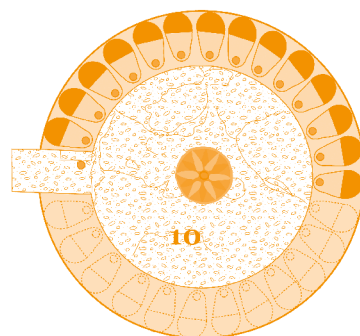


# The East Bath: a Greek bath at Krokodilopolis (Kiman Faris)



**Abstract:** The East Bath at Kiman Faris is one of four collective Greek baths uncovered during rescue excavations in the 1960s at the archaeological site of Kiman Faris in Fayoum City. Since its discovery, several photographs with brief comments have been published, but the bath has not yet been fully documented or mapped. The present study aims to provide a comprehensive description of the archaeological remains of the building, a plan of the discovered architectural elements, and a discussion of the building materials, floors, and the use of space within the structure. The goal is to enhance understanding of the East Bath's significance as an integral part of the cultural and architectural history of the ancient city of Krokodilopolis and of Ptolemaic Egypt in general.

**Keywords:** Greek bath, Krokodilopolis, Kiman Faris, Hellenistic architecture, urban excavation, Greek bathing practices

## INTRODUCTION

Egypt is notably rich in baths, with nearly 100 Greek- and Roman-built structures (46 of them Greek baths) discovered across the country. The exploration of these baths began in the 19th century and has continued since, with an increasing number of discoveries in recent years.

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This surge in findings can be attributed in part to urbanization, which has led to more rescue excavations nationwide. In the Fayoum, several Greek baths have been

found in the most important towns, such as Dionysias (two baths), Theadelphia (two baths), Kom el-Khamsin (one bath), Tebtynis (two), and Krokodilopolis (at least

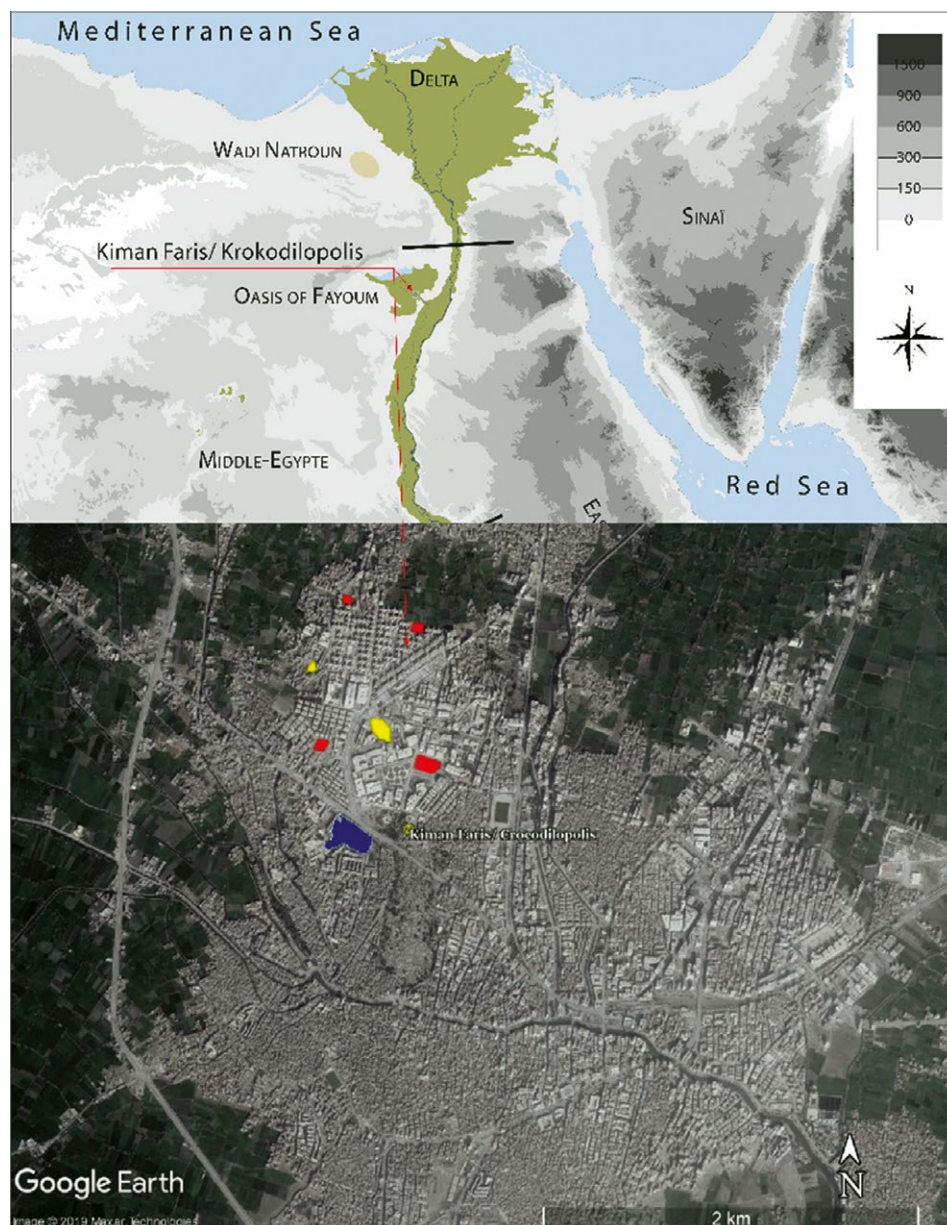


Fig. 1. Position of the East Bath within the area of Ptolemy's temple, one of the remaining parts of Kiman Faris (Google Earth image edited by Y. Mahmoud)

four baths), as well as in smaller villages like Euhemeria (two baths), and Watfa (one bath) (Fournet and Redon 2017b).

Extensive rescue excavations were conducted at Krokodilopolis —modern Kiman Faris (northwestern districts of Medinat el-Fayoum; *TM Geo 327*)— dur-

ing the 1960s, resulting in the discovery of a collection of Greek baths, including the Sarapeion Bath, the North Bath, the East Bath, and the Northwest (Small) Bath, in addition to a private bath (Leclant 1967: 191, Tab. XXXIII, Fig. 21; Davoli 1998: 149; Davoli and Ahmed 2006: 85–86).



Fig. 2. Aerial view of the “Ptolemy’s temple” area of Kiman Faris. A–D are four trenches excavated by Fayoum University, each accompanied by a photograph of its results. A: the East Bath; B: the basement of a large building; C–D: trenches revealing mixed materials from previous excavations (Photo and processing Y. Mahmoud)

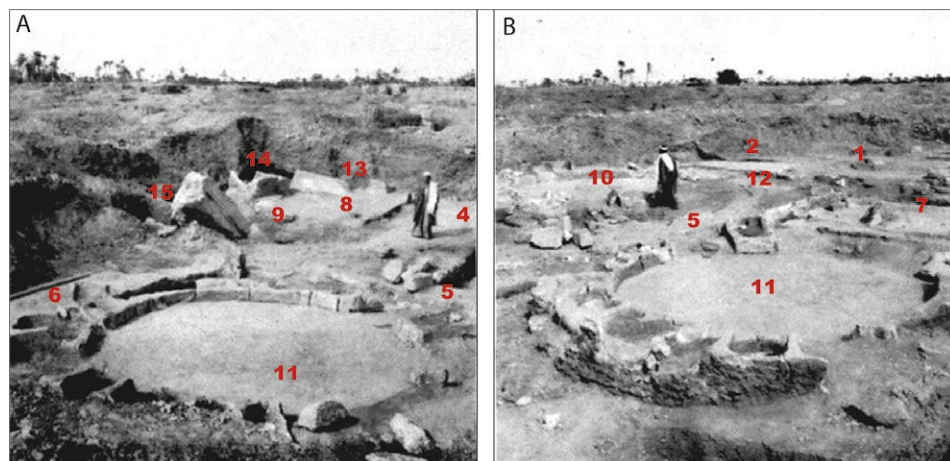


Fig. 3. The East Bath at Kiman Faris shortly after its discovery (After Leclant 1967: Tab. XXXIII, Figs 21–22, here as A and B, respectively)

Kiman Faris is the location of “Shedet/Šdt”, the regional capital of the Fayoum from the Old Kingdom onward [Fig. 1]. The sacred name was “Per Sobek,” which means “House of Sobek” (Petrie 1889: 1; Derda 2006: 3; Hewison 2008: 18). This name was translated into Greek as “Krokodilon Polis/Κροκοδύλων πόλις”. The metropolis was given names after members of the Ptolemaic royal house, such as Ptolemais Euergetis (Πτολεμαῖς Εὐεργέτις), Arsinoiton Polis (Ἀρσινόιτων πόλις), and Arsinoe (Ἀρσινόη) (Davoli 1998: 149; Hewison 2008: 19; *TM Geo* 327).

