which had existed on the flat bank of the Nile to the south and southwest of the Banganarti enclosure, must have mined mud brick and silt from this particular area. In some parts of the fortifications, the wall was plundered right down to the foundations, sometimes even 5 m below the ground surface.[3]

Excavations revealed the earliest fortifications, which were repeatedly enlarged and reinforced, but no tower, similarly as in the case of the northwestern corner of the fortifications (see Żurawski 2009; Drzewiecki 2009). The western stretch of the curtain wall is also thinner, reinforced in the center with a semicircular tower that should be linked rather with the later set of fortifications protecting the Upper Church (Raphaelion). It seems thus that this side of the complex was less endangered. Even so the walls of the earliest, roughly rectangular fort reached 4.50 m in thickness. They are dated to the 6th/7th century, contemporary with the building of the Lower Church.

Clearing work along the northern curtain wall uncovered two new towers, one in the northeastern corner and another one, a gate, in the western section of the wall. Exploration of the tower gate revealed the earliest defensive architecture built partly of red brick. The doubled wall (after rebuilding) of the tower gate revealed rectangular sockets that may have housed a trebuchet, which the Nubians first saw during the raid of Abdullah ibn Sa'd ibn Abi Sarh in the middle of the 7th century (Vantini 1975: 639). The device could have been used as protection for the flanks of the northern wall. A similar installation was documented in the oldest wall of the Dar el-Arab fort on the Fourth Nile Cataract. A late example of the use of a trebuchet in Sudan was evidenced in the 17th century *Seyahatname* [Books of Travel] by Evliya Çelebi (fort of Sese [modern Sesebi ?], cf. Prokosch 1994, 124–125).

TESTING IN THE LOWER CHURCH

Eight test pits were dug,[4] some of them continued from the previous season [***Fig. 3***]. The datum point for all the trenches was the threshold in the southern entrance to the Upper Church (Raphaelion).

TEST PITS 1 AND 7

The test pits were located on the axis of the southern entrance to the Upper Church, test pit 1 next to the southwestern pillar of the Raphaelion, west of the trench with the *Anastasis* mural, test pit 7 in the entrance against the inner face.

The footing of the foundation of the lower church was recorded in the first of the pits, as well as layers of fill, the western face and wall pilaster of the Lower Church and floor level connected with the earliest phase of the basilical church accumulation layer. The most important discovery, however, is a wall, which turned out to constitute the foundation on which a wall of the Lower Church and the said floor was erected. This wall was approximately 0.20 m wider than the wall of the basilical church and it was not interconnected, demonstrating clearly that it

3 Modern Chinese enameled bowls used to dig Nile silt and *maroq* were found in robbers' pits even 1.20 m below the ground surface.

4 Supervised by Dr. Tomasz Stępnik with assistance from Magdalena Łaptaś and Magdalena Woźniak.

belongs to the earliest phase of the Lower Church, one which had so far not been recorded archaeologically. The bottom of the foundation of this oldest wall is consistent with measurements taken in the other trenches, that is, 4.35 m below the datum point. In test pit 7, the depth of the oldest remains was only 3.60 m, but nothing of any structural importance was discovered.

TEST PIT 2

Situated in the eastern part of the church. Apart from documenting the explored tomb, the pit was meant to uncover the bottom of the foundation of the basilical phase of the Lower Church. This level was recorded at approximately 4.40 m below the provisional datum point. The remains of a niche for mounting a funerary stela were noted in the eastern face of the west wall [*Fig. 4*].

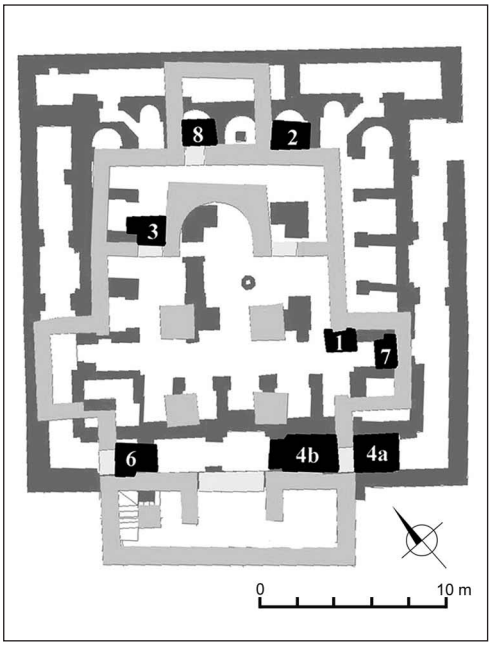

Fig. 3. Plan of the Upper and Lower Churches with the localization of the trenches excavated in 2007

