

# PRELIMINARY REPORT

# *AKORIS*

2009

*South Area*



*Foreign Pottery*



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## 1 GENERAL VIEW

Through this season's excavation, one block of the South Area composed of five houses and bordered by a northern thoroughfare and an eastern side street, was completed. As a consequence the following has been clarified:

First the houses show a great difference in size, the minimum 25m<sup>2</sup> and the maximum more than 150m<sup>2</sup>. It connotes the social stratum gap among the people living there. Second an almost perfect 'Phoenician' amphora transported from the Levant was retrieved in a middle-size house. Some foreign pottery, almost all shards, had already been unearthed in the South Area, and consisted of the same type amphorae, lentoid flasks and table-ware, which seem to have been from not only the Levant but also from Palestine comparing them with contemporary Israeli pottery. The trade with these districts, whether direct or not, proceeded even at such a local middle Egypt city as Akoris in the Third Intermediate Period (TIP) when the dynastic control over foreign trading weakened, and these foreign products were commonly shared across the stratum gap. Discovered bullas may have been used in this trade (Fig. 2).

The third notable matter is the arrangement of entrances. No entrances to the houses face the thoroughfare or the side street. One faces the western Nile valley, another probably to the same direction though its exact position was undetectable because of previous destruction, and the other three to the alleyway forking from the side street as mentioned below. Such restriction of openness

to the outdoors is appropriate for the trading and manufacturing area where the harmful, unacquainted might enter. The last intriguing matter is the distinction between the accumulations in the streets and the houses. In the streets forage and minute soil are horizontally accumulated without prominent relics, which is in vivid contrast to the houses where various kinds of remains are heaped in disorder. Considering its condition, some public control on the streets must have been practiced.

(KAWANISHI)

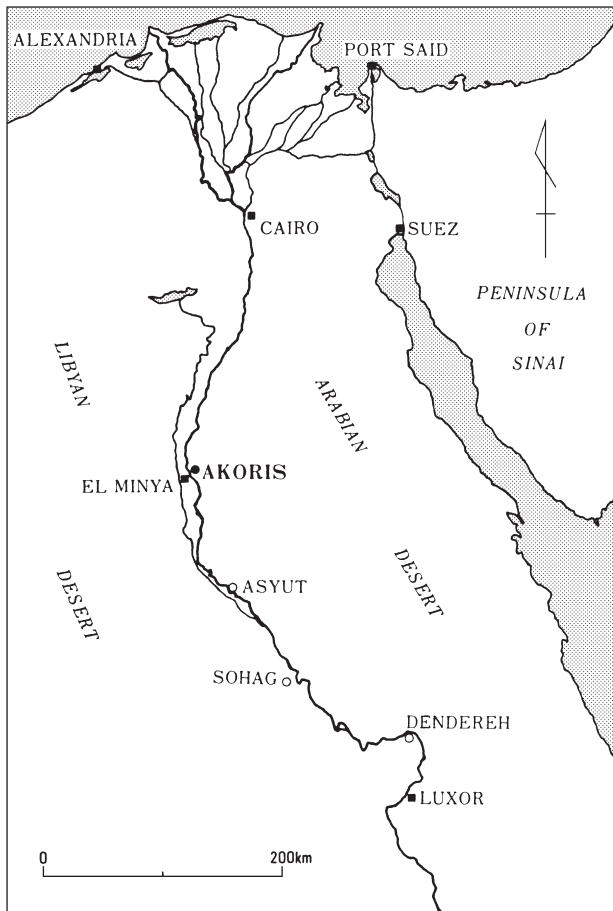


Fig. 1 Map of Egypt.

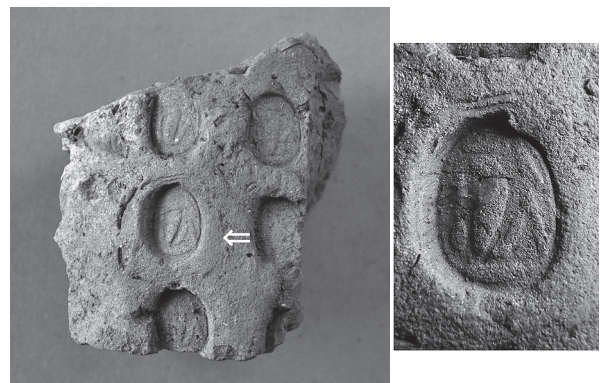


Fig. 2 Excavated Bulla in 2009.



## 2 ARCHAEOLOGICAL INVESTIGATIONS

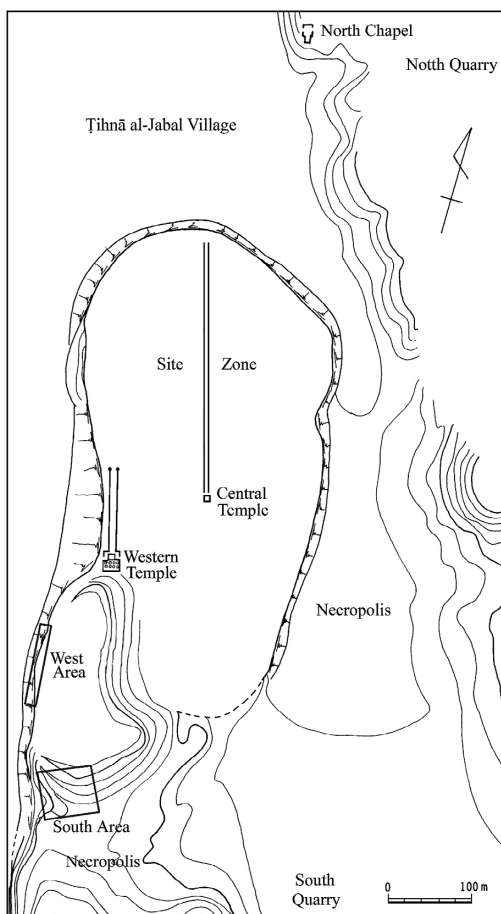
**South Area** (Cover, Figs. 3–6) A settlement, which dates mainly from the TIP, extends down the south slope of the crag and stretches across the southern lowland to the next crag. In this season, we continued to excavate in the southeast area divided by the east-west main street of 2.1m in width, and the east side by the north-south street of 1.8m in width diverging southward in a T-shape, and by bedrock on both the west and south sides (see *Preliminary Reports 2006* and *2008*). The excavated area measures 30m east-west × 30m north-south in total.

As for the common houses, House II, where last season our work had to be suspended because of a deficiency of time was completely exposed and its whole plan shows that at least four smaller rooms (Rooms 4–7) are located around a larger one (Room 3) measuring 7.5m east-west × 6.0m north-south.

Room 3 is too wide to have been roofed and has no traces of columns on the firmly mud-plastered floor, which leads us to surmise it to have been roofless. Had the room been roofed, long, thick timbers would have been required to support the weight. Regarding the 60cm thickness of the surrounding mud brick wall, the existence of a roof is doubted though a sunshade is possible. Two hearths were unearthed near the center of the floor, and traces of two fireplaces remain on the south wall. Many twigs possibly to provide fuel are scattered around them. Taking a lot of domestic animal bones scattered into consideration, Room 3 is supposed to have been a courtyard.

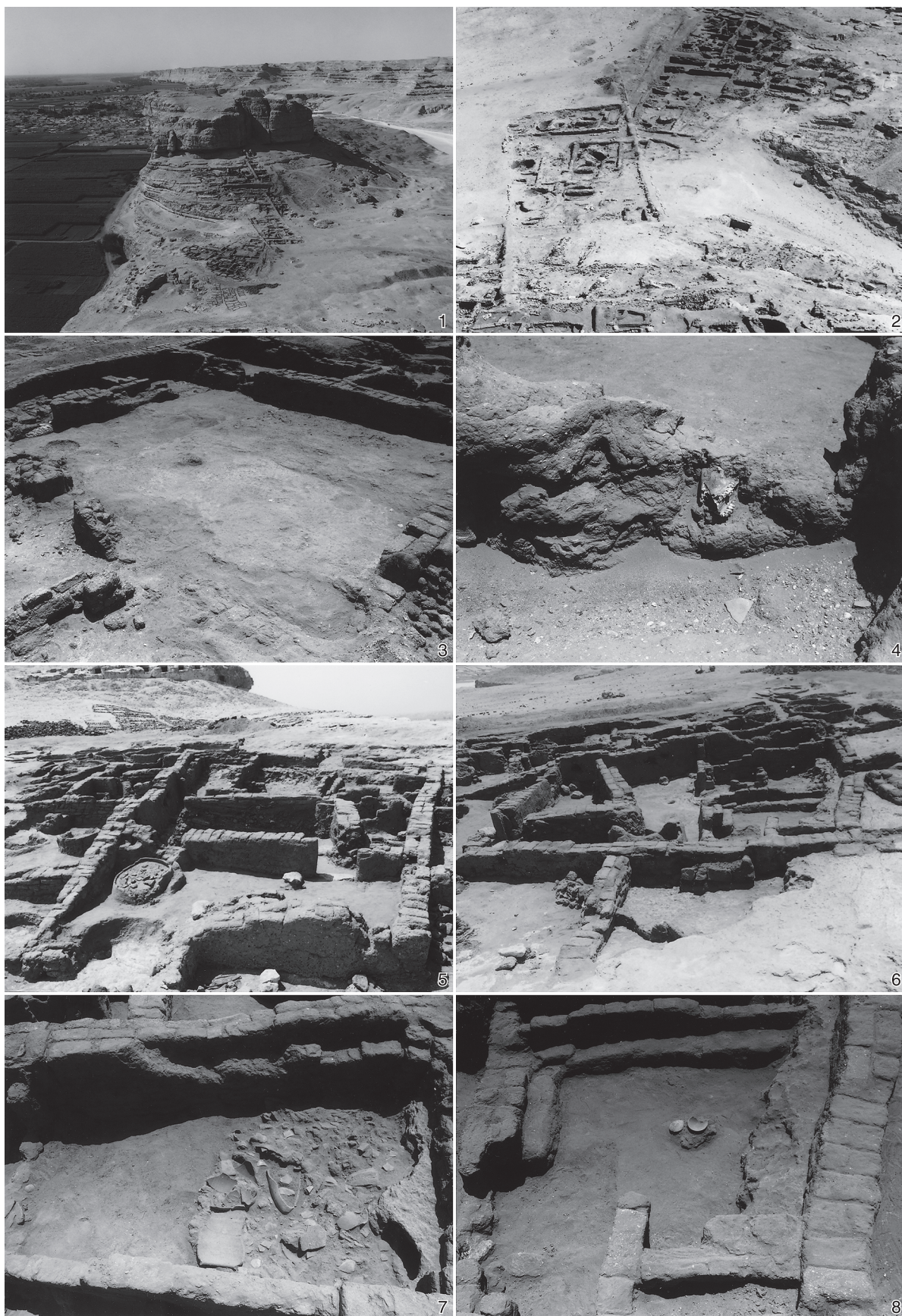
Two small rooms, Rooms 6 and 7, were uncovered at the east end of Room 3. They were probably built as partitioned space and then lost their original functions. While two rooms (Rooms 4 and 5) at the south end, measuring 4.5m east-west × 2.5m north-south, 5.1m east-west × 2.5m north-south respectively and open to Room 3. A large jar, of which the upper part had been lost, remained at the southwest corner surrounded by a mud brick enclosure, and the skull of a young pig was deliberately buried under the threshold of Room 5, which makes us suppose it was done as a meaningful, religious custom.