The East Bath is located in Ptolemy’s temple area, one of the few remaining parts of the ruins under the authority of the Ministry of Tourism and Antiquities [Fig. 2]. The area is bordered on the north, west, and south by streets that separate it from governmental buildings and educational facilities, while on the east it is bounded by governmental buildings. The bath itself is situated in the southwest of the site, adjacent to its western boundary. About 50 m north of the bath, there

are remains of a limestone wall bearing a Greek graffito indicating the name of one of the Ptolemies. To the southeast of the bath lie large limestone blocks, possibly representing parts of a major building (a temple pylon or the auditoria of a theater?).

The East Bath is the main focus of this study, as it has not been fully excavated and remains visible in its original location. It is of particular interest to researchers and scholars, as much information about it has yet to be published, and a complete plan has not yet been drawn. Further excavations were carried out at the site in 2016 and 2017. During these works, the visible parts of the building were cleaned, and reeds and dirt were removed. Additionally, sections that had been buried in mud for nearly 60 years since the bath was first discovered were re-excavated [see below, Fig. 5]. The mission’s work also included photographic and architectural documentation of the building, resulting in the creation of some 3D models [see below, Fig. 6] and floor plans [see below, Fig. 9].

## HISTORY OF RESEARCH

In their descriptions of the ruins of Kiman Faris, both Wansleben (1678)<sup>1</sup> and

Pococke (1743)<sup>2</sup> mentioned buildings believed to be baths. As eyewitnesses, they

- 1 Johann Michael Wansleben was a German theologian, linguist, and traveler. He was born in Erfurt in 1663. He converted to Catholicism and became a member of the Dominican Order in 1666. After a long stay in London, Wansleben planned a journey to Ethiopia in search of religious manuscripts for his patron, Ernest I, Duke of Saxe-Gotha. However, he never got beyond Egypt (Hamilton 2018: 1–5).
- 2 Richard Pococke (1704–1765) was an English prelate and anthropologist. He served as the Bishop of Ossory (1756–1765) and Meath (1765), both dioceses of the Church of Ireland. However, he is best known for his travel writings and diaries. From 1737–1741, he visited the Near East (Egypt, Palestine, Lebanon, Syria, and Asia Minor) and Greece. These travels were later published in his *Description of the East of 1743 and 1745* (Pococke 1743: 55, 58).



noted that the buildings, or at least parts of them, were visible on the surface of the site as early as the 1670s.<sup>3</sup>

The East Bath was first reported in a preliminary account of excavation activities from December 1965 by Abd-Elhaleem Rizk (inspector of antiquities). In the same report, he also mentioned another structure, “the North Bath”, and provided a list of the artifacts found that month. However, the report casts doubt on the findspots of the registered antiqui-

ties, as Rizk did not distinguish between the artifacts discovered in these two different buildings. His report included a brief description and a schematic drawing of the uncovered ruins (Rizk 1965a; 1965b). In the report on excavations in Egypt for 1965–1966, published under the direction of Leclant, two photographs of the East Bath of Krokodilopolis are presented with a general reference to the excavations at Kiman Faris [Fig. 3]. These photographs show that most parts of the



Fig. 4. Remains of the Hellenistic bath in the 1990s, view to the north (Photo P. Davoli, after Davoli 1998: Fig. 67)

- 3 Wansleben wrote that his guide had told him a specific building was a bath: “in our way we went over the Ruines of the ancient Arsinoe, where I saw nothing remarkable, but some old Walls which my Guide told me were the remains of a Bath” (Wansleben 1678: 158). On the other hand, Pococke’s description is much clearer; he mentions the building material (brick), the general plan (round building), the mortar on the walls (a petrified substance similar to that seen on ancient aqueducts), and the function (bagnio). Here is Pococke’s text: “There are little remains of the city, except the great heaps of rubbish that are seen on all sides, and ruins of a wall of a round building, which seems to have been built of brick, but the east side of it was encrusted with such a sort of petrification as is seen on ancient aqueducts; the people say it was a bagnio, and possibly it might be some old building converted to that use” (Pococke 1743/I: 59).

bath had already been uncovered; they depict two *tholoi* (circular Rooms 10 and 11), Rooms 2, 7, and 8, Area 9, and Corridors 1, 3, 4, 5, 6, and 12 (Leclant 1967: 191, Tab. XXXIII, Fig. 21).

In the late 1990s, Paola Davoli briefly commented on the bath and published a general photograph of the building [Fig. 4] (Davoli 1998: 149, Fig. 67; Davoli and Ahmed 2006: 85). However, in her 2006 paper with Nahla Ahmed, the baths were not mentioned among the remaining archaeological features visible on the surface. Bérangère Redon and Thibaud Fournet also referred to the bath in their study of the Greek baths in Egypt (Fournet and Redon 2017b: Cat. No. 19). Additionally, a mention of the bath mosaics

was made by Guimier-Sorbets and Redon (2017: 145–146, Table 1 and Fig. 31) in their study of pavements in Greek baths in Egypt, based on an analysis of the photograph published by Davoli. However, a comprehensive publication, including a complete plan, has not yet been produced.

During the period from 20 December 2016 to 14 January 2017, a mission from the Faculty of Archaeology at Fayoum University focused on cleaning and continuing excavations in the East Bath. This bath was the second excavation area out of three targeted during that season. Unfortunately, the excavations had to be halted before all parts of the bath could be fully uncovered. Nevertheless,



Fig. 5. The East Bath at the end of the 2016–2017 Fayoum University excavations (Photo Y. Mahmoud)



efforts were made to clean and document the previously uncovered sections, both photographically and architecturally. The mission's work revealed the possible presence of some annexes to the south and west of the bath. It was not possible to continue excavations in the western part

of the bath (Rooms 8–9) due to the high groundwater level. Additionally, after removing the weeds and surface mud, it was discovered that the floor of the area had been severely damaged, despite appearing to be in good condition in earlier photographs [Fig. 5].

## GENERAL LAYOUT AND EQUIPMENT OF THE BATH

By the end of Fayoum University's excavations in 2017, the visible remains of the East Bath consisted of parts of the floors of five corridors (1, 3, 4, 5, 12), two circular rooms —*tholoi* (10, 11)— with

hip-bathtubs, and the floors of three rectangular rooms (2, 7, 8). Only Room 8 contained remains of two immersion bathing tubes. No traces of walls remained [Figs 6–7].



Fig. 6. Orthophotomosaic of the East Bath at the end of the 2016–2017 Fayoum University excavations (Photo and processing Y. Mahmoud)



Due to the poor state of preservation of the remains and the insufficient evidence to construct a comprehensive picture of the bath based solely on the description of these remains, I chose to describe each element within an analytical framework. This approach considered the relationship of each element with others and involved reviewing old photographs of the bath from its initial discovery in the 1960s, as well as additional images taken during the 1990s. Excavation re-

ports for the bath area were also examined and compared with similar examples of baths in Egypt.

The aim was to achieve a comprehensive understanding of the original layout of the bath, the possible functions of the various rooms and corridors, and the service units that might have existed. This analysis relied on interpreting the archaeological remains, old photographs, and identifying any modifications and developments that occurred over time.