TEST PIT 3

The ceramic floor of the Lower Church was discovered in the test pit situated in the northern part of the church. There were two clay pipes sunk into the floor. A blocked entrance to the northern sacristy was

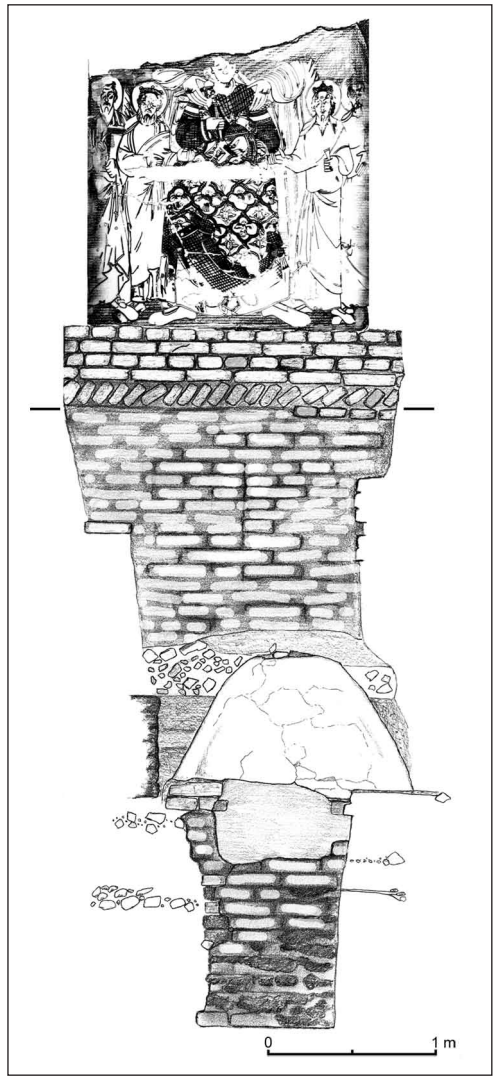

Fig. 4. Test pit 2. East wall of the eastern mastaba tomb with superposed east wall of Chapel 3 of the Upper Church (Drawing T. Stępnik and A. Błaszczyk)

recorded, as well as the eastern section with accumulations inside the Lower Church and the foundation footing of the Upper Church [*Fig. 5*]. The bottom of the foundation of the Lower Church was hit at approximately 4.40 m below the datum point.

TEST PIT 4

The test pit was enlarged when traces of murals were noted on the eastern face of the west wall. Test pit 4a covered a 2.50 m section of the wall in front of the entrance to the Lower Church. The blocked southern entrance to the Lower Church was discovered [*Fig. 6*], as well as two levels of brick and stone-and-brick pavement. The upper floor was connected probably with an early phase of the Upper Church from before the construction of the West Portico (0.50 m below the top of the portico foundation (relics of a drainage(?) channel destroyed by the foundation of the said portico, were discovered in the southern part). Its bottom stood on a layer of mud bricks and the channel was covered with stone slabs.

Below this floor there was a mud-brick buttress which did not close off the entrance. The buttress seems to have been erected during the functioning of the Lower Church, presumably to reinforce an unstable outer wall of the Lower Church.