An east-west alley of 2m in width diverges to the west from the north-south street, along the south wall of House II. Three houses, labeled House III, IV and V respectively, have an entrance to the alley. While House III extends westward from the alley, Houses IV and V, newly excavated, extend to the south. The south side of the alley was rebuilt 50cm inward at 65cm higher than the bottom of the old wall, however a new wall remains only a height of two mud bricks. The wall seems to be a part of a lost building.



**Fig. 3** Map of Akoris.

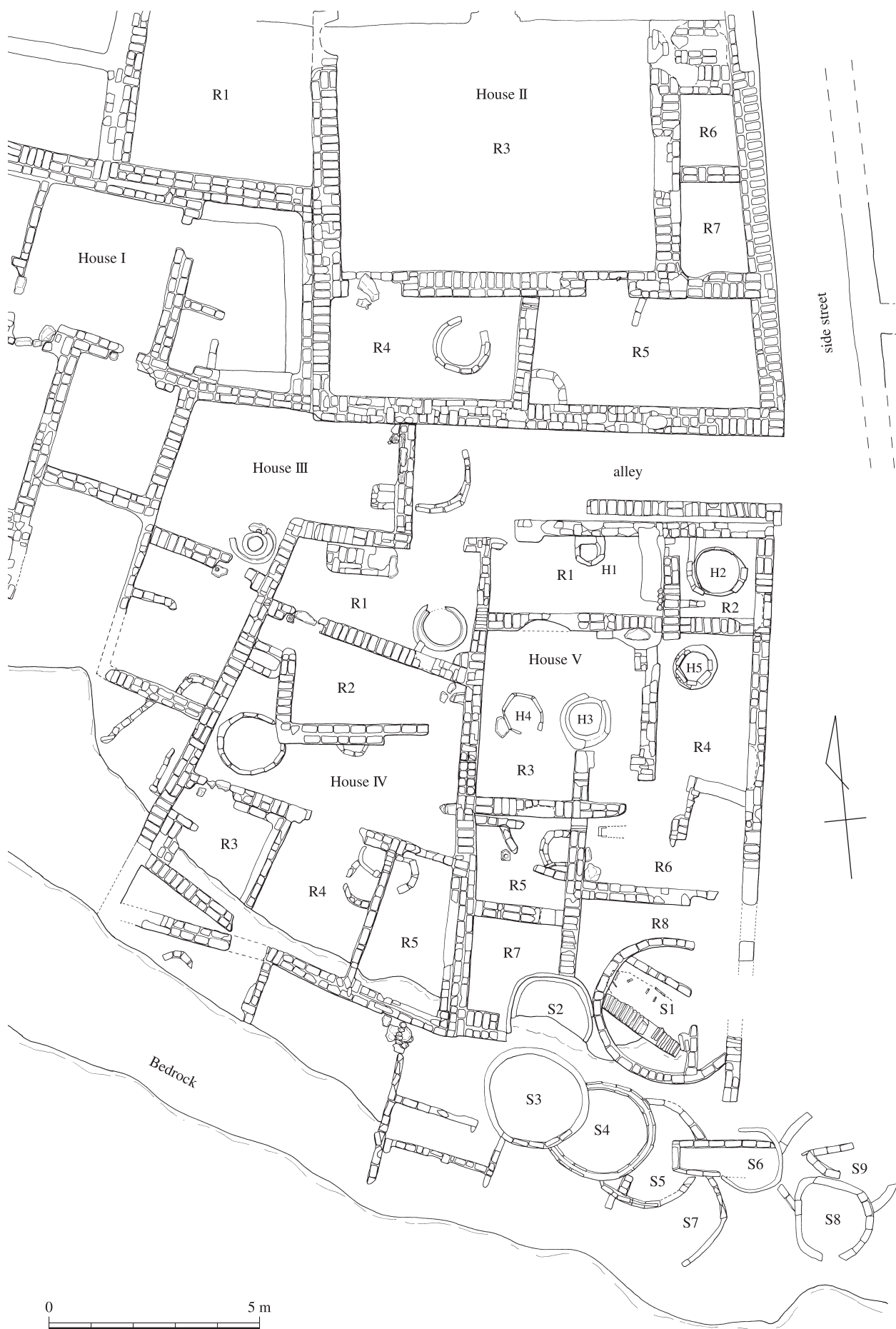




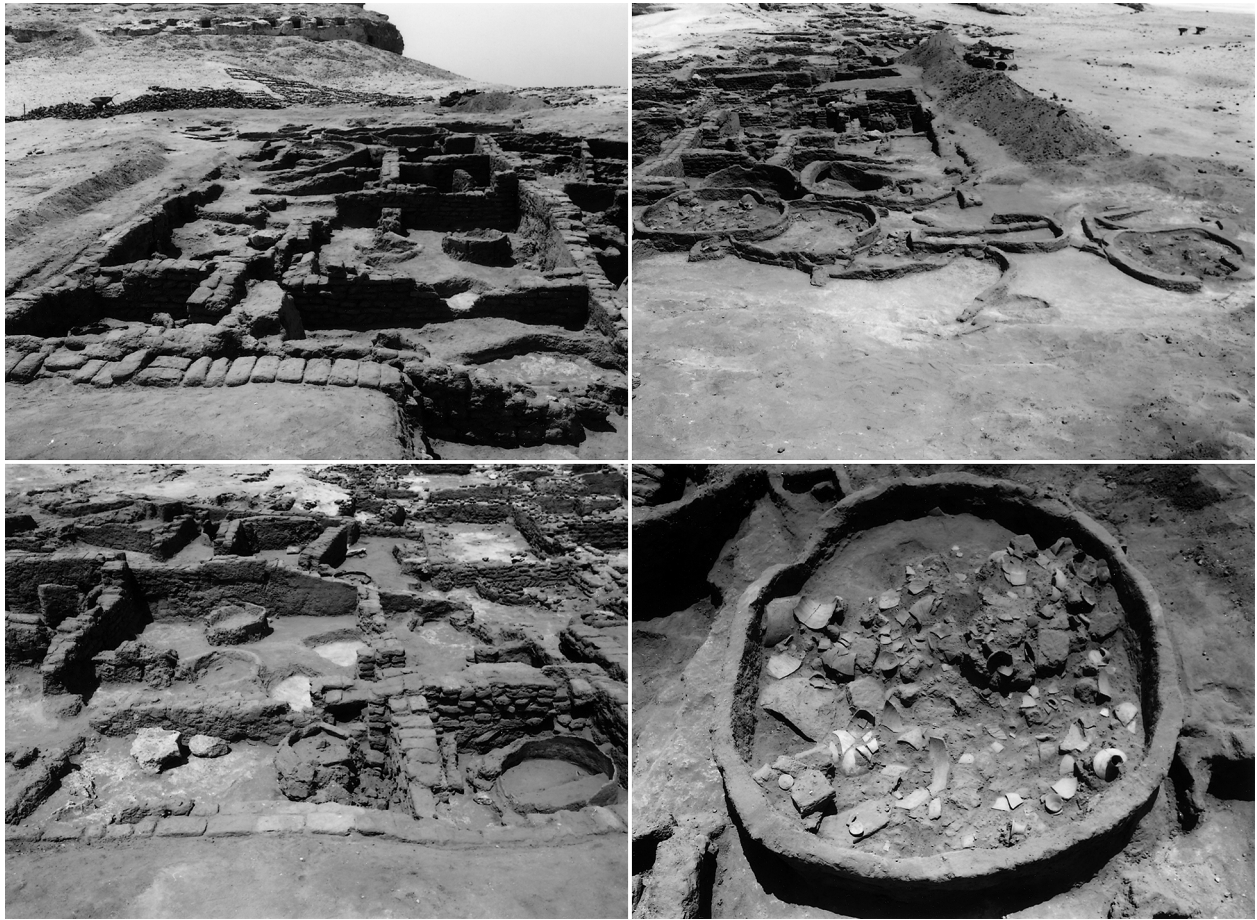
**Fig. 4** South Area.