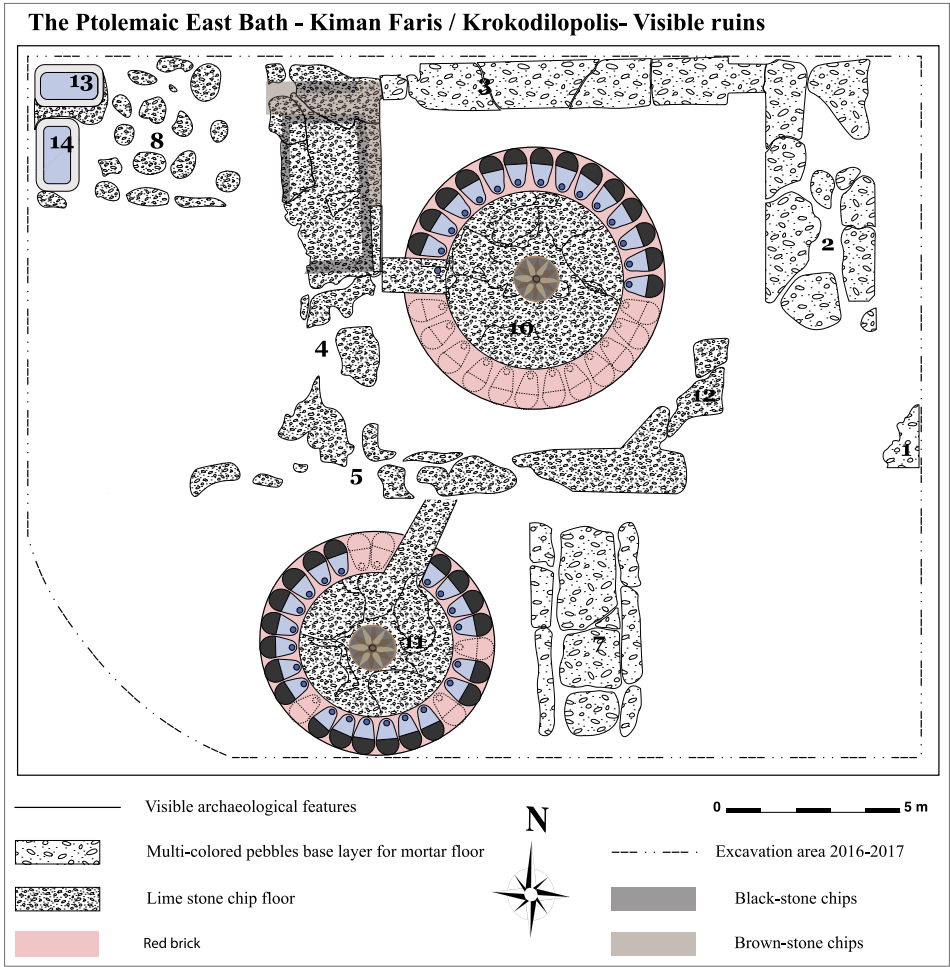


Fig. 7. Plan of the visible ruins of the East Bath (Drawing Y. Mahmoud)

Based on this, three plans of the bath were drawn. The first illustrates the visible remains at the site [see Fig. 7], the second represents an initial phase of the bath's construction [Fig. 8], and the third depicts the bath in its final stage, when all its units were completed [Fig. 9].

**GENERAL LAYOUT**

The canonical plan of the Greek baths in Egypt was recently drawn up by Fournet and Redon (2017b), who demonstrated that most of these buildings followed a very homogeneous design. This consistency makes it easier to understand

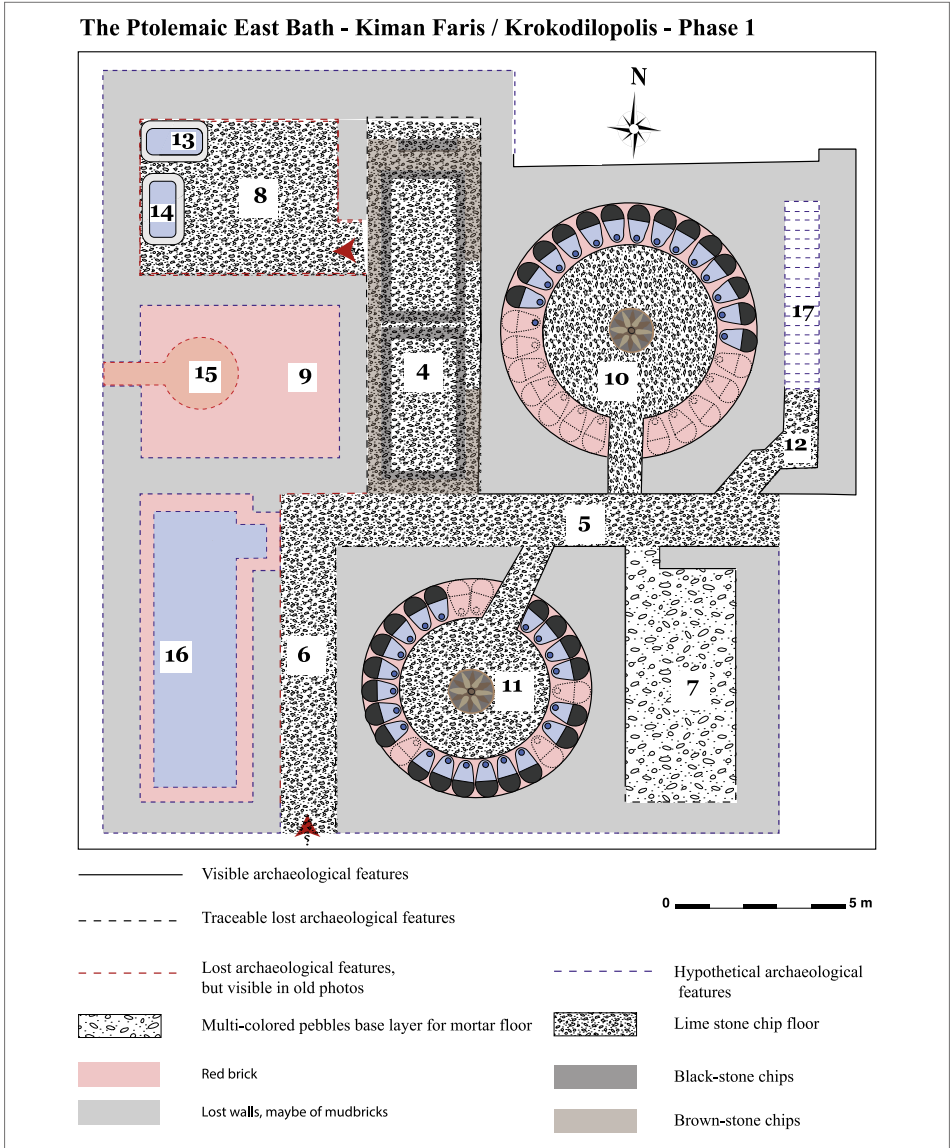


Fig. 8. Interpretive plan showing phase 1 of the East Bath (Drawing Y. Mahmoud)

and reconstruct the layout of the parts that have not been preserved. Based on the uncovered architectural elements of the East Bath at Krokodilopolis, archival photos, and available excavation reports, the general layout of the bath can be reconstructed.

The East Bath can be briefly described as a classical collective Greek bath, featuring at least two entrances, one of which is on the eastern side, leading to

Corridor 1. From there, one can enter one of two opposing pathways within the bath; either Room 2 or Corridor 5, where the two pathways begin. From Room 2, one can access Corridor 3, which leads to Corridor 4, providing entry to Room 10, located on its eastern side. This room is one of two *tholos* rooms (10 and 11) within the bath, each containing hip-bathtubs. Additionally, from the same Corridor 4, one can enter a rectangular room (8) on