The stone-and-brick pavement was recorded on the level of the entrance to the Lower Church. The sandstone slabs were

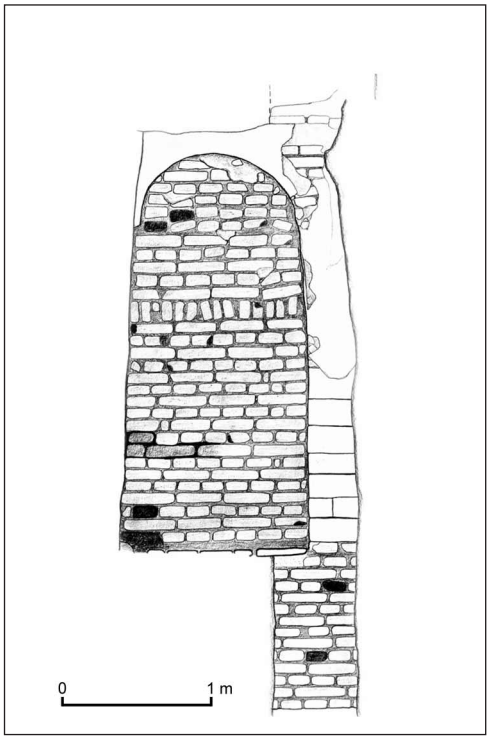

Fig. 5. Test pit 3. View of the blocked entrance to the northern sacristy (Drawing T. Stępnik and A. Błaszczyk)

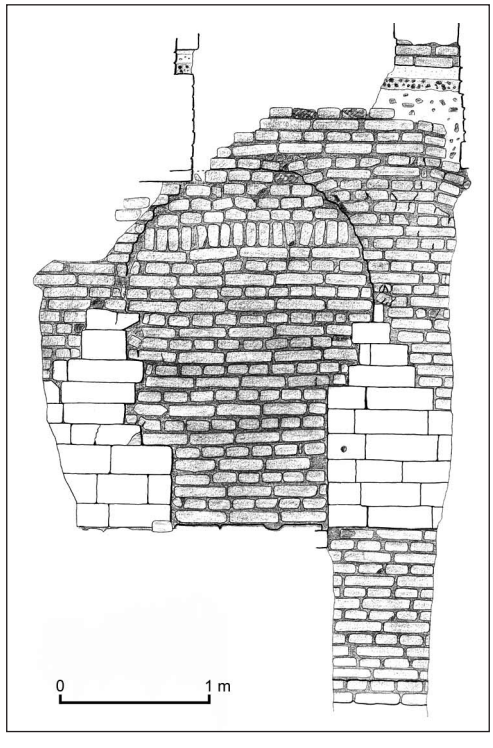

Fig. 6. Test pit 4a. View of the blocked southern entrance to the Lower Church (Drawing T. Stępnik and A. Błaszczyk)

from 4 to 12 cm thick and varied in size. On top of these slabs a floor of ceramic tiles was laid (tile dimensions 15/17 x 20/21 cm).

The foundation of the Upper Church was erected on top of the wall of the Lower Church. The load was such that the walls of the Lower Church subsided and cracked in the southern face of the wall. The bottom of the foundation of the Lower Church was reached at approximately 4.40 m below the datum point.

The other part of the enlarged trench, test pit 4b, was excavated on the other side of the blocked southern entrance to the Lower Church. Poorly preserved traces of a wall painting were uncovered on the eastern face of the west wall next to the doorway [*Fig. 7*].

TEST PITS 6 AND 8

The last two test pits constituted a continuation of previous work and concentrated on completing the documentation. The bottom of the foundation of the Lower Church in test pit 8 was recorded at approximately 4.50 m.

THE OLDEST PHASE OF THE LOWER CHURCH

The overall conclusion from the test trenches is that the bottom of the foundation of the oldest phase of the Lower Church is found approximately 4.40 m below the provisional datum point, the only exception being test pit 7, where it was recorded at only 3.60 m. In all cases, the culturally sterile layer underlying these remains consisted of yellow sand.

Relics of some pavements from the Lower Church were recorded (test pits 1, 2, 3, 4a). They were made of typical red brick, ceramic tiles (small in test pit 4a, big in test pit 3) or slabs of sandstone of different size and irregular shape.

The walls of this oldest phase show the same bondwork: course of stretchers and course of headers, with sporadic deviation (test pit 8). The blocking of the entrances follows the same bond, although with less consistence; usually, there are one or two courses of stretchers on end. The blocking in test pit 8 (as in test pit 6) appears to have a rubble deposit in the central part, possibly suggesting two phases of blocking. The bricks used for the blocking come from dismantling; they are chipped and sometimes bear traces of plaster, including murals, and whitewashing.