Nos. 1, 2: General view; No. 3: House II R3; No. 4: Pig skull; Nos. 5–8: House IV.





**Fig. 5** Plan of the South Area excavated in 2009.



**Fig. 6** South Area. Nos. 1–3: House V; No. 4: Silo 3.

House IV has a trapezoidal plan. The north wall measures 4.4m in length, the south one 8.0m and the north-south one 9.9m. There is no doubt that the entrance of this house, though lost presumably due to looters, was located in the north wall, because all the inner doors of the rooms open southward. Room 1 bears a trapezoidal plan, of which dimensions are 4.9m east-west  $\times$  1.7m and 2.6m north-south. A thick wall-like structure of mud brick, 0.6m in thickness and 1.8m in length extends to the west inside of the north wall. There is a possibility that it consisted of the lower part of stairs, considering that a limestone set at the east end of the structure bear abrasions like those on stepping stones. A pottery-made hearth, 1.0m in diameter, remains in the southeast corner, while an entrance to a south room remains in the west part of the south wall.

Room 2 also shows a trapezoidal plan, and measures 5.0m and 6.5m east-west  $\times$  4.0m north-south. An L-shaped wall, which has a different direction from other walls of this house, was built on an accumulation of soil measuring 63cm thick. The direction of this wall is coincident with House II and V and the foundation is almost the same as the new wall in the alley.

A hearth is provided at the center under the L-shaped wall and a fireplace made of mud bricks is fixed on the west wall. Regarding the volume of accumulated ash, the hearth seems to have been availed in daily use. A silo, 1.5m in diameter, remains at the southwest corner, and two simple structures composed of natural stones, one at the northeast corner and another near the southeast corner, remain although their usage is indistinct.

The south space was partitioned into three parts by two thin walls. They are labeled Rooms



3–5 from the west and each room has a doorway, however, strangely, the doorway of Room 3 is obstructed by the silo of Room 2. This room is equipped with a narrow *mastaba* (a built-in bench), and located far from the main entrance as well as Room 5 of House I which has a *mastaba*. Room 3 is supposed to have been a living room.

Room 4 has two round enclosures in the northeast corner, and Room 5 bears a similar enclosure in the northwest corner. Because of the existence of ash, these enclosures seem to have been used as fireplaces. Many pottery shards and many lumps of clay with traces of wood or branches were exposed in situ when a roof collapsed on the floor of Room 5. It is noteworthy that a Phoenician type amphora was included among them. According to the chronology of this type, it dates from the end of the 12th century – the 11 century B.C. (see Patricia M. Bikai *The Pottery of Tyre*, 1978).

House V, which is contiguous eastward to House IV, has a nearly rectangular plan and its dimensions are 6.3m east-west × 11.3m north-south though the south wall has been mostly destroyed by the construction of silos and tombs. The entrance of this house was confirmed on the north wall in a heavily damaged condition.

Many dividing walls were uncovered in this house. A northern east-west wall extends from end to end, however, other walls were too damaged to reconstruct them to what they had originally been. There is no trace of a door in each wall. Yet, the detected walls can be differentiated by two transitional phases, earlier and later, through where two walls cross and the foundation height of mud brick walls.

Speaking simply, except for the above-mentioned northern wall, the east-west walls are preceded by the north-south walls. Five hearths were revealed, and labeled as Nos. 1–5 respectively. No. 1 was set almost at the north wall of Room 1 and made of mud, and No. 2 in Room 2 was made by pottery. Including No. 5 in Room 4, these hearths belong to the earlier phase. In Room 3, No. 3 is a mud-made hearth and No. 4 made of mud bricks has an unknown use. These two belong to the latter phase.

Room 5 is enclosed with walls without an entrance. In the northeast corner, one quarter of cylindrical wall measuring 1.5m in diameter with an entrance was discovered. A hollow made by a smaller one of two arc-shaped walls in it is full of round stones used for grind meal. Considering that many grain of barley were found around the southwest corner, Room 5 is supposed to have been an interior silo and could have been entered by a ladder. A fragile wooden coffin with human bones of a young female was placed perpendicular to the west wall of Room 6.

Silos and tombs were built over the south walls of Rooms 7 and 8. Silo 1 was reused as a tomb, and Silos 5 and 6 were partially destroyed by a rectangular tomb made of mud brick. Judging from these facts, the tombs obviously postdate the silos. In addition where two walls cross also indicates the chronological sequence of silos, beginning with the oldest, Silo 7 → 5 → 4 → 3, Silo 2 → 3, Silo 9 → 6 and Silo 9 → 8. On the floors of Silos 3, 4 and 8, many pottery shards and animal bones were found. The tombs were too disturbed due to looters to restore to their original appearances. Even if they had at one time borne mortuary goods, they were most of completely lost. Yet some human bones of a mature male in Silo 1 and female hair in Silo 5 were scattered about. A wooden winnowing scoop for collecting the grain was found near Silo 9 (Fig. 7 No. 27).

Some thin walls which do not seem to have formed houses extend southward from House IV and V, and a small burned down room is adjacent to the southwest of House IV. Because there is a

hump of bedrock around the south walls of Houses IV and V, it is difficult to extend these houses to the south. Such poor divisions must have been attached to the main houses for some use.

Through the excavations of 2006, 2008 and 2009, a city plot, which consists of five main houses, has been completely exposed. Trying to compare the houses with each other, while the room arrangement is not uniform, House I measures 55m<sup>2</sup> House II more than 150m<sup>2</sup> and House III 25m<sup>2</sup>, House IV 61m<sup>2</sup> and House V 71m<sup>2</sup> in dimensions. House II, the largest one, is situated at the corner of the T-shaped intersection which is the most conspicuous, and a western room labeled Room 1 in 2008 was decorated with mural paintings. Furthermore, walls of House II measure one and a half times as thick as other houses. Considering not merely the dimensions but all these facts, evidently the inhabitants of House II belonged to the higher class than the others. And probably Houses I, IV and V of which dimensions are equivalent, belonged to middle class inhabitants, while House III, the smallest one, belonged to the lower class. If this social estimation is not seriously flawed, the finding of a prestige item such as a large imported pilgrim flask probably from Levant even in House III of the lower class attracts attention as an approach to the reconstruction of socio-economic aspects of the inhabitants (see *Preliminary Report 2008*).

The layout of the entrances is also interesting. Houses I and II open to the western bedrock, and Houses III, IV and V to the above-mentioned alley. In short, no entrances of the houses open to the north-south street. In addition, there is a definite difference in accumulated remains and conditions between the houses and the streets plus the alley, that is, many mud brick fragments, stones and various kinds of household waste fill up the inside of the houses, and the accumulating layers are inclined and confused, whereas animal fodder, dung and minute soil are neatly stratified in the streets and the alley. These facts suggest to us that the streets and the alley were under some public control and the busy streets were too risky for the inhabitants to provide entrances.

(TSUJIMURA)

**Finds from the South Area** (Fig. 7)      Faience objects (Nos. 1–11)      No. 1: Faience lion-headed goddess, *Sekhmet*, with a scarab on the head and a scepter in left hand, House II Room 3, fragment, l. 2.70 × w. 1.25 × t. 0.75cm.      No. 2: Faience lion-headed goddess, *Sekhmet*, Area 09D (leather workshop), fragment, l. 2.05 × w. 1.26 × t. 1.16cm.      No. 3: Faience human god, *Bes*, House V Room 6, l. 1.57 × w. 0.70 × t. 0.41cm.      No. 4: Faience lion-headed goddess?, *Sekhmet*?, south of House IV, l. 1.39 × w. 0.65 × t. 0.56cm.      No. 5: Faience human god, *Pataikos*?, south-eastern excavated area, fragment, l. 1.30 × w. 0.79 × t. 0.58cm.      No. 6: Faience amulet, *Udjat*-eye, House IV Room 2, l. 1.55 × w. 1.28 × t. 0.60cm.      No. 7: Faience goddess, aegis of *Hathor*, House V Room 3–4, l. 2.23 × w. 1.57 × t. 0.50cm.      No. 8: Faience scarab, with hieroglyph read as *nbt pr(?) M[kt-...] di ['nh]* (The lady of the house(?), Me[ket-...], given [life]) (according to Mr. Uchida), Area 09D (leather workshop), fragment, l. 1.42 × w. 1.07 × t. 0.74cm.      No. 9: Faience ring, with engraving a human or god, House V Room 5, fragment, l. 2.53 × w. 0.94 × h. 1.88cm.      No. 10: Faience ring, with an end of cartouche sign, side street, fragment, l. 1.05 × w. 0.98 × h. 1.19cm.      No. 11: Faience chalice, lotus shape, Area 09D (leather workshop), fragment, l. 4.14 × w. 3.63 × t. 0.47cm.

Baked clay objects (Nos. 12–18)      No. 12: Clay human figurine, fertility figurine (?), fired, with a naval-like projection and four light red slip lines, Area 09D, fragment, l. 6.76 × w. 4.16 × t. 1.63cm, there were 8 human figurines found in this season.      No. 13: Clay cobra figurine, fired, House V Room 2, fragment, l. 12.43 × w. 5.58 × t. 4.33cm, there were 38 cobra figurines found in this season.      No. 14: Clay cobra figurine, fired, with two red slip lines, House IV Room 3–5,

fragment, l.  $8.75 \times w. 4.89 \times t. 2.78$ cm. No. 15: Clay weights, fired, with a hole, House V Room 7, l.  $3.65\text{--}4.51 \times d. 1.66\text{--}2.18$ cm, there were 33 similar clay weights found in this season. No. 16: Clay weights?, fired, with threads on the both ends, Area 09D (leather workshop), l.  $4.28 \times d. 1.73$ cm. No. 17: Clay spindle whorl, fired, converted from pottery shards, House IV Room 4–5, d.  $3.78 \times t. 0.81$ cm, there were 6 similar clay spindle whorls found in this season. No. 18: Unidentified clay object, toy?, fired, with two holes and notch, House V Room 6, l.  $5.00 \times w. 2.05 \times t. 1.46$ cm.