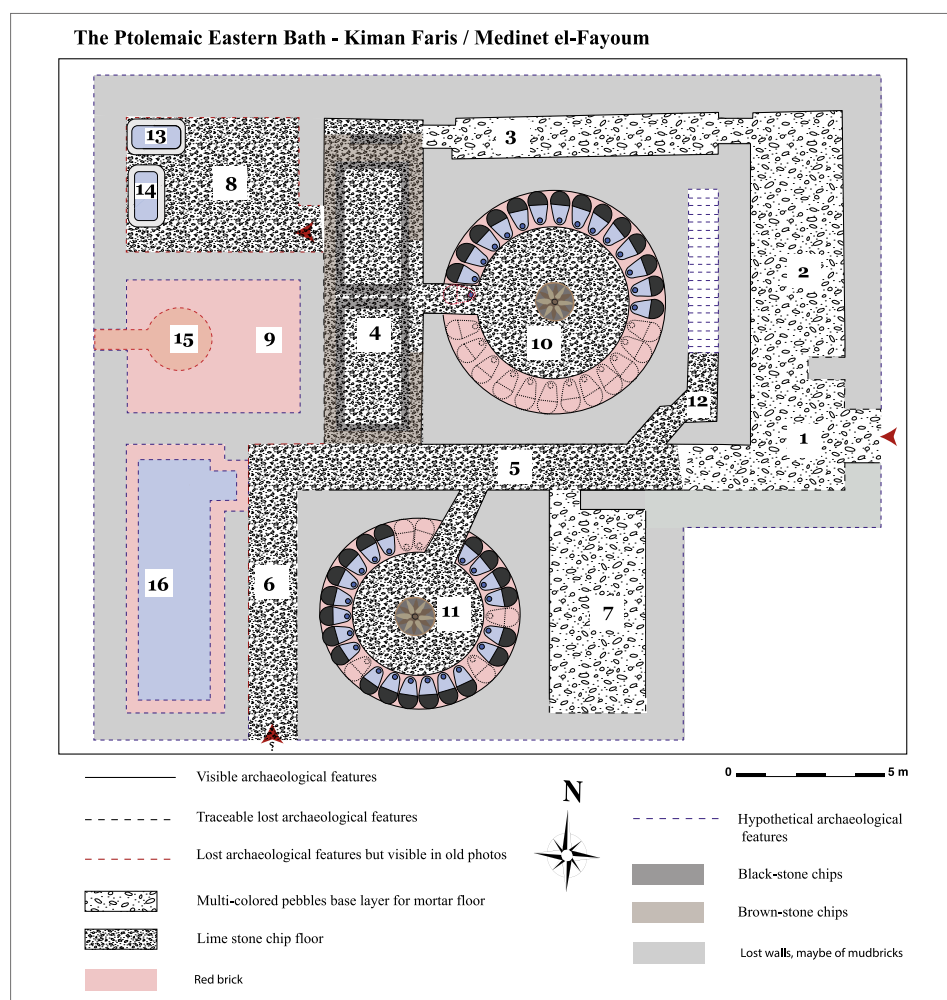


Fig. 9. Interpretive plan showing phase 2 of the East Bath (Drawing Y. Mahmoud)

its western side, designated for individual immersion baths for relaxation. Adjacent to this room on the south is Area 9, which housed the water heating furnace. At its southern end, Corridor 4 connects with Corridor 5.

Another circuit, in the southern part of the bath, is also accessible from Corridor 1. It gives access to Corridor 5, which extends from east to west. This corridor first opens onto rectangular Room 7 and *tholos* Room 11 to the south. From the western end of Corridor 5, one can enter Corridor 6, which extends west of *tholos* Room 11 from north to south and likely provides access to a water tank (16). It ends to the south with the second entrance to the bath, enabling workers to move freely between the furnace area, of which Room 9 is a part. There must also have been additional facilities for fuel storage and ash disposal. This entrance allowed workers to easily supply the reservoir with water and regularly operate the furnace. In an earlier phase of the bath's construction, Corridor 5 may have provided access to Corridor 12, which perhaps led to a staircase to the roof of the bath [see *Figs 7–9*].

### LOST WALLS

The writings of numerous visitors to the site indicate that Kiman Faris served as a large quarry for building materials, such as mud brick and red brick, which

were used to construct houses and other buildings in the Arab town of Medinat el-Fayoum.<sup>4</sup> It is believed that this extensive quarrying is the reason for the disappearance of the walls of the East Bath. Photographs of the bath published just after its discovery in 1965 show that the walls were missing [see *Fig. 3*], and no remains of the walls were found during the Fayoum University excavations in 2016–2017 [see *Figs 5–6, 11*]. This phenomenon is also observed in the North Bath at Kiman Faris, where the basins and floors are well preserved, but the walls have completely disappeared, leaving gaps between the floors and around the basins (Fournet and Redon 2017b: 412–413; Explore Fayoum 2020). This is a general phenomenon that affected all Greek baths in Egypt, and it can be explained by the durability of the preserved materials (mortar, red bricks) and the recovery of the mud bricks, which were used for most of the walls, as well as the vaults that likely covered all or some of the rooms (Fournet and Redon 2017a: 104, n. 22).

The thickness of the inner walls of the bath seems substantial, with a minimum of about 1.10 m for the walls of the *tholos* rooms. This observation is based on the distances between the remnants of the floors of Corridors 2 and 3 and the back sides of the hip-bathtubs in *tholos* Room 10.

4 Schweinfurth (in the 1870s) recorded the activities of the sebakheen, where several hundred people were working to transport sebak and animal manure deposited in the old city to be used as soil fertilizer, due to the spread of sugarcane and cotton crops that required fertilizers. In addition, he confirmed the use of the site as a quarry for building materials. While most of the stones on the site had been quarried in earlier periods and there were no longer large quantities of burnt bricks, there were groups of residents working to extract the burnt bricks that lined the old basins and wells (Schweinfurth 1887: 58–61).



## ENTRANCES

Due to the poor state of preservation and the loss of all walls, some aspects regarding the overall plan and circulation within the bath cannot be definitively confirmed. One of these aspects is the location of the bath's entrance or entrances [see *Figs 8, 9*]. Based on observation the floors remaining on-site and review of archival photos, it seems likely that the bath had two entrances: one on its eastern side and another on its southern side. The first entrance probably opened into a rectangular corridor (1). This entrance was identified based on the discovery of a small section of the floor of Corridor 1, located about 1.5 m southeast of the floor of Room 2 [*Fig. 10*]. This corridor served as the starting point for movement within the bath for the bathers, as previously explained. The remaining part of the corridor floor indicates that it had the same type of flooring as Room 2, consisting of mortar with multicolored pebbles. In the plan [see *Fig. 9*], the thickness of the surrounding walls was estimated based on the measurements of the spaces between the floors of the corridors and other rooms. This approach was necessary because the *sebakheen* had removed all remnants in the southeastern corner of the building, making it impossible to accurately determine the boundaries of the structure in that area.

The second entrance was not archaeologically uncovered and does not appear in the archival photos, but its existence can be inferred by observing the presence of Corridor 6, which was identified through archival images (Leclant 1967: 191, Tab. XXXIII, Fig. 21). This corridor is assumed to have provided access to the bath's water tank. Comparisons with similar baths suggest that a rear entrance often existed to facilitate the movement of workers between the heating area, the water tanks, and other sections of the bath.<sup>5</sup> Therefore, I believe the service entrance was likely located there, as the position is ideally suited for this function.

## TWO-SECTION COMPLEX

The East Bath appears to have been divided into two sections, based on the possible movement pathways of the bathers [see *Fig. 9*]. These two routes were previously described. The first path begins at Room 2 and provides access to Rooms 8 and 10, facilitating movement in the northern section of the bath. The second path, which passes through Corridors 5 and 6, leads to the southern section of the bath, including service annexes such as the water tank (16) and the heating area (9), accessible through the southern entrance. Movement between the two sections was likely possible through the connection at the southern end of Corridor 4 and the northern wall of Corridor 5.

5 In comparison with the Kom el-Khamsin bath, considered the best-preserved Greek bath in the Fayoum region, which had an entrance at the end of Corridor 1, with Water Tank 3 located beside it (Fournier and Redon 2017b: 408). Another example of a bathhouse with a secondary entrance is the recently discovered Abu el-Gedour bath, which I visited recently. In this bath, a corridor separates the two tholoi rooms from the furnace, water tank, and the room with individual immersion bathtubs. At the southern end of this corridor, there is an entrance that does not adjoin the water tank, but rather the relaxation bath room, while the water tank is located on the northern side.



Fig. 10. A portion of the floor of Corridor 1 was uncovered to the southeast of the corner of the floor of Room 2 (Photo and processing Y. Mahmoud)



### THE NORTHERN SECTION

To visit the northern section, one enters Room 2 on the northern side of Corridor 1. The room measures 8.3 m from north to south and 3.13 m in width and retains some sections of its original floor. It likely served as a changing room before proceeding to the bathing Rooms 8 and 10, similar to Room 6 in the Karnak baths, Room 8 in the Buto North bath (Phase Ia), or Rooms 1 and 2 in the Buto East bath (Fournet and Redon 2017b: Cat. Nos 5, 6, and 33). The room also functioned as a passageway; from the northern end of its western wall, a doorway 0.80 m wide provides access to Corridor 3.

Corridor 3, extending from east to west, served as a passage between Room 2 and Corridor 4. It measures 8.97 m in length and 1.10 m in width. At both its eastern and western ends are narrow en-

trances approximately 1 m long and 0.8 m wide. These reduced-width entrances likely served to minimize heat loss from the bath through this corridor, helping to retain warmth within the bathing area. Additionally, they preserved privacy by limiting visibility from outside. The western end of Corridor 3 leads directly into Corridor 4.

Corridor 4, oriented north–south, measures approximately 11.04 m in length and around 3.5 m in width. It provided access to *tholos* Room 10 on its eastern side and to Rooms 8–9 on its western side, although exact connections between these rooms and Corridor 4 are not preserved. Additionally, a small doorway in the southern part of the corridor's eastern wall gave entry into Corridor 5, facilitating further movement within the bath complex.