The entrances to the church and all arched doorways inside the building were blocked in the 11th century, as was also the

Fig. 7. Orant, wall painting on the west wall in test pit 4b (Drawing L. Piekacz)

western part of the building with the staircase and southwestern room. The ruins were leveled to the walking level of the period which was already 3 m above the floors of the oldest phase. The fill inside the structure is two-layered: red brick rubble in the lower parts, containing an abundance of potsherds representing a limited repertoire of forms: mainly amphorae and big flasks, and mud containing some crushed red brick, mud brick and lime particles, but little if any pottery, in the upper parts.

The purpose of these activities was to prepare a stable ground for the Raphaelion which was to be constructed on top of the older structure. Even so, there is plentiful evidence, from test pit 4, for example, for uneven subsidence of the upper building which resulted in the final collapse of the central part of the structure.

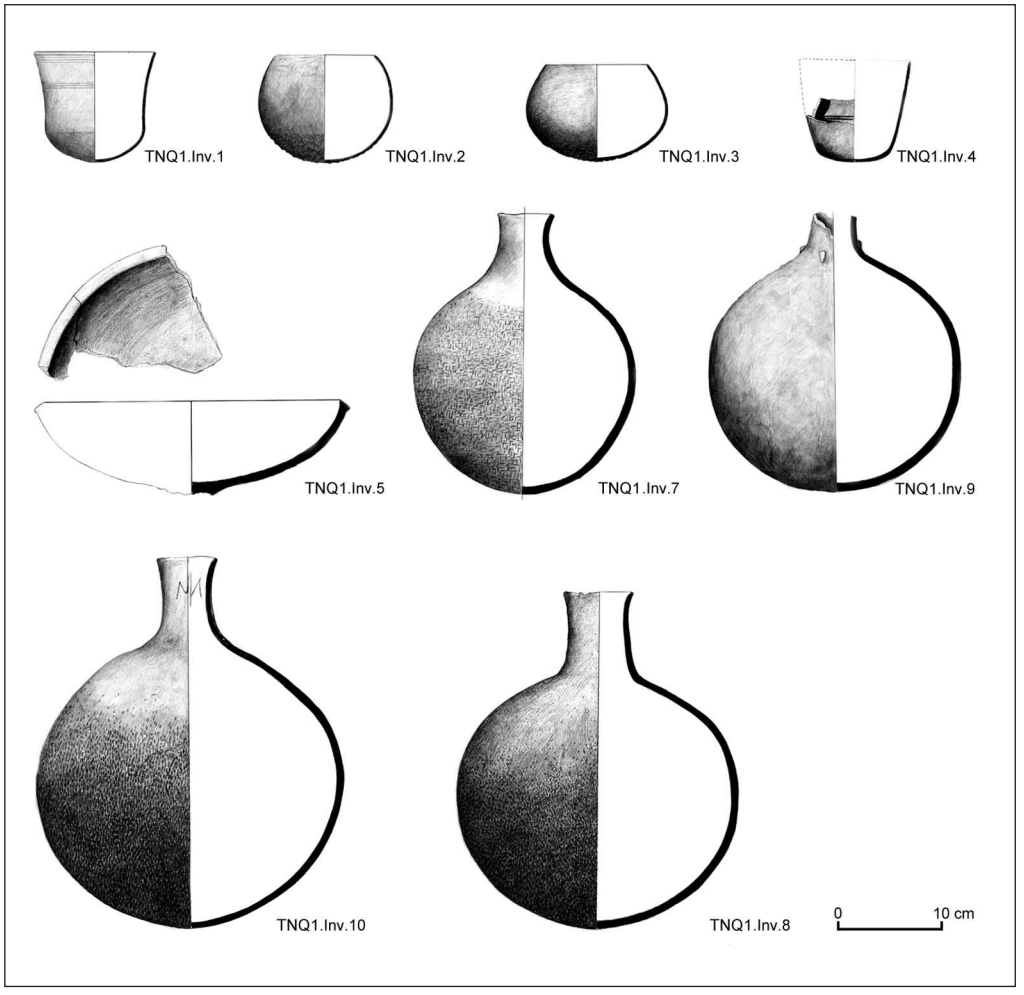

Fig. 8. Clay vessels from the burial chamber of tumulus TNQ1 (Drawing. A. Pląskowska)