Copper/Bronze object (No. 19) No. 19: Copper/Bronze fish hook, House V Room 5, l.  $3.01 \times w. 1.75 \times d. 0.25$ cm.

Stone objects (Nos. 20–24) No. 20: Unidentified stone object, weight or axe?, limestone, with two holes, House V Room 1, l.  $10.66 \times w. 8.30 \times t. 4.46$ cm. No. 21: Stone weight, sandstone?, with groove line, Silo 5, l.  $7.87 \times w. 6.80 \times t. 4.27$ cm. No. 22: Flint sickle blade, House V Room 5, l.  $8.88 \times w. 4.47 \times t. 0.97$ cm. No. 23: Stone step?, red granite, House V Room 3, l.  $36.0 \times w. 21.0 \times t. 6.0$ cm. No. 24: Stone Bowl, limestone, Silo 2, fragment, d.  $23.0 \times h. 12.0 \times t. 2.4$ cm.

Wooden objects (Nos. 25–31) No. 25: Wooden comb, with twenty teeth, House V Room 3, l.  $5.75 \times w. 4.76 \times t. 0.71$ cm. No. 26: Wooden spindle whorl with a shaft, House V Room 3, fragment, whorl; d.  $4.76 \times t. 2.36$ cm, shaft; l.  $7.82$  cm. No. 27: Wooden farm implement, winnowing scoop for left hand, north of Silo 9, l.  $39.9 \times w. 10.8$ cm. No. 28: Unidentified wooden object, weaving tool?, with a hole, the western side of House IV, l.  $19.5 \times w. 4.67 \times t. 2.23$ cm. No. 29: Wooden handle for basket, with vegetable thread on both ends, the southern side of House IV, l.  $12.50 \times w. 7.75$ cm. No. 30: Wooden bowl, with holes and flat base, House V Room 2, fragment,  $12.63 \times 15.43 \times h. 8.10 \times t. 1.17$ cm. No. 31: Unidentified wooden object, the western side of House IV, l.  $23.80 \times w. 4.31 \times t. 3.59$ cm.

Bone object (No. 32) No. 32: Unidentified bone object, weaving tool?, Area 09D (leather workshop), l.  $8.42 \times w. 1.06 \times t. 0.48$ cm.

Pottery (Nos. 33–36, cover) No. 33: Pottery, rounded bottomed dish, House V Room 6, h.  $6.6 \times \text{rim diam. } 26.1$ cm. No. 34: Pottery, bowl with flat collared base, Silo 3, h.  $6.4 \times \text{rim diam. } 10.4$ cm. No. 35: Pottery, deep bowl, House II Room 3, h.  $6.4 \times \text{rim diam. } 14.3$ cm. No. 36: Pottery, pilgrim flask, Silo 3, h.  $13.8 \times \text{body diam. } 12.3$ cm. Cover right top: Pottery, jar with two handles, decorated with black circle, foreign pottery?, House V Room G, h.  $13.8 \times \text{rim diam. } 7.0 \times \text{body diam. } 12.3$ cm. Cover right bottom: Pottery, Phoenician amphora, with two handles, House IV Room 5, h.  $64.0 \times \text{rim diam. } 11.0 \times \text{body diam. } 44.0$ cm. (HANASAKA)

**Leather Workshop** (Figs. 8–10) The leather workshop situated halfway up the slope of the South Area, just to the south of the huge east-west wall (EW wall) measures 2.3m in height, 1.5m in thickness and at least 23.0m in total existing length. We investigated the workshop in the 2002–2004 and 2007–2009 seasons, and confirmed its western edge in 2003 and eastern edge in 2007. The whole area of the workshop measured approximately 17.5m east-west and 5.9m north-south. There is a possibility of locating the southern edge further south down the slope, unfortunately however, it has not been confirmed yet. There were accumulated layers consisting of debris, animal hair, vegetable remains, and so on. In addition, a large quantity of leather products including both whole and pieces, especially sandals and shoes were excavated in each season. Almost all the sandals and leather pieces were a dark brownish color, which showed that the leather had been tanned by vegetable materials, namely *Suntwood*, one of the many varieties of '*Acacia nilotica*'. Judging from





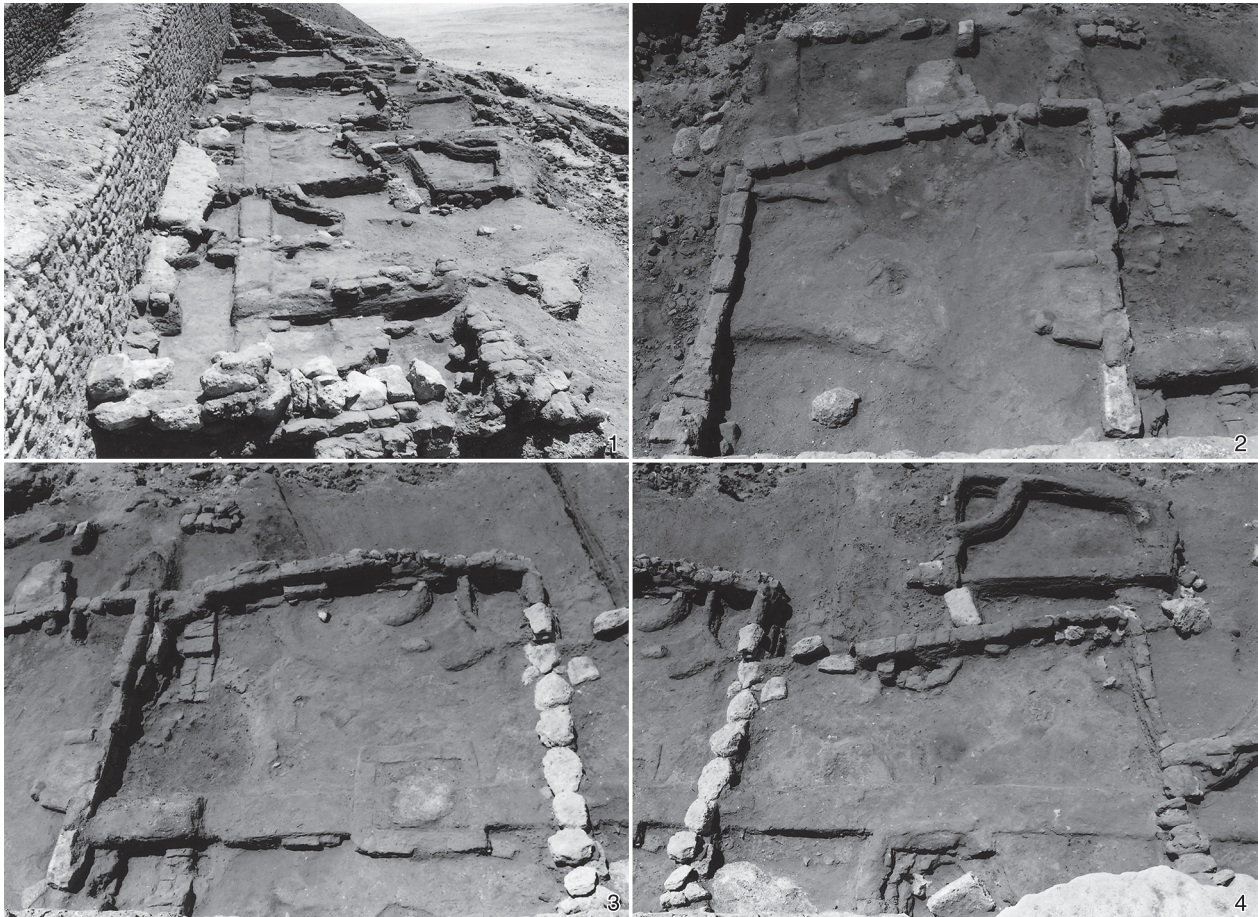
**Fig. 7** Finds from the South Area.

Nos. 1–11: Faience objects; Nos. 12–18: Baked clay objects; Nos. 19: Copper/bronze object; Nos. 20–24: Stone objects; Nos. 25–31: Wooden objects; Nos. 32: Bone object; Nos. 33–36: Pottery.

the archaeological remains, the leather workshop was in use in the TIP, which was a little later than that of other parts of the South Area.

We divided the leather workshop into several sections and named them LW (Leather Workshop) 1-LW10, from the west to the east. In the present report, we want to digest features of each section, LW1-LW10, with reference to the investigation of this season at LW1-LW7.

Basically, the north-south walls of each section were set at right angles to the EW wall, while the east-west walls run parallel to the EW wall. Almost all the walls consisted of mud bricks which were irregular in size and shape. In addition, the walls did not form a straight line and only a few tiers of the wall remained. It is inferred that the walls might have been low without any upper structures or ceilings, using recycled mud bricks.



**Fig. 8** South Area: Leather Workshop.  
No. 1: General view; No. 2: LW8–10; No. 3: LW6; No. 4: LW4–5, 7.

Here are the details of each section of the leather workshop.