Fig. 11. *Tholos* Room 10, viewed from the east (Photo Y. Mahmoud)

### THOLOS ROOM 10

One could access *tholos* Room 10 through a door in the eastern wall of Corridor 4, which had a width of 1.10 m. Observing the gaps around the remains of the floors, it becomes apparent that the external walls of the room were straight, indicating that the room was rectangular from the outside and circular from the inside [Fig. 11].

The length of the walls extending from east to west (north and south) was approximately 10.10 m, a measurement based on the length of the parallel Corridor 3. However, it is worth noting that the thickness of the walls was not consistent on all sides. The wall thickness in the middle of the eastern side was approximately 2.6 m, while on the southern side it was only 1.5 m. The inner diameter of

the room was determined to be 5.12 m, providing further insight into the dimensions and layout of *tholos* Room 10 within the bath complex.

Adjacent to the perimetral walls of *tholos* Room 10, a series of individual bathing basins, known as “hip-bathtubs”, were discovered. Fourteen hip-bathtubs are still preserved, extending from the northern side of the entrance to the middle of the eastern side. Each hip-bathtub was oval-shaped, with a seat-like form. Twelve more hip-bathtubs can be restored in the second half of the room, meaning it had the capacity to accommodate up to 26 bathers at the same time [see Figs 6, 7, 9].

Notably, remains of a hip-bathtub that had been completely levelled were found in the entrance area, situated be-



Fig. 12. Entrance to tholos Room 10 (Photo Y. Mahmoud)



low the level of the first hip-bathtub on the northern side of the entrance [Fig. 12]. These findings suggest that the *tholos* underwent two phases of construction. Based on this, two hypotheses can be proposed: the first is that the entrance was originally narrower and was widened by removing one of the hip-bathtubs, meaning that the room originally contained 26 hip-bathtubs. The second hypothesis is that the entrance was not originally located here, and the room was modified to have its entrance from the west. The second hypothesis seems more likely, as the entrance floor is already narrow. If it had originally been narrower by the width of a full hip-bathtub, it would have been too narrow to allow anyone to pass through. During the first phase, the original entrance to *tholos* Room 10 might have been toward the south, opening into Corridor 5 [see Fig. 8], similar to the North Bath at Kiman Faris, with which the East Bath shares many characteristics (Fournet and Redon 2017b: 412).

The hip-bathtubs in *tholos* Room 10 exhibited specific dimensions and features. Each basin measured approximately 0.90 to 1 m in length. The rear part of every basin featured a piece of limestone, semi-circular in shape, which served as a seat during bathing. This limestone

piece had a width equal to the maximum width of the basin, measuring about 0.55 to 0.60 m, and occupied a space of 0.30 to 0.33 m from the rear part of the basin. The hip-bathtubs were constructed of red bricks measuring 0.24 m × 0.12 m × 0.07 m. The extension of the rear wall of the basins revealed that the wall foundations extended to three courses below the floor level, approximately 36–40 cm deep [see Figs 3, 11].

Inside each hip-bathtub, there was a semi-spherical depression with a diameter of 0.25–0.30 m, designed to collect wastewater and facilitate its drainage onto the floor. The hip-bathtub floors were paved with a waterproof mortar. Additionally, inside each water collection depression, there was a smooth limestone piece, hollow in form, serving to reinforce the depression. It can be said that the design and construction of these hip-bathtubs are quite similar to those found in the underground Greek bath at Taposiris Magna (Fournet and Redon 2009: 122, 134, Fig. 10).

Remnants of preserved plaster layers found on parts of the hip-bathtubs and adjacent walls suggest that the interior of the bath was covered with a reddish-colored lime plaster layer, providing further insight into the construction and finishing materials used in the bath complex.<sup>6</sup>

6 The use of hydraulic mortar is a common feature in Greek baths, playing a crucial role in protecting construction materials from the water used during bathing. This is particularly important because many baths were built using fragile materials that are easily damaged by water, such as mud brick. For example, in a recently discovered bath at Kom Abu el-Gedour in Abu al-Matamir, Beheira, the entire bath was constructed with clay and mud brick, with the furnace and water tank built from fired bricks. Lime mortar was applied to cover all the walls and basins, providing protection and enhancing their appearance (the author visited the bath during excavations in August 2024).

## ROOM 8

Along the western side of Corridor 4 is an area measuring approximately 10 m × 5 m. Archival photographs of the bath [see *Fig. 3*] show that the northern part of this area contained rectangular Room 8 with a well-preserved floor, as well as two individual immersion basins. One basin extends from east to west (13), and the other from north to south (14), adjoining the northern and western walls of the room, respectively.

Unfortunately, the room's floor is now largely destroyed and covered by fast-growing grasses and reeds that reappear quickly after being cleared [see *Fig. 5*]. The remnants of the ruined floor consist of small limestone chips mixed with water-proof mortar. The destruction of the floor extends approximately 4.6 m from north to south, starting from the northern edge of the excavation area, and about 5.5 m from east to west, starting from the western edge of Corridor 4 to the western end of the two individual immersion basins (13–14), which represent the remaining architectural features in this room. Each of the two basins is approximately 1.8 m long and 1 m wide. Due to their proximity to the site wall, the excavation area was not expanded further westward.

## AREA 9 (THE FURNACE?)

Archival photographs show that the area south of Room 8 —labeled as 9 on the bath's plan— is lower in elevation and appears as a shallow pit. In the western section, there is a large rectangular feature, likely a support or column, with an adjacent circular pit [see *Fig. 3*].

During the 2016 excavations by Fayoum University, the area was cleared of

grass and reeds, but no archaeological features were uncovered. Excavations did not descend lower than 10 cm due to the high water table. However, scattered slag remnants were observed in debris from previous excavations to the west and southwest of the bath [see *Fig. 5*].

The archaeological evidence in the archival photographs can be interpreted as follows: the large feature is likely a burnt brick column, while the circular pit may represent the core of a furnace (15), with the column serving as a structural support on its northern side. Therefore, it can be suggested that this area housed the water-heating furnace, as it is located between the immersion basin relaxation Room 8 to the north and the presumed location of the water tank (16) to the south [see *Fig. 9*].

Compared to other baths, the location of this room is perfectly suited for this function. In the Greek bath at Taposiris Magna, Room 3*bis*, which contains the heating furnace, is located south of Corridor 3, which separates it from the *Tholos* Room 1, and it is adjacent to Room 7, designated for individual immersion tubs (Fournet and Redon 2013: 239–240, *Fig. 6*; 2017*b*). In the bath at Athribis, Room 8, which houses the furnace, functions as a corridor and is situated between two sets of immersion tub rooms (Rooms 5 and 7). A similar arrangement is found in the East Bath at Buto, where the furnace room is next to Corridor 6, designated for immersion tubs, and separated from the two circular rooms by Corridor 5. This configuration is repeated in the first phase of the North Bath at Buto, in the South Bath at Buto, the bath at Kom el-Khamsin in Fayoum, and in the

Sarapeum Bath at Kiman Faris, where Room 5, which houses the furnace, is surrounded by three immersion rooms (E, G, H). At the Kom el-Giza bath, Furnace J is adjacent to the wall of Immersion Room F, and it is likely that two heating channels extended from the furnace beneath the room's floor (Bergmann and Heinzlmann 2009: 91–92; Fournet and Redon 2017b).

The remains of the heating system are likely still present in the debris,<sup>7</sup> as the 2016 excavations did not reach sufficient depth.

### THE SOUTHERN SECTION

To access the southern section, one follows the second route through Corridor 5, which runs from east to west and serves as the main axis of movement in this part of the building. The corridor preserves sections of its floor, with scattered remains extending approximately 13.3 m from east to west, and a maximum preserved width of about 1.44 m. The original total length of the corridor was likely around 15.3 m, with a width of about 1.5 m.

As one proceeds from east to west along the corridor, there are successive entrances: first to Corridor 12 on the northern side, then to Room 7 on the southern side, followed by *tholos* Room 11. The corridor then connects with Corridor 4 (previously discussed in the north-

ern section) and terminates at Corridor 6 to the west. Corridor 6 serves as a continuation, allowing access to the water tank and ending at the southern entrance of the bath. The following sections will discuss each of these corridors and rooms in detail.

### CORRIDOR 12

Corridor 12 extends westward from the *tholos* Room 10, and large portions of its floor have been preserved. These remains indicate that it was an angled corridor, extending approximately 1.5 m at a 45° angle in a northeasterly direction toward Corridor 5, before turning north for another 2 m. The average width of the corridor is 1.5 m. It appears that this corridor provided access to a staircase (17), whose steps began at the northern end of the currently preserved floor [see *Fig. 9*]. This may explain the exceptional thickness of the wall separating Room 2 and *tholos* Room 10 [see *Fig. 6*]. The corridor can thus be interpreted as a service passageway, potentially used for maintenance or for accessing annexes located on a second floor.