EXPLORATION OF TUMULUS TNQ 1/07

An accidental discovery of the pottery furnishings from a post-Meroitic tumulus tomb in the village of Tanqasi, including eight complete bowls — four *qullal*, a cup and two bowls [***Fig. 8***] — necessitated salvage explorations (supervised by A. Pląskowska). There were no traces of a superstructure. The shaft and the burial chamber, which was 1.70 by 0.60 m, the two separated by a row of large stones, were excavated 0.80 m into a hard silty ground. A shallow cavity at the southern end contained the skeleton of a woman aged about 40, inhumed in a contracted position (for anthropological examination of the skeleton, see below, Appendix 1). The body had been wrapped in a shroud tinted violet-brown; apparently owing to the humidity, the bones were discolored in effect. The presumed position of the body is with the head to the east. The chamber had been blocked with sandstone; some blocks were preserved *in situ*, one block even in the blocking, 0.40–0.50 m above the bottom of the chamber. The tomb was backfilled after completing the exploration.

REFERENCES

Drzewiecki, M.

2008 The curtain wall in Banganarti. Results of research in 2006, *PAM* XVIII [=*Reports 2006*], 403–409

Prokosch, E.

1994 *Ins Land der geheimnisvollen Func: Des türkischen Weltenbummlers Evliya Çelebi Reise durch Oberägypten unde den Sudan nebst der osmanischen Provinz Habeş in den Jahren 1672/73*, Graz

Vantini, G.

1975 *Oriental Sources Concerning Nubia*, Warsaw–Heidelberg

Żurawski, B.

2008 Banganarti. The 2006 season, *PAM* XVIII [=*Reports 2006*], 385–395

APPENDIX 1

EXAMINATION OF HUMAN BONES FROM BANGANARTI AND TANQASI, 2007

Karol Piasecki

SKELETAL REMAINS FROM BANGANARTI

1. SECTOR IV

(For the location, see below, contribution by M. Drzewiecki, page 345–346, in this volume).

Fragment of the post-cranial skeleton of a late *subadultus* individual, the sex indeterminable owing to transitional build of the pelvis. Preserved right femur and tibia, fragment of the humerus, ulna, pieces of ribs, feet and upper part of the body of the first sacral vertebra [***Table 1***].

Intrusive in this context, shaft of the left humerus of an *infans* I/II, 120* long.

Animal remains found in context with the human bones: four fragmentary pig teeth (including one from a young specimen), epiphysis of the long bone of an immature individual identified as an ovicaprine, patella of a donkey(?), fragments of the femoral bone of a mature pig and a few minor pieces difficult to identify.

2. SECTOR VIII (ROOM 17)

(For the location, see below, contribution by M. Drzewiecki, page 357 in this volume).

Right pelvic plate, rather female. Adult individual, fairly low height. Also fragment of the talus, rib and metatarsus, most likely from a single individual.

Moreover, fragment of the shaft and distal epiphysis of the right tibia of another adult individual, tall(!), most probably also a female.

Table 1. Long bone measurements for material found in Sector IV at Banganarti (2007)

	h/l	tr	sg	bic	ob	remarks
clavicula *s*	116	–	–	–	–	no epiphysis
ulna *d*	237	–	–	–	–	without distal socket
femur *d*	417 (393)	20	23	70	413	(without distal socket)
tibia *d*	334	19	26	–	–	shaft only

d – right; *s* – left; h/l – maximum height/length; *tr* – transverse midshaft diameter; *sg* – sagittal midshaft diameter; *bic* – bicondylar breadth; *ob* – oblique (bicondylar) length

BONES FROM THE BURIAL AT TANQASI (TNQ 1/07)

Skeleton of a man, *maturus*, rather late. Most of the bones are damaged: the skull is well preserved, less so the vertebrae and long bones, and pelvis (Tables 2–5; for the archaeological circumstances of the discovery, see above, 335).

The skull is fairly big, massive with hypertrophy of the left mastoid. No trace of compensative asymmetry indicates that the hypertrophy occurred rather late in life, especially as there is no asymmetry also in the post-cranial skeleton. Atrophic *cribria orbitalia* in the left eye socket.