LW1, measuring 1.8m east-west  $\times$  2.7m north-south, was situated at the west end of the leather workshop. There were three partition walls at the east, south and west ends of LW1. The fact of the matter is that the western wall was not the actually limit of the leather workshop, since the foundation of the wall was placed higher than the accumulated layers of the workshop and leather products could be found below the wall. However, we could not find any objects relating to the leather workshop beyond the western wall. In LW1, there was a hearth, measuring 85  $\times$  125cm, beside the eastern wall to LW2. We found many leather objects including sandals, thongs, triangular offcut pieces and colored leather pieces to the southwest of the hearth in the 2009 season.

LW2, measuring 1.7m east-west  $\times$  2.8m north-south, was situated to the east of LW1. There was a line of mud bricks and limestone, possibly a pseudo-partition wall, placed as a border from LW3 on the east side. Beside the eastern wall, there was a hearth without a surrounding mud brick wall or pounded earth (*pisé*) as in LW1. In the north-east corner of LW2, there was an arched partition of *pisé*, however, we could not find any special objects inside. It is possible that the partition wall between LW1 and LW2 was set in course of the operation of the leather workshop, because the same accumulation of the layer could be confirmed beneath the wall.

LW3 measured 1.9m east-west  $\times$  1.8m north-south. The curved mud brick wall, stretching southward, touched the eastern partition wall of LW4. It was hard to decide whether the wall was



set there originally or attached later. The condition of the southern part of LW3 was obscure, because there is a huge hole dug by robbers, 2.3m in diameter, to the south of LW2 and LW3. On the other hand, we found many leather objects from the investigation area in this season at the north end of LW3 where the natural limestone bedrock was exposed.

LW4 measured 3.3m east-west  $\times$  2.8m north-south, and the bedrock was exposed in the northwest corner. The narrow southern and western walls, which separated LW3 and LW5 from LW4 respectively, were a series of walls forming an L-shaped line. It is quite likely that there were gateways accessing LW3 and LW5 at both ends of the walls. There was a line of more than ten pieces of limestone, forming the border between LW6 on the east side. Those stones were unshaped blocks about 30–40cm square in size. At the center of the northern part of LW4, there was a hearth measuring 110  $\times$  80cm surrounded by mud bricks and *pisé*. In the 2009 season, the trace of another hearth from a lower accumulation was confirmed.

LW5 measured 2.0m east-west  $\times$  1.9m north-south which was situated next to the south of LW4. There were two walls, east and south, which had three tiers of mud bricks. A rectangular limestone block, measuring 50cm in length, was set at the north end of the eastern wall. It was the only limestone block which was formed into a rectangular parallelepiped in the leather workshop. In the corner of the eastern and southern walls, there was an arched partition, excavated in the 2002 season. We found many leather pieces from the investigation area in the western part of LW5 in the 2009 season.

LW6 was the largest area in the leather workshop, measuring 4.3m east-west  $\times$  3.6m north-south. The southern and western mud brick walls formed an L-shape. There was a hearth measuring 100cm square in size in the north-west area of LW6, surrounded by mud bricks. In the corner of the south and west walls, there was an arched partition of mud bricks. In the 2003 season, we found a lump of lime used as animal hair remover in a pot set inside the arched partition. In the 2009 season, two parts like ‘deposits’ were investigated at the south and east end of LW6. They are the places where we found a huge quantity of objects: whole and parts of leather sandals and shoes, leather thongs, triangular cut pieces, animal hair, seedpods of *Suntwood*, pottery sherds, and so on.

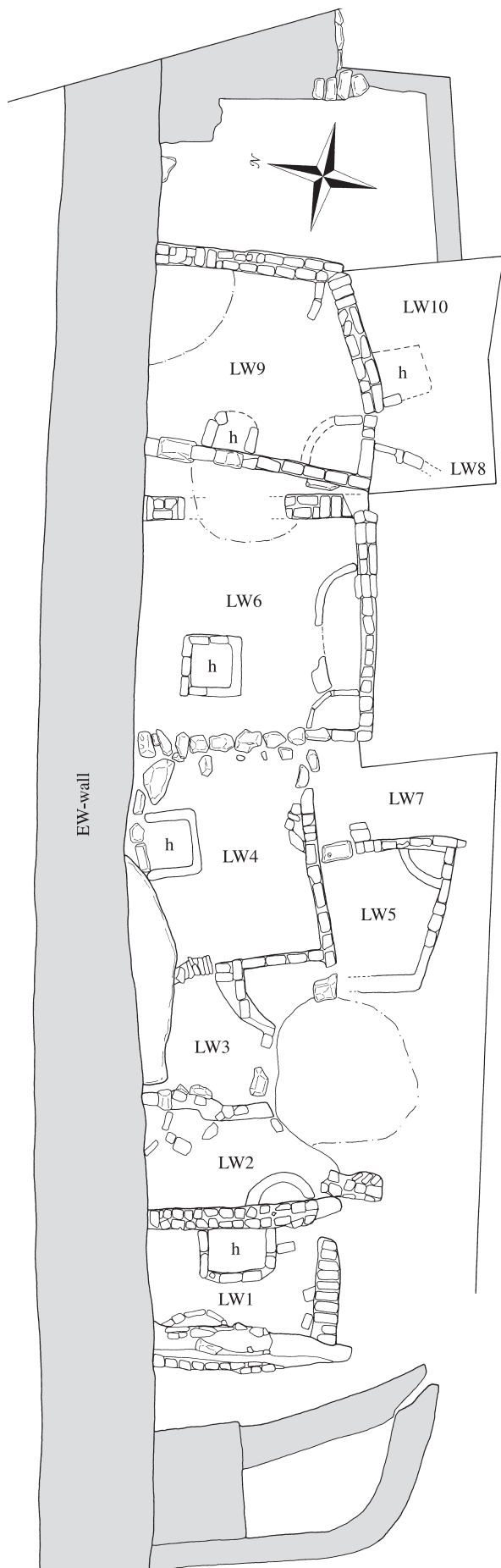
LW7 and LW8 were flat areas without partition walls and neither southern edges could be confirmed. LW7, measuring 1.6m east-west  $\times$  3.0m north-south, was situated to the south of LW4 and the east of LW5. A cross section of LW7 showed that there were some accumulations containing animal hair and seedpods of *Suntwood*. LW8 was the smallest area located to the south of LW6 and the west of LW10, measuring 0.7m east-west  $\times$  2.0m north-south. It was difficult to fix the boundary between LW8 and LW10, however, there was a short north-south wall.

LW9, measuring 2.9m east-west  $\times$  3.5m north-south, was to the east of LW6 and was the east end of the leather workshop. In previous investigations, we confirmed a hearth along the western wall, measuring 90  $\times$  60cm in size surrounded by mud bricks. And in addition, there was an arched partition of mud bricks in the corner of the southern and western walls.

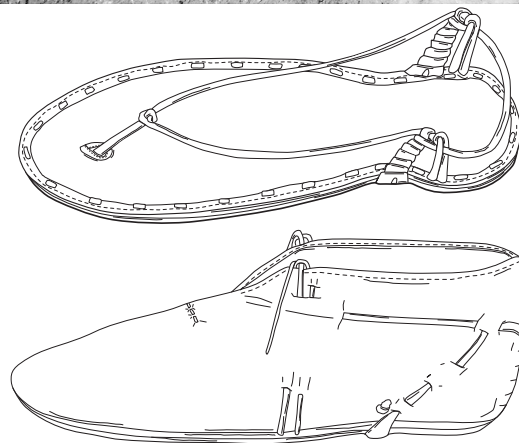
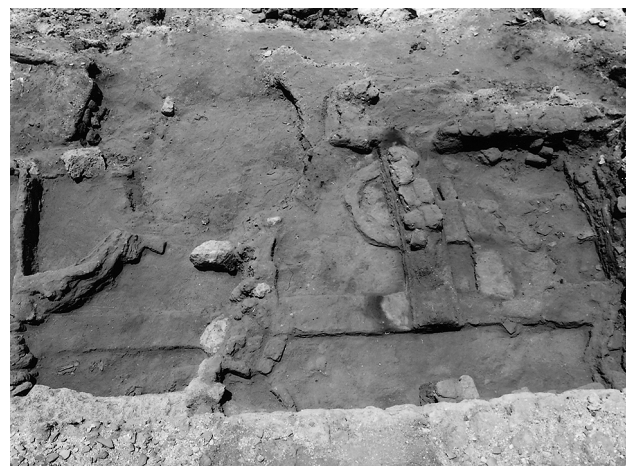
LW10 measured 2.8m east-west  $\times$  2.5m north-south, with a damaged hearth on the side of the northern wall between LW9. There was no wall at the east end of LW10, however we found leather fragments at the eastern limits of the leather workshop. Under the circumstances, it is possible to assume that the leather workshop might extend eastward over the present limit which was decided in 2007 by the eastern partition wall of LW9.

The main points of the organization of the leather workshop are summarized as follows:





**Fig. 9** Plan of the leather workshop.



**Fig. 10** Leather workshop  
Upper: LW1-3, Upper middle: Leather products,  
Lower middle; Schematic of footwear, Lower;  
Footwear.

In every case, each section of the leather workshop took a rectangle shape surrounded by partition walls which were very thin and not in a straight line. In addition, the walls were constructed with mud bricks and some limestone, however, they were irregular in size and shape. It therefore seems that they were not piled higher and didn't support an upper construction.

It was inferred that the order of constructing the leather workshop started from the eastern part, LW9. As mentioned above, the southern and western walls of LW4, LW6 and LW9 were set consecutively making L-shaped lines respectively. The L-shaped wall of LW9 was built first, and then the wall LW6 was added to it. And next, the wall LW4 was attached. It is quite reasonable to think that the time difference between each part of construction was small and each section of the leather workshop existed almost at the same time.