### ROOM 7

Room 7 is located on the southern side of Corridor 5 and has retained most of its floor [see *Figs 4, 6*], although it shows large cracks and some small missing sections. Based on the remaining floor de-

7 In Egyptian classical Greek baths, the furnace, consisting of a large and deep cylindrical or conical hearth, occupied a central position. Few examples have been thoroughly excavated, with the notable exceptions of those at Buto East and Karnak. In both structures, one or two boilers, which supplied the bath with hot water, probably sat above the fireplace. These boilers were accessible to bath attendants circulating in the oblong corridor, allowing them to draw hot water and manually carry it to the two *tholoi* and the immersion bathtub room (Fournet and Redon 2017a: 106).

bris, the interior dimensions of the room can be estimated at approximately 6 m from north to south and 3 m from east to west. The floor shows no traces of internal structures, but it is likely that this room functioned similarly to Room 2 in the northern section — as a changing room prior to entering the two *tholos* Rooms 10 and 11 during the early phase of the bath's construction. After the entrance to Room 10 was modified, Room 7 likely served those heading to Room 11.

### **THOLOS ROOM 11**

This *tholos* room is located on the southern side of Corridor 5. Its entrance, facing northeast, is approximately 1.07 m wide. The level of this room is about 0.5 m higher than that of Corridor 5; a slop-

ing entrance leads from the corridor into the room. This elevation difference might be due to ground disturbances caused by dredging activities and a rising water table, which lowered the level of Corridor 5. This is evident in the steep slope of Corridor 4's floor from north to south, although there may have originally been a planned elevation difference, as the entrance from the corridor to the room appears to have been intentionally sloped [Fig. 13, see Fig. 3].

Although the internal diameter of this *tholos* room is smaller than that of *tholos* Room 10 — measuring approximately 4.6 m — it shares many similarities, including the same type of flooring and decoration, as will be described later. Arranged along the interior walls are about 25 hip-



Fig. 13. *Tholos* Room 11, viewed from the east (Photo Y. Mahmoud)



bathtubs, designed and measured similarly to those in *tholos* Room 10, though with reduced spacing between the tubs to compensate for the 0.60 m difference in internal diameter. The tubs in this room follow the same construction style as before, and the mosaic floor closely resembles that of *tholos* Room 10. This consistency in design and execution suggests a unified approach to the construction and decoration of the bathing facilities within the bath complex.

On the other hand, only two hip-bathtubs are completely missing on the western side of the entrance, along with two non-adjacent tubs on the eastern side and a fifth missing tub on the south-western side. The remaining tubs show varying degrees of damage, with some missing their back parts or entire seats. Overall, the state of preservation of this *tholos* room is better than that of *tholos* Room 10.

### **CORRIDOR 6 AND TANK 16**

The floor plan of Corridor 6 was primarily reconstructed based on archival photographs of the bath, which show the floor extending westward from Room 11. Archaeologically, only small, broken fragments of the floor remain *in situ*, consisting of limestone chips mixed with mortar. The original width of the corridor cannot be definitively determined, but it likely matched that of Corridor 5. Although this corridor is the last architectural element on the western side of the bath for which we have tangible evidence—either from the archaeological *in situ* remains or the archival photographs—its presence prompts questions about its function.

Based on the corridor's location and its relationship with the rest of the building's facilities, I propose that it provided access to the bath's water tank (16). This reservoir was likely located on the western side of the corridor. By comparison with other baths, it can be inferred that the reservoir was constructed of red bricks and lined with waterproof mortar. The outer wall was likely built of mud brick, as was the case for most of the bath's walls, or possibly red bricks. At the southern end of Corridor 6 was the bath's southern entrance, as previously mentioned.

The proposed location for the reservoir south of the furnace aligns with the placement of reservoirs in comparable baths, where they are typically situated adjacent to the furnace. On the opposite side is the bathing room equipped with individual immersion tubs, which in our case is Room 8, located north of the furnace. Therefore, the southern location is the most plausible site for the reservoir. Examples include: reservoirs 9 and 10 in the South-East Baths at Tell Atrib (Cat. No. 3); reservoir 9 in the East Baths and reservoir 5 in the North Baths at Tell el-Fara'in (Cat. No. 6); reservoir 6 in the South Bath at Qasr Qarun (Cat. No. 10); reservoir 3 in the Bath at Kom el-Khamsin (Cat. No. 16); reservoir 7 in the Bath at Kom el-Wist (Cat. No. 18); reservoir a in Bath 1 and reservoirs 10–11 in Bath 2 at Kharabet Ihrit (Cat. No. 32); and reservoir a in the baths north of the first pylon at Karnak temple (Cat. No. 33) (Fournet and Redon 2017b). A recently discovered bath at Abu el-Gedour shows the same feature, with the reservoir located beside the furnace, to its north.

## PAVEMENTS

The bath's rooms and corridors are adorned with a variety of mosaic floor techniques, each lending its own unique aesthetic to the space. Two distinct types of floors are observed:

1. Mortar floors [Fig. 14]: mortar floors consist of a surface layer made of mortar spread across the floor, into which aggregate is embedded to enhance its strength — though the aggregate is not meant to be visible. This surface layer is typically very thin, often just a few centimeters thick and sometimes even less than 1 cm, in contrast to the thicker sub-floor layers beneath it (Guimier-Sorbets and Redon 2017: 140).

In the East Bath, mortar floors were applied in Rooms and Corridors 1, 2, 3, 5, 6, 7, and 8, as well as in the hip-bathtubs within the two *tholoi*. These floors consist of multicolored pebbles [Fig. 14:A] — typically white, yellow, and brown quartz pebbles— or white limestone chips, used as reinforcing materials within the mortar. The two types of filler were set in a bed of light gray-reddish mortar. On one hand, the pebble filler was used in Rooms and Corridors 1, 2, 3, and 7 and in the hip-bathtubs. On the other hand, limestone filler [Fig. 14:B] was used in Rooms and Corridors 5, 6, and 12. Originally, these surfaces were covered with a layer of colored mortar, possibly red-

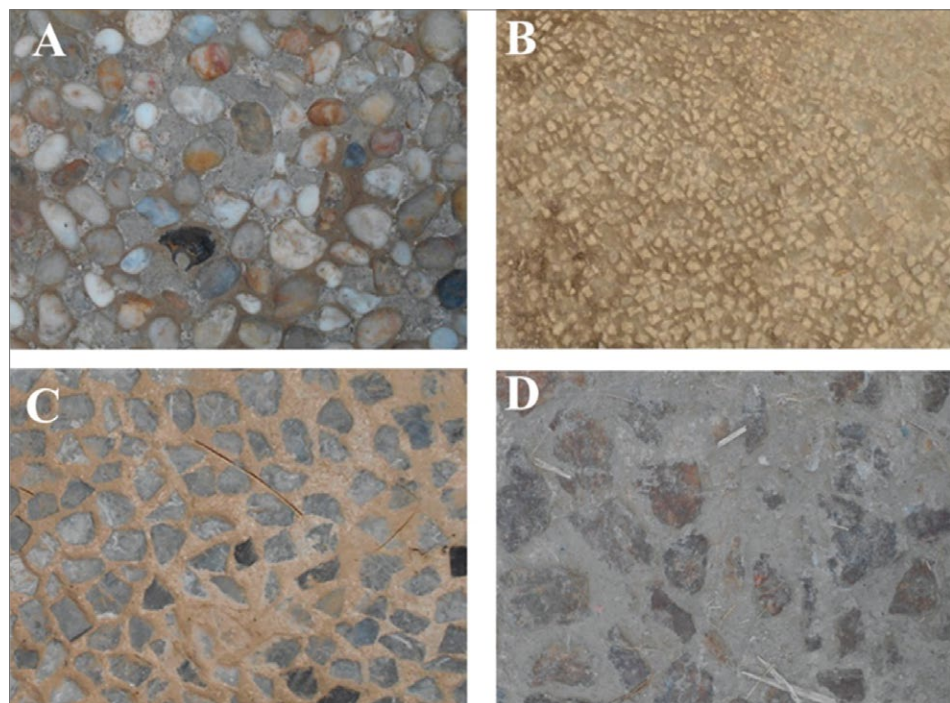


Fig. 14. A – pebble fill of mortar floors in Corridors 1, 2, 3, and 7; B–D – limestone chip flooring in the rectangular frieze in Corridors 4, 5, 6, 12 and Rooms 8, 10, and 11 (Photos Y. Mahmoud)

dish to match the wall color. The floors of Corridors 5 and 12 still preserve remnants of gray mortar on the surface.