Dentition: some roots and the front teeth have been preserved. Numerous fistulae and strong reduction of the alveolar process. Alveolar processes in the mandible have been completely obliterated in place of lost teeth, the narrowing of the arch advanced. Slight rotation of the mandible ramus.

Post-cranial skeleton: vertebrae partly damaged and incomplete. Three vertebrae of the lumbar part with osteophytic changes. Backbone geometry undisturbed. Degenerative changes of the vertebral core in the neck section. Degenerative changes of the articular surface of the right patella.

Tables 2-5. Cranial indices, craniometry, cranioscopy (Michalski–Wierciński–Piasecki scale [Piasecki 1992]) and long bone measurements for the male burial from Tanqasi (TNQ1/07)
Legend:
*– burdened with a measurement error in excess of the standard
d – right side
s – left side

Table 2. Cranial indices

Cranial Length–Breadth	64.4*
Cranial Length–Height	90.6
Cranial Breadth–Height	140.5*
Frontoparietal	78.0
Kolmann's Upper Facial	54.1
Virhoff's Upper Facial	72.0*
Total Facial (morphological)	82.7
Orbital	75.9
Nasal	52.0 *d*
m_2	157.0*
m_3	162.3*

Table 3. Craniometry

g–op	191
eu–eu	123*
b–ba	173
au–au	123*
zy–zy	133
zm–zm	100*
ft–ft	96
n–ns	50
n–pr	72
n–gn	110
mf–ek	41.5 *d*
h.orb.	31.5 *d*
apt–apt	26
go–go	97
kdl–kdl	124*

Table 4. Cranioscopy (MWP)

1	11	15	2
2	5	16	3
3	4	17	2
4	3/4	18	5/6 *d*
5	4	19	4
6	1	20	2
7	2	21	4
8	3	22	4
9	3 *s*	23	3–4
10	6	24	–
11	6	25	2
12	2	26	2
13	1/2	27	3
14	1/12	28	3

Table 5. Long bone measurements

	h/l	tr	sg	bic	ob	remarks
axis, dens	17.5	11.5	10.5	–	–	
sacrum	95	99	–	–	–	
patella *d*	43	44	–	–	–	
humerus *s*	335	17	19	62	–	
humerus *d*	–	17.5	20	–	–	
radius *s*	273	–	–	–	–	
radius *d*	273	–	–	–	–	
femur *s*	459	25	31(33)	–	–	(crista)
femur *d*	449	24	28(31)	–	–	(crista)

d – right; *s* – left; h/l – maximum height/length; *tr* – transverse midshaft diameter; *sg* – sagittal midshaft diameter; *bic* – bicondylar breadth; *ob* – oblique (bicondylar) length

APPENDIX 2
CONSERVATION WORKS IN 2007

Dorota Moryto-Naumiuk and Lucyna Piekacz

The main objective of the conservation season this year (in January and February) was the transfer of two wall paintings from the Lower Church in preparation for their transfer to Poland. Current conservation work included protection of the so-called "Blind Ali" graffito on a pillar in the West Portico of the Church, over which a shelter roofing was built to preserve it *in situ*, and conservation of the wall plastering on the western and eastern facades of the Upper Church where the plaster showed a tendency to become detached from the wall. The conservators also stepped in to preserve the newly found painting in test trench 4b and to take emergency action on the wall paintings in Chapels 3 and 4 of the Upper Church after monitoring revealed problems.

MURAL TRANSFER

The lime plaster of the murals at issue, namely, the *Anastasis* and *St. Sisinnios trampling a female demon* from the western part of the south wall of the nave of the Lower Church, two years after the discovery was in poor condition, having lost both cohesion and adhesion to wall. One of the reasons for this was the migration of salts to the painting surface and their crystallization between the plaster and the coats of limewash, resulting in detachment of the latter. In this situation, transfer was deemed the only effective solution to save these murals.