Other characteristics of the leather workshop were hearths and arched partitions set at the corners of the walls. The hearths were confirmed in six sections, LW1, LW2, LW4, LW6, LW9 and LW10. They measured about 1.0m square and were surrounded by mud bricks and *pisé*. The later arched partitions were found from LW2, LW5, LW6 and LW9.

It would be possible to establish two functions of the leather workshop: a factory for leather products and a tannery. Though few tools have been found, there was enough evidence to show that the factory was in operation since we could find related objects such as leather sandals and shoes, triangular cutoff pieces, leather thongs, pieces of red and green colored leather and so on.

As to a tannery, there was no conclusive proof of such a function. It is conceivable that the tannery was carried out on the spot of the investigation area on the ground that there were a large quantity of animal hair, lumps of lime used as hair remover and acacia seedpods for vegetable tanning. Large jars for soaking skins, depicted in some private tombs, have not been found in the leather workshop in our investigations. This fact remains as a matter to be discussed. Furthermore, the process of vegetable tanning probably required water in large quantities, however, it must have been too hard to bring water to the leather workshop located on the slope of the South Area. It is plausible that the vegetable tanning was operated in other places near the source of water supply, and then, the tanned leather with acacia seedpods perhaps was carried into the leather workshop.

(HANASAKA)

**Leather Footwear** (Figs. 8–10) The purpose of this section is to introduce briefly the leather products found in the South Area during the 2002–2009 seasons. Attention to leather products has been growing for the last few years, and several studies have been made especially by the *Ancient Egyptian Footwear Project*. Those vigorous studies were based on leather footwear in museum collections, but there is, nevertheless, a lack of the firsthand information about both leather products and remnants of workshops confirmed from archaeological excavation. Due to space limitation, this section will concentrate on the leather sandals and ankle shoes found in the South Area.

It seems highly possible that almost all of the areas in the South Area, including the leather workshop, were occupied mainly in the TIP. We have found a few Hellenistic or Coptic relics, however, from the surface of the layer.

We will take a close look at the footwear, excavated from the South Area, temporarily named '*Akoris footwear*'. Most of the *Akoris footwear* was made of the brownish leather tanned by the vegetable '*Acacia nilotica*'. It was different from the footwear in the museum collections in that the usage of red and green colored leather was limited only for thongs and that there were few elaborate decorative techniques in the *Akoris footwear*. It is possible that the leather is goatskin judging from

the analysis of the animal hair and pore by microscope. The important point to be emphasized is that much of the *Akoris footwear* was actually worn in daily life, as described below.

Several dozens of better preserved leather footwear and a huge quantity of parts, triangular cutoff pieces, thongs and other leather products were excavated from the leather workshop. In this section, we will deal with forty pieces of the *Akoris footwear* excavated in good condition from both the leather workshop and other areas of the South Area to observe the details. These forty include twenty-four leather sandals and sixteen ankle shoes.

The size of complete sandals among the twenty-four objects was between 26.1cm in length  $\times$  10.8 cm in width, and 13.8 cm in length  $\times$  6.0cm in width. It is difficult to estimate the original size from broken parts of the sandals, but suffice it to say that the average would be approximately 21.0cm in length  $\times$  8.0cm in width.

Most of the sandals had soles made of two or three layers. The soles were made stronger by stitching some leather layers together rather than using a single thick skin. The toe of the sole is mildly pointed and can be distinguished as to left or right foot. It gradually become narrower toward the mid-part, and cut off the heel roundly.

It is said that the most characteristic feature of the Egyptian sandals was the 'eared' cutting pattern of the soles, confirmed throughout the Pharaonic period. These 'ears' were projections at the narrow mid-part cutting out along the edge of the heel back-part of the sole. Among our finds, it could be verified that six eared-sandals out of twelve keep the mid- and back-parts. It was usual that the ears were cut out on each layer of the sole, and that leather thongs were twined around the bunch of the ears.

The sandals had a Y-shaped strap, side straps knotted on the toe strap, holding the instep of the foot and a back ankle-strap turning up to hold a heel and an ankle. These straps were tied to the holes pierced at the end of the ears, or directly pierced the soles.

There was a variety of stitching along the edge of the soles. The first way was a simple seam along the edge by a thread made of twisted animal hair and was found in seven of the sandals. The second was stitching by leather thongs 0.2–0.3cm in width, and these totaled nine. There were six sandals stitched using both animal hair thread and leather thongs. Two in our twenty-four sandals didn't have stitching because they were made with a single sole.

In addition, ten sandals among all our finds had leather strips, measuring less than 0.5cm in width, put between the sole and the thread/thong along the edge of the soles. It was quite probable that the stitching was reinforced with the leather strip. Some sandals were stitched together not only along the edge of the sole, but also in the middle part of the sole. There were also two ways of stitching, using animal hair thread or leather thongs. The whole sole was sewn elaborately with the animal hair thread, but on the other hand, it was roughly pierced with one or two leather thongs in the center of the sole.

There was a pair of sandals which was the only example made of red colored leather in the *Akoris footwear*. They had slender shape soles with ears and the insole was padded with animal hair, perhaps that of a goat. The sandals with those features are thought to be from the 21st and 22nd Dynasties.

We have mentioned the sixteen ankle shoes which were defined as footwear which has an upper-cover over the foot; an instep and a heel. The height of the upper-cover would be on/over the ankle. It was decided that a piece should be judged 'shoe' from the fragment of the upper part,



the way of attaching the straps and so on. The size of complete ankle shoes of the sixteen found was between 27.4cm in length  $\times$  12.2cm in width, and 13.2cm in length  $\times$  7.1cm in width.

As a matter of fact, it was very difficult to distinguish ‘ankle shoes’ from ‘sandals’ because they had the exactly same shape of sole. The ears cut out the sole in ten ankle shoes out of sixteen cases can be confirmed. In addition, there were five ankle shoes with holes for toe-straps. Based on these observations, it is likely that the ankle-shoes were derived from sandals, in other words, the ankle-shoes were merely sandals with the upper-cover over a foot. It is possible to presume that the ancient footwear maker prepared a sole with ears and a hole for toe-straps as a beginning of the manufacturing process. Then, one was attached to the toe- and ankle-straps to make a sandal, and the other, attached to the upper-cover to make a shoe.

The similar way of stitching to that of sandals was seen. The upper-cover was stitched together with the soles. In many cases, the leather thongs with strips were used for reinforcing the stitching.

The upper-cover was made from a single sheet of leather, not from combine pieces. The leather sheet had to be cut off into a semi-oval shape with one end similar to the toe-shape of the sole and the other end flat with a v-shaped slit. When it was folded at the center and stitched with the flat ends together, the v-shaped slit would become the opening of the upper-cover. The edge of the opening was wrapped by a leather strip and attached to the leather shoe lace.

The ears were cut from the sole are lengthened and pierced on the side of the upper-cover. At the end of the ears, they were tied up with narrow leather thongs to stiffen the sides and heel of the upper-cover.

These explanations above are based on the typical examples from our finds. It is worth noting that they are very similar to the ankle-shoes in the British Museum, BM EA 4402/03, which are unprovenanced, but said to be ‘Ptolemaic’ red leather shoes.

One of interesting points of the *Akoris footwear* is that there are some recycled footwear made from small pieces of other products. Furthermore, it could be confirmed that some products had been repaired and covered up by small pieces of leather. These facts lead us to the conclusion that the *Akoris footwear* was made and used in daily life, not as funerary goods. It is highly likely that the ordinary Egyptians in the TIP wore footwear, both sandals and ankle-shoes. (HANASAKA)