This technique is consistent with similar examples found in the North Bath at Kiman Faris, Bath No. 1 at Theadelphia, and small baths in Tebtynis, Karnak, Kom el-Giza (Bergmann and Heinzelm ann 2009: 94–95), and the North Bath at Buto (Guimier-Sorbets and Redon 2017: 151–157).

2. Chipped mosaic floors [see *Figs 11, 13, 15, 16*]: this type of mosaic resembles *opus tessellatum*, but the individual elements lack recognizable shapes such as squares or near-squares (Guimier-Sorbets and Redon 2017: 140). Chipped floors are observed in the pavements of Corridor 4, Room 8 and the inside of the two *tholoi* Rooms 10 and 11. These floors use small stone chips arranged in a random pattern, contributing to a distinct and visually intriguing mosaic effect throughout these spaces.

### THOLOI PAVEMENTS

The pavements of the two *tholoi* feature chip mosaic floors composed of lime-

stone chips arranged in a central pattern [see *Fig. 14:B*]. These floors were designed with a slope from the center toward a small drainage channel that runs parallel to the hip-bathtubs positioned along the edge of the mosaic floor. Despite suffering significant damage due to rising groundwater and soil subsidence—which resulted in the floors breaking into several sections with differing heights, directions, and slopes—it can be confirmed that the overall slope of the *tholoi* floors leads toward their entrances.

The entrances of the *tholoi* show sharp inclines toward Corridors 4 and 5, indicating that the floors of these corridors likely shared the same slope direction, channeling wastewater toward a specific drainage point outside the building via a pipe embedded in one of the walls. Currently, it is impossible to determine the exact location of the lost drainage outlet, but it was likely situated near the southern entrance at the end of Corridor 6, or perhaps even through the eastern entrance at the start of Corridor 1. A similar drainage method was used for the wastewater in



Fig. 15. Central floral decoration in the *tholoi*: A in Room 10; B in Room 11 (Photos Y. Mahmoud)

the nearby Sarapeion Bath, located to the west of the East Bath. There, water from the southwestern bathing rooms was drained through Rooms I and U to the west, along the southwest façade, while water from northwestern rooms drained through a pipe in the north wall of Room D. This drainage feature is common and has been detected in many other baths, such as those at Buto (Fadl et al. 2017: 29), Kom el-Giza, Edfu, ‘Asafra small bath, Bir Samut, the North Baths at Tebtynis, and the large baths at Luxor (Fournet and Redon 2017b: 415).

In the center of each *tholos* floor is a circular panel featuring a rosette (lotus flowers) composed of six petals made from the same material as the pebble floors, and six additional petals made from brown stone chips [Fig. 15]. The petals are arranged in alternating sequence, with each pair of same-material petals separated by a petal of the other type. The spaces between the petal ends are filled with black stone chips. Additionally, a round outer frame, also made of brown stone chips, surrounds the entire form, separating it from the rest of the floor, which is composed of white limestone chips.

Flower designs in mosaics are commonly found across the Hellenistic and Roman worlds, often serving as focal points on otherwise simple floors. However, their use in *tholos* pavements appears to be unique to Egypt. In other locations such as Canopus, Hermopolis, Hu (Diospolis Parva), Karnak, Diospolis Parva, and Tell el-Herr, artists took care to depict specific blooms native to Egypt rather than employing generic rosette motifs, placing them in settings where such imagery was not traditionally used. It is highly probable that the mosaics created for the *tholoi* in Philadelphia<sup>8</sup>—each featuring a central flower—also depicted *Nelumbo nucifera*.<sup>9</sup> The inclusion of Egyptian lotus flowers, typically associated with serene Nilotic landscapes, in a space where they would be submerged in water, likely aimed to evoke a tranquil ambiance for bath-goers (Guimier-Sorbets and Redon 2017: 148–149; Cole 2021: 18–19).

#### CORRIDOR 4 PAVEMENT

The pavement of Corridor 4 [Fig. 16] stands out as the most intricately decorated among the corridors of the bath

8 These mosaics are mentioned in a Zenon Papyrus (P. Cairo Zen. IV 59665), lines 3–15: “[the contractor] will fill in the remaining area with sixty containers of pebbles [Greek: psephoi]. The [circular] paved floor of the women’s tholos he will situate at a distance of one cubit and two palms from the gateway, and he will surround it with a black border having a width of two fingers, and he will then put in place an [inner] decorative band depicting sea-shells, having a width of ten fingers, and then another single border into the middle of which he will fit poppy design, one cubit in diameter. He will fill the remaining space with sixty containers of pebbles.” (Pollitt 1990: 180; McKenzie 2007: 152).

9 *Nelumbo nucifera*, commonly known as the Sacred Lotus or Indian Lotus, is a species of aquatic plant native to Asia, particularly India and Southeast Asia. It is renowned for its strikingly beautiful flowers and large, round leaves that float on the water’s surface. The plant holds significant cultural and religious symbolism in many Asian traditions, often associated with purity, enlightenment, and spiritual awakening. In ancient Egyptian art, the lotus also symbolized rebirth and creation, frequently appearing in artistic representations.



building. It features a chip mosaic floor composed of three types of stones in contrasting colors: white, brown, and black. The floor is divided into two halves, both adorned with identical decorations. The northern section of the corridor is well-preserved, whereas the southern section has suffered significant damage.

A central rectangle, measuring approximately 4.2 m × 1.6 m, is crafted from white limestone chips and serves

as the visual focus of the corridor. This is surrounded by an inner frame of black stone chips, approximately 0.20–0.25 m thick. An outer frame made of brown stone chips runs along the two longitudinal sides and fills all remaining spaces of the corridor, creating a harmonious and visually captivating mosaic pattern throughout. This description pertains to the northern half of the corridor; the southern half was identical.

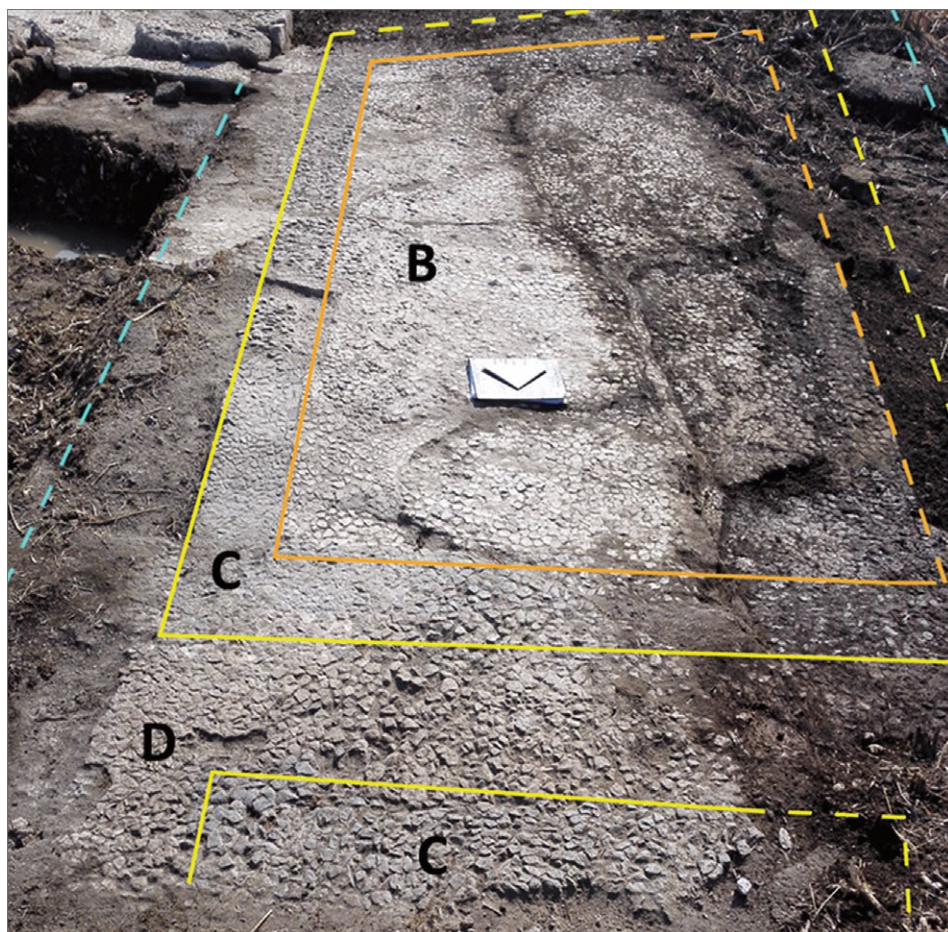


Fig. 16. Corridor 4 with outlined boundaries of the various stone types (see B, C, and D in Fig. 14) (Photo and processing Y. Mahmoud)

Through their examination of old photographs of baths dating to the 1980s, Anne-Marie Guimier-Sorbets and Bérangère Redon concluded that the floor of the chamber was made of limestone, and that the floral decoration was executed in a pebble composition similar to that found in Corridors 2 and 3. However, they were unable to determine whether brown and black stone chips were used in its execution (Guimier-Sorbets and Redon 2017: 153).