The first step was consolidation of the technological coats with injections of KLUCEL G in an alcohol solution (three spoons glue dissolved in minimal water and mixed with 1 liter alcohol). The paint coat was then impregnated with PARALOID B-72 in toluene (one part resin to 12 parts solvent), protecting it while existing gaps were filled with putties. For the bigger cavities the putty used was made of one part lime, two parts local clay, three parts sand with minimal PRIMAL E330. Smaller spots of crushed plaster and small cavities (especially those made by termites) were filled with easily removable putty made of skin glue (one part glue and six parts talcum powder with pigments). After filling the cavities, another coat of PARALOID B72 in toluene (same proportion as before) was applied.

Even while these steps were being taken, tests of glues for fixing the facing coats were underway. Previous on-site experience indicated the usefulness of KLUCEL G in water solution for small-size paintings, but for murals the size of the ones in question, it was necessary to use stronger glue. Tests with removing facings pointed to skin glue 1:6 with water as the better solution.

To make the facing, two to three coats of Japanese tissue were applied to the entire painting surface. Next came a synthetic textile resembling silk which was glued with suitably wide margins for fixing the textile

to a frame. A linen textile was then glued on top. After drying, the edges of the textiles were fixed to a wooden frame and held in place by wedges. Steel lines attached to the roof structure safeguarded the murals during the entire process of taking down from the wall, which was executed in the opposite direction, that is, the bricks were dismantled from the back and the plaster cut away from the painting.

This done, the mural was transported to the field lab where it was placed face down on a flat surface. The wooden frame was removed. The back was cut down to a more or less even thickness and impregnated to consolidate it in preparation for the coming treatment. The impregnation was done with injections of glue (one part PRIMAL AC33, one part local polyvinyl acetate, approximately eight parts water). The glue was also brushed on repeatedly. Once the water had evaporated, the back of the painting was leveled with lime putties containing more PRIMAL E330 and polyvinyl acetate. Repeated impregnation of the plaster followed.

A glass fiber net was then fixed to the back of the painting using polyvinyl acetate with sand. Next came white polyurethane foam (1 cm thick) for thermal insulation and another coat of glass fiber net. A wooden skeletal frame in the form of a box was prepared and fixed with polyvinyl alcohol glue and a two-component, low-volume epoxy installation foam. This type of construction is easy to remove in case of emergency and creates the proper conditions for transporting a transferred mural.

CURRENT CONSERVATION

The outside wall plastering of the Upper Church, which is made of lime and very coarse sand, has good cohesion, but failing adhesion to the wall. The first step was mechanical cleaning of the surface with brushes to remove sand and coats of clay. Water was subsequently applied for cleaning, following tests. With regard to the scratched graffito of "Blind Ali", a coat of dirt was left in place as it makes the drawing easier to recognize. Surfaces were fixed with KLUCEL G dissolved in alcohol (1 spoon glue to 1 liter alcohol). In the next step, injections were made to fix the crushed plaster to walls. For smaller areas, a mixture of PRIMAL AC 33 and locally produced polyvinyl acetate (1:1) and one part glue to six–seven parts water was used, having first weakened surface tension with water mixed with alcohol (1:1). Lime casein made from lime and powdered milk was tested and found to be a very satisfactory solution for the gaps and bigger areas of crushed plaster to fill the voids. For the very big gaps on the pillars, lime casein was additionally mixed with sand. Finally, the borders of the original plaster were protected with bands made of lime putty (one part lime, three parts sand, two parts local clay with addition of PRIMAL E330.)

The coat of paint in the murals in Chapels 3 and 4 of the Upper Church was found to be powdering intensively. The surface was cleaned of dust and the paint consolidated using as an impregnate KLUCEL G dissolved in alcohol (one spoon powder glue to one liter alcohol). Injections of PRIMAL AC33 in water solution (one part glue with approximately eight parts water) were made to fix the coats of limewash to the plaster.

In the case of the newly discovered murals in test trench 4a, both cohesion and adhesion were very poor. They were first allowed to dry very slowly to stop new salts crystallization between layers of painting. The surface of the paintings was then cleaned gently with soft brushes. The coat of paint was fixed with KLUCEL G (same as

in the case of the paintings in the chapels of the Upper Church) and injections were made with a water dispersion of PRIMAL AC33 (1:8). Gaps and cavities were filled with lime putty, after which the mural was impregnated with PARALOID B72 in toluene with acetone (1:4:8) for better protection of the surface. The murals will have to be monitored for future deterioration caused by potential salt migration to the surface.