### 3 SOUTH QUARRY

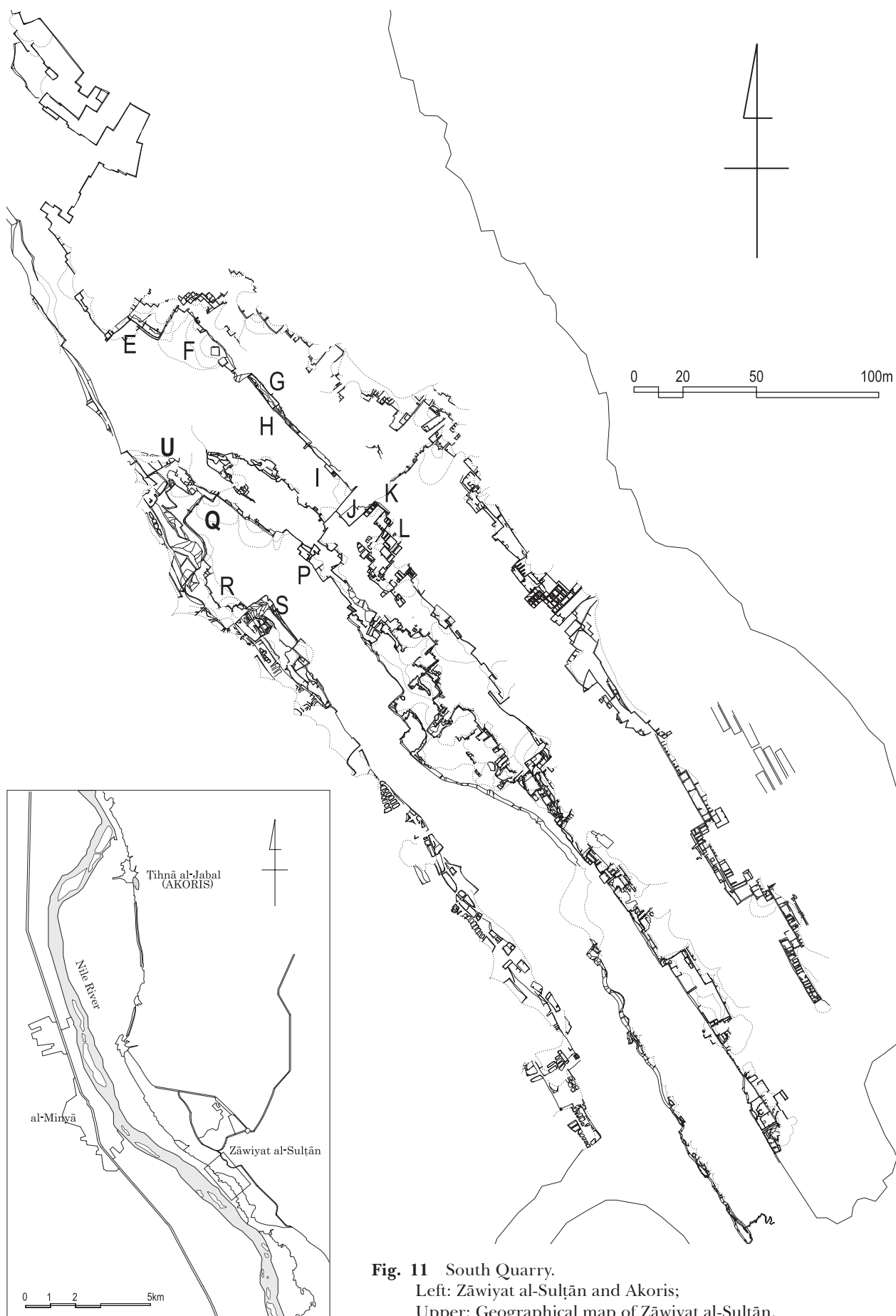
**Epigraphical investigation** (Figs. 11–13) A survey of several galleries at the quarry in Zāwiyat al-Sultān was conducted in 2009. The ceilings of following four galleries were measured for making plans: section E on the eastern side of the valley, sections R, S, and U on the western side. Legible Demotic and Greek graffiti of those sections and section H on the eastern side were traced by life-sized scale, while these graffiti have been confirmed, read, and photographed in the previous seasons. In addition, we re-examined sections previously investigated, and identified a few unexamined galleries with graffiti.

Few examples of Greek graffiti traced in this season are translated below:

#### U 2

Year 39, Ep(ei)ph 10, Philippos,  $4\frac{1}{2} \times 2\frac{2}{3} \times 1$

\* month Epeiph is written by a monogram of three characters E, P and Ph.



**Fig. 11** South Quarry.  
 Left: Zāwiyat al-Sulṭān and Akoris;  
 Upper: Geographical map of Zāwiyat al-Sulṭān.



**Fig. 12** Graffiti on the ceiling of section U.

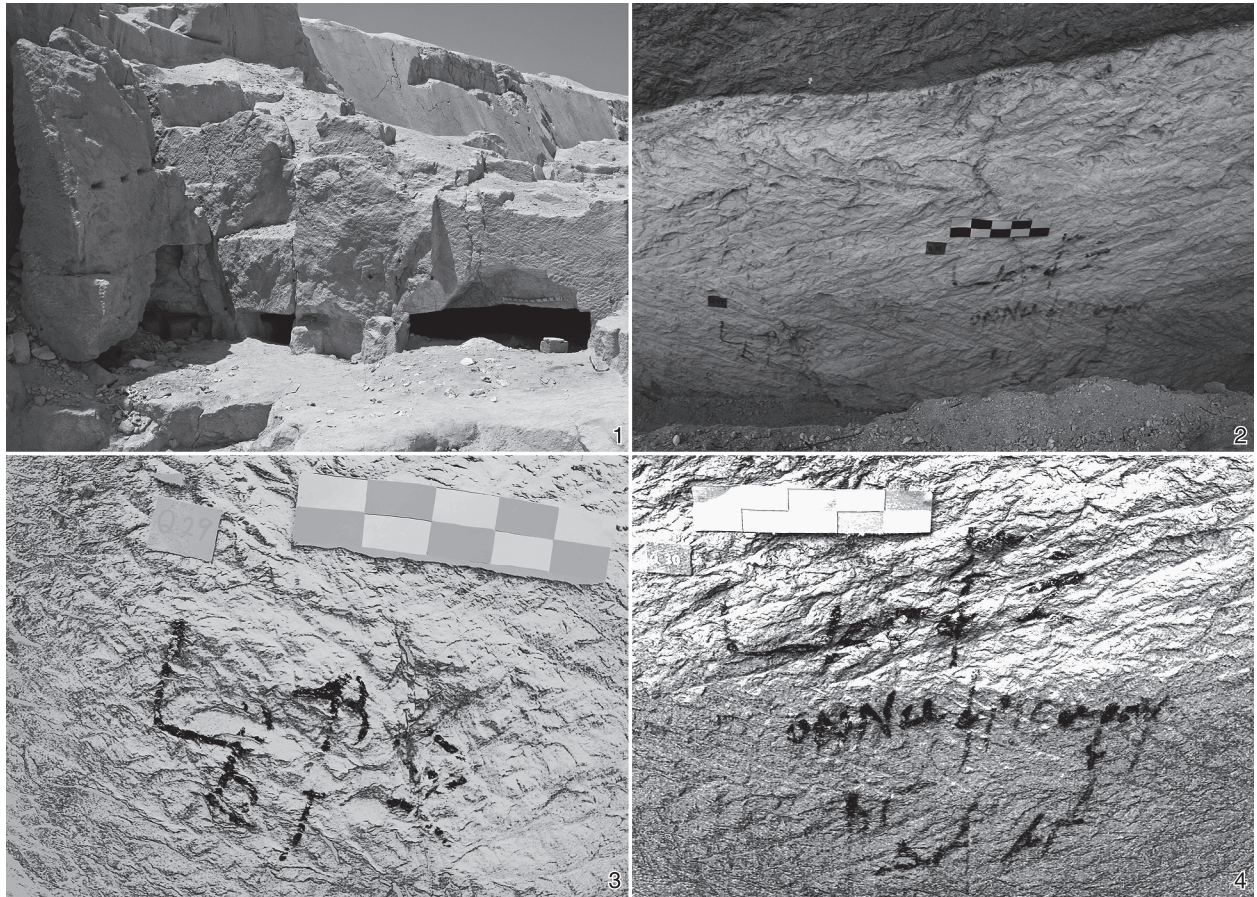
## U 12

Year 39, Pha( ) 10, Aristodikos,  $4\frac{1}{3} \times 3\frac{1}{3}$

\* month is written by a monogram of two characters of Ph and A. Thus the month can be Phamenoth, Pharmouthi, or Phaophi.

Interesting observations made in this season are that, at least, some of red lines on the ceilings were drawn in order to indicate clacks on floors; that some Greek graffiti in section R use prepositions such as 'apo' (from) or 'eis' (to) in order to indicate the duration of successive months; that section R





**Fig. 13** Details of South Quarry.  
No. 1: Entrance of section U; No. 2: section Q; No. 3: Q29; No. 4: Q30.

has a few graffiti on vertical walls. The most significant observation is the rediscovery of a graffito with the date of the 26th year of Ptolemy III, which has not been attested. This rediscovery merits some detailed discussion.

A trial dig at the northeastern corner of section Q revealed a valuable clue as to the chronological sequence of the quarrying activities at this innermost area on the bottom of the valley. After the removal of the accumulated sand, two graffiti, both written in Greek alone, appeared side by side on the vertical quarry face. Both the graffiti are written with narrow brush in cursory style.

### **Q 29**

Year 2, Tybi 7

### **Q 30**

Year 26, Phaophi 7

Onnophris son of Horos

$4\frac{1}{3} \times 2\frac{1}{3} \times \frac{5}{6}$

The shape of the monogram for Tybi on Q 29 is quite different from that of Q 17 and other nearby graffiti denoting the same month of the same year. Also the shape of B denoting the year 2, as well as its relative position to the regnal sign, is rather anomalous, though the reading seems certain. No corresponding numerals are written below the graffito. As for Q 30, the whole text





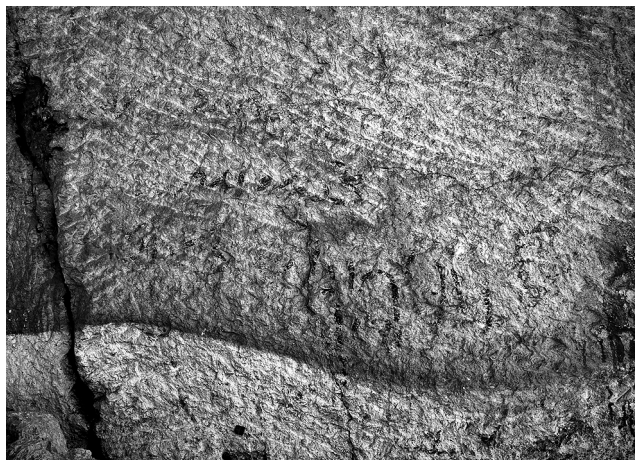
**Fig. 14** General view of Section G.



**Fig. 15** Large stone blocks abandoned.



**Fig. 16** Tunnel beneath a stone block.



**Fig. 17** Demotic graffiti on the wall.

does not leave any doubt for reading. The last numeral is not ordinary 1 but smaller  $\frac{5}{6}$ , but this is not unparalleled. Q 30 is located a little bit higher than Q 29, but horizontally they are only about 60 cm apart.