A comparable floor design can be found in Room 6 of the Karnak bath, although there are notable differences. The floor at Karnak features an outer

frame of pebbles covered with red mortar, and a central rectangle composed of limestone chip mosaic (Boraik 2009: 77; Boraik et al. 2013: 65). In contrast, the East Bath employs two frames and a central rectangle, all made of chip mosaic. In addition to the two floral motifs in the *tholoi*, this corridor mosaic is also noteworthy, as Anne-Marie Guimier-Sorbets observes. It underscores the importance of this room and likely imitates flagstone paving. At Karnak, the visual effect was further enhanced by painted walls (Guimier-Sorbets and Redon 2017: 154).

## BUILDING PHASES

It is difficult to determine the precise stages of the building's development, but based on the available evidence, at least two phases can be identified. During the first phase, the entrance to the *tholos* Room 10 was likely from the south, through Corridor 5, facing the entrance of *tholos* Room 11. This suggests that Corridor 5 was probably the only passage at that stage. The bath had an entrance at the beginning of Corridor 5, from which one could enter Room 7 to change clothes and then proceed to one of the two *tholos* rooms (10 or 11). At the end of Corridor 5 was Corridor 6, which led to the tank (16), and to the north of the corridor and tank, the furnace (9) may have been located. As for Corridor 4 and Room 8, it is difficult to determine whether they were part of the initial phase or later additions [see Fig. 8].

In a later phase—or possibly multiple phases—the bath was modified with the addition of Corridor 1 as a new entrance, along with the addition of Room 2 and Corridor 3. Notably, the floors of Corridor 1, Room 2, and Corridor 3 share the same composition, being made from multicolored flint pebbles, while the rest of the bath used limestone pebbles—except for Room 7, which may have been repaved during this phase. The most significant change during this phase was the alteration of the entrance to Room 10, which was moved to the west through Corridor 4. It is also possible, as mentioned earlier, that Corridor 4 and Room 8 were later additions to the plan. These modifications likely occurred gradually over several stages rather than all at once [see Fig. 9].

## CHRONOLOGY

Given that the hip-bathtubs in the two *tholoi* number approximately 50–52 basins, and that there are at least two individual immersion bathtubs with no indications of a subterranean heating system, it is evident that the bath can be classified as a classic Graeco-Egyptian bath (Fournet and Redon 2017a: 117–118).

Determining the precise date of the bath's construction and subsequent modifications is challenging. A review of the monthly reports written by Abdel Halim Rizk during his supervision of the excavations at the bath reveals that he did not differentiate in his inventory of movable finds between artifacts discovered in the East Bath and those from the North Bath, where excavations were conducted simultaneously. Rizk compiled a single list that included all the artifacts discovered during each

month. Moreover, records from the 1960s show that several baths were uncovered around the same time. The only bath to which the finds can be clearly assigned is the Sarapeum Bath. In the case of the other baths, the finds were sometimes associated with numbered baths or vaguely referenced by location, often differing from the names known today. Due to the lack of comprehensive reports, distinguishing between the northern, eastern, and northwestern (small) baths has become increasingly difficult.

During the 2016 excavations, few original layers were exposed in the bath area, and most discoveries came from disturbed layers. However, the majority of the pottery recovered dates to the Ptolemaic period, covering the entire era without allowing for more precise dating.

## RESTORATIONS

Photographs taken during the bath's excavations show that the southern half of the hip-bathtubs in *tholos* Room 1 was completely missing at the time of discovery [see *Fig. 3*] (Leclant 1967: 191, Tab. XXXIII, *Fig. 21*). They remained unrestored until the late 1990s, as evidenced by a photograph taken by Davoli (1998: 155, *Fig. 67*) [see *Fig. 4*]. However, visitors to the bath today will find that the restoration department has constructed two parallel semi-circular walls made of red brick to delineate

the missing southern extension of the hip-bathtubs [see *Fig. 11*]. It also appears that the restoration department carried out repairs on parts of the bath's flooring, particularly in Room 1, where white cement mortar mixed with sand was used to fill cracks and gaps. Additionally, black cement mortar was applied to parts of the exterior of the hip-bathtubs and spread across the surrounding floor area — likely as a protective measure or to prevent plant growth.

## RESULTS AND CONCLUSION

The study of the East Bath in Krokodilopolis sheds light on the architecture and daily use of public baths during the Ptolemaic period. Despite the loss of many structural elements — particularly walls, which were likely removed during material reclamation activities— the excavations conducted between 2016 and 2017, in conjunction with analyses of archival photographs and historical plans, have significantly contributed to a comprehensive understanding of the bath's design and development.

Data were gathered from several sources, including archival reports, photographs, and field excavations. These were analyzed by combining field observations of the preserved sections of the bath with reconstructed plans based on archaeological evidence. Furthermore, the site was cleared of mud and vegetation that had covered much of the structure, revealing well-preserved floors and hip-bathtubs that had remained buried for decades.

By re-evaluating missing architectural elements through comparison with similar baths in Egypt, researchers were able to propose a reconstruction of the original layout. These comparisons clarified the distribution of rooms, water drainage pathways, and the location of the two main entrances, leading to a more coherent understanding of internal circulation and functional zones within the bath.

The recent excavations yielded important findings that contributed to a better understanding of the bath's architectural layout. Key areas — such as the two *tholos* rooms, the heating room, and the connecting corridors — were identified.

Analysis of the preserved floors allowed researchers to trace the flow of water from the bathing rooms through the corridors and ultimately out of the building via a southern outlet.

The discovery of potential annexes to the south and west, which have yet to be fully excavated, suggests that the bath complex was more extensive than initially thought. Further excavation will be needed to fully uncover the site. The phased modifications, such as the relocation of entrances and the addition of new corridors, reflect the evolving functionality of the bath over time.

The East Bath follows a classical design characteristic of Greek bath architecture, featuring traditional elements such as circular *tholos* rooms equipped with individual hip-bathtubs and a series of interconnected corridors facilitating movement throughout the bath. The rooms were designed to accommodate large numbers of bathers simultaneously, reinforcing its role as a public facility.

The bath's layout reveals careful consideration of movement within the building, including two separate entrances — one likely intended for visitors and the other for service or operational use. The narrow corridors and small doorways were likely designed to retain heat within the bath and provide privacy for the bathers.

The bath features two primary types of flooring. The first consists of mortared floors (multicolored aggregate), made of mortar with embedded pebbles of various sizes and colors (such as white, yellow, and brown quartz). These floors were originally coated with a colored plaster



layer, likely reddish to match the walls, and were found in the main rooms, corridors, and hip-bathtubs. The second type comprises chipped mosaic floors made of small, irregularly shaped stone chips arranged in a seemingly random pattern, creating a unique visual effect. These floors, found in the main corridors and *tholos* rooms, feature central floral designs executed in brown and black stone chips, surrounded by white limestone chips.

The East Bath was constructed using a combination of red brick and water-proof lime mortar, with the possible use of mud brick in the now-lost walls. The internal walls were coated with reddish-colored plaster. The hip-bathtubs were built with red bricks, while it is likely that mud brick was used for most of the walls — though these were largely lost due to later quarrying. The bath's roof is

believed to have been vaulted, constructed from mud brick and plaster, in order to maintain the required temperatures inside the building.

This study of the East Bath provides valuable insights into the architectural evolution of public baths in Ptolemaic Egypt. The bath's design reflects a fusion of Greek and Egyptian architectural traditions, with particular attention to both functionality and aesthetics. These findings highlight the importance of continued excavation in the southern and western sectors to uncover additional annexes and complete the reconstruction of the building's original layout. Continued research will deepen our understanding of the social and cultural roles of such baths within Ptolemaic society and contribute to the broader field of ancient public architecture.

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