The spatial proximity of these two graffiti strongly suggests that they were written within a limited period of time; the year 26 should be the last regnal year of a certain king and the year 2 must represent the second year of his successor. This observation strengthens our previous hypothesis that the activities at section Q should be dated to the last years of Ptolemy III and the early years of Ptolemy IV. Although the precise date of the accession of Ptolemy IV is not known, the earliest papyri of his reign indicates that Ptolemy III must have died in the November or December of 222 (Phaophi or Hatyr of the regnal year 26). Q 30, thus, belongs to one of the latest documents of the reign of Ptolemy III, who was still alive or the news of his death had not reached to this district on the seventh of Phaophi, Year 26 (23 November 222). (SUTO and TAKAHASHI)

**Architectural investigation** (Figs. 14–19) In summer 2009, the author and colleagues undertook a limited survey in the eastern side of the quarry, which we called “Section G” (Fig. 11). This survey aimed to reconstruct the working procedures used for quarrying stone blocks at the site, as well as examining the relationship between many Demotic and Greek graffiti and the distribution of innumerable red lines.

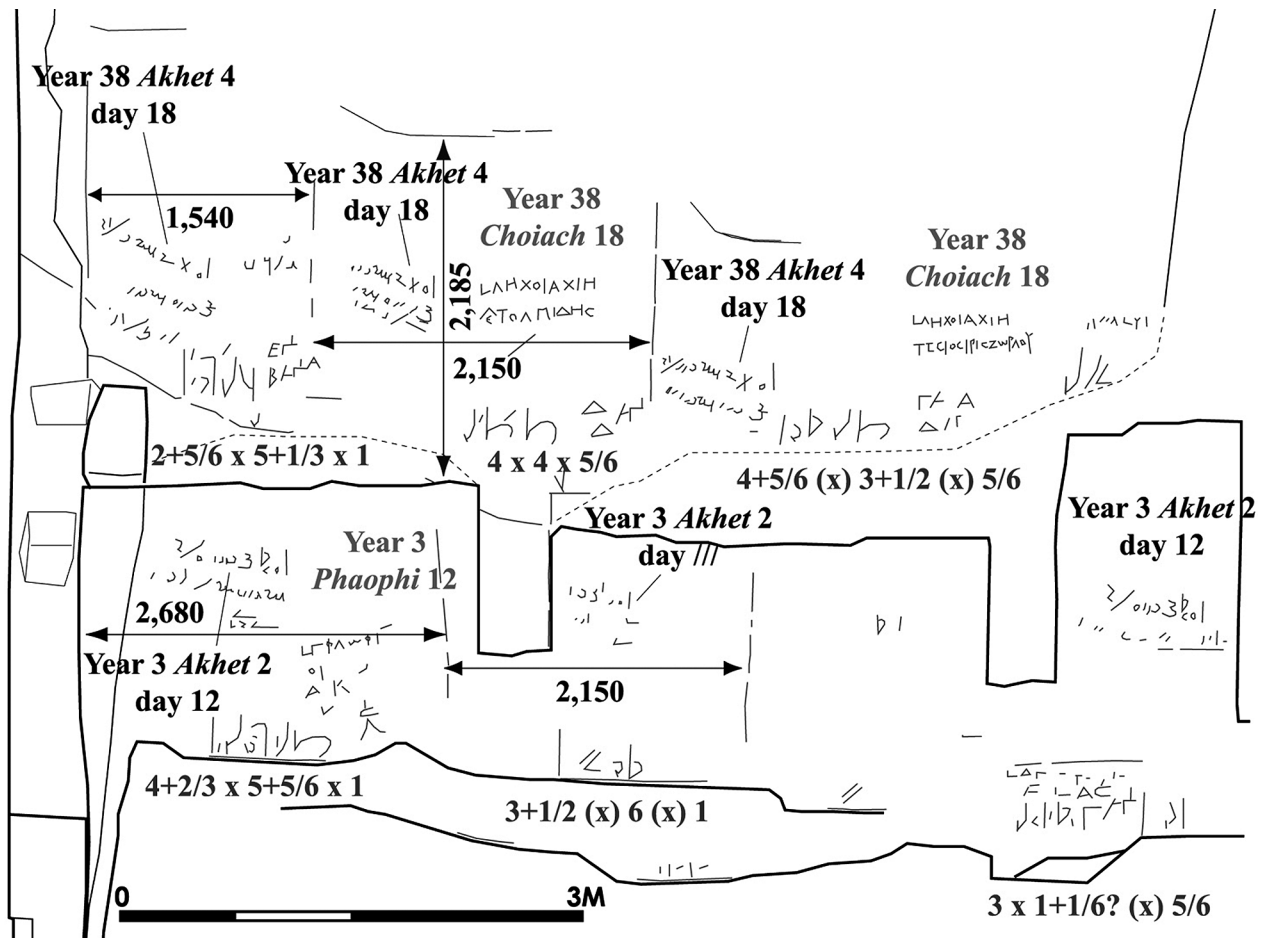
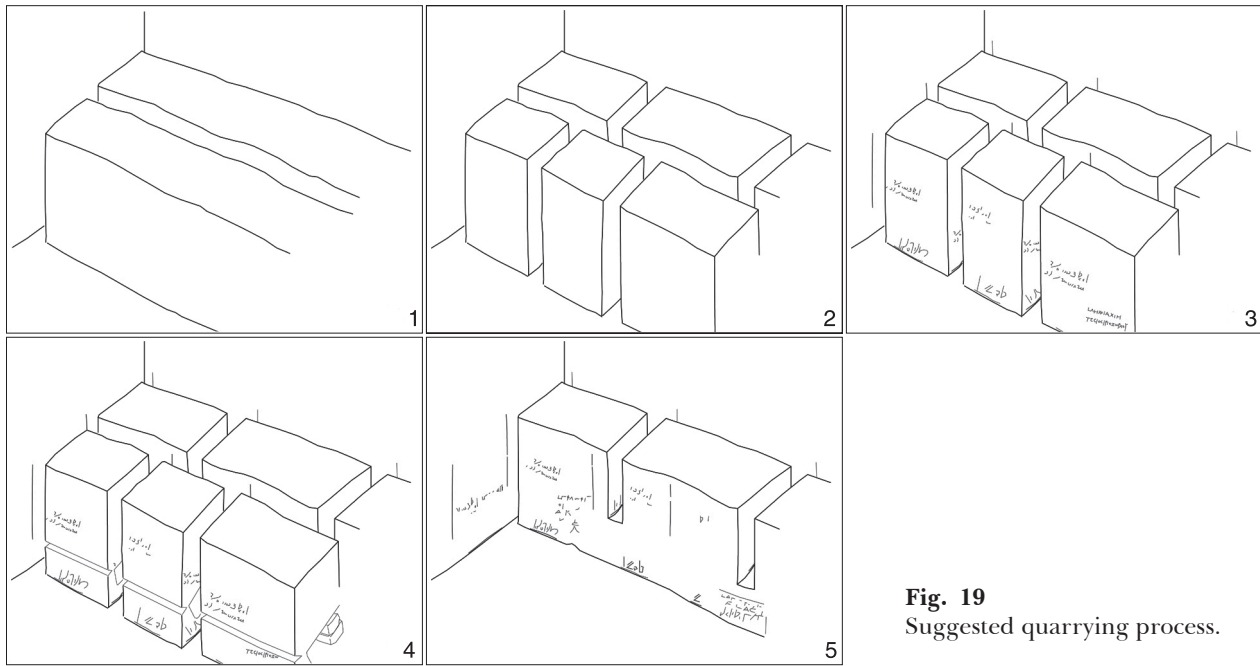


Fig. 18 Detailed drawings of Section G.

Detailed drawings of Section G were made in this season (Fig. 18). A few remains of large stone blocks abandoned during the quarrying were observed in this area (Figs. 14–16). Large stone blocks in most cases are about 1.5 to 2.5m in length and about 1 to 2m in width, and about 1.5 to 2.5m in height. Vertical trenches about 40 to 50cm wide have been excavated around each block. Fig. 16 shows a situation where a workman excavated a tunnel about 60cm high to separate a stone block from the bedrock. A great number of Demotic and Greek graffiti along with red lines were observed on various parts of the quarry faces. These graffiti consist of a year of reign, a date, a personal name, and then three consecutive numbers (Fig. 18). Fig. 17 is a sample of Demotic numbers translated as  $4 + \frac{5}{6} \times 5 + \frac{1}{3} \times 1$ . The same three numbers are contained in a Greek text written near a Demotic one. Precise measurement surveys proved that the three numbers corresponded, in order, with the width of the region sectioned by vertical red lines, the height of the region sectioned by the horizontal red lines, and the width of the narrow separating trenches. The three numbers are thus undoubtedly to denote the amount of excavation in the trenches surrounding a quarried stone block rather than the size of the block itself. A measuring unit of *ca.* 54.0cm, which is close to the royal cubit (1cubit = 52.5cm) of the dynastic period, was used continuously in this area of the quarry datable to the Ptolemaic period. It is almost the same length as was used in the underground tunnel beneath the unfinished colossus (*Akoris Preliminary Report* 2006, pp. 20–23).

This evidence allows us to describe the working procedures for quarrying stone blocks as follows (Fig. 19). First, trenches were excavated along the outlines of the stone blocks (Figs. 19–1,





**Fig. 19**  
Suggested quarrying process.

19-2). At certain intervals during this process, the supervisor of the quarrying inspected the work done. Vertical red lines were drawn on the wall surfaces along the ends of separating trenches, and horizontal red lines were drawn along the bottoms of trenches. Demotic and Greek texts containing the three measurements were written at the same time (Fig. 19-3). Finally, horizontal tunnels were excavated beneath the stone blocks to separate them from the bedrock (Figs. 19-4, 19-5).

Field surveys and analyses are in progress; further studies will be conducted on the issues summarized here. (ENDO)

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