

THE OSTRACON

THE JOURNAL OF THE EGYPTIAN STUDY SOCIETY

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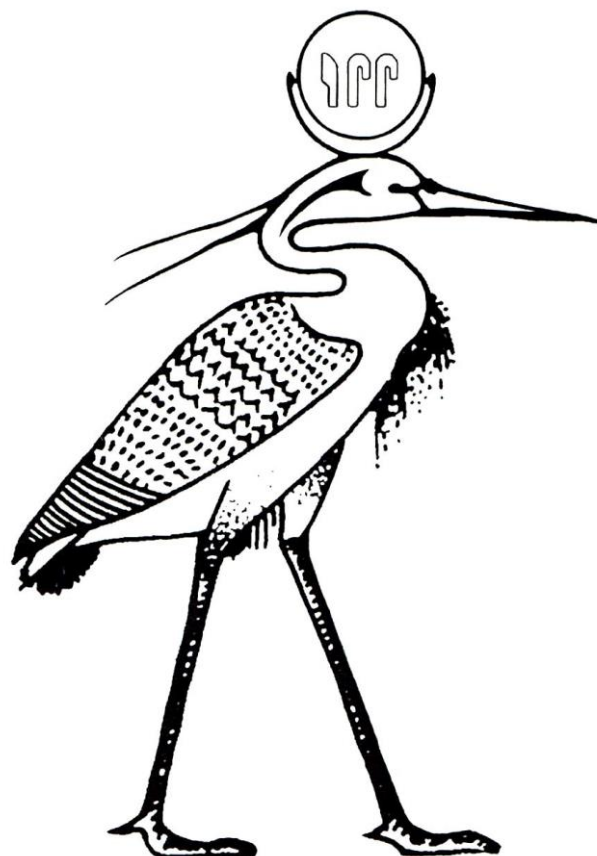
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Tausret Temple Project: The 2013 Season and Other Notes

By Pearce Paul Creasman,
University of Arizona

Since our last report in *The Ostrakon*,¹ the University of Arizona Egyptian Expedition (UAEE) has undertaken two archaeological field seasons and significant changes have occurred within the UAEE itself. This report summarizes these events.

First and foremost, it is my duty to inform the loyal readers of our reports that Richard H. Wilkinson retired from teaching at the University of Arizona in 2012. Consequently, as the new Director of the Expedition, I now have the privilege of bringing you news from the field. After nearly a quarter of a century at the helm of the UAEE, Professor Wilkinson now advises the Expedition in his new capacity as “Founding Director.” Rest easily, however, as Professor Wilkinson is still active, fully committed to research, and has several books forthcoming.² Please see the conclusion of this report with regard to the new and forthcoming publications from the UAEE.

PHARAOH/QUEEN TAUSRET’S THEBAN TEMPLE

As regular readers of this journal will recall, the University of Arizona Egyptian Expedition has been excavating at the site of Pharaoh/Queen Tausret’s “temple of millions of years” in Western Thebes since 2004. W. M. Flinders Petrie visited and excavated the site very briefly in 1896.³ While he recovered numerous small objects, the understanding of the temple, its construction, and the queen whom it served was left incomplete. The UAEE’s work has focused on developing a greater understanding of the monument, the woman, and the occupation of the surrounding site.

The 2012 season took place between 23 May – 29 June, and a comprehensive report is in press.⁴ The season’s work focused primarily on the excavation of the temple sanctuary, which, to a large degree, escaped investigation by Petrie’s teams. Because the sanctuary was perceived as the “center of movement” in the temple during the New Kingdom,⁵ making it critical to modern interpretation of the site, the fact that Petrie’s team worked only around its edges is fortunate. Excavations here improved both our understanding of the site’s stratigraphy and the temple’s degree of completion before its presumed destruction at the beginning of the 20th Dynasty.

The 2013 season took place between 21 May – 21 June.⁶ The primary goals were to excavate additional areas of the temple (e.g., the first courtyard, where evidence of columns was expected), but more importantly, to investigate later features in and around the temple. We found no distinct evidence of columns in the first courtyard, and even suggestive evidence was minimal. While it is not uncommon for smaller temples to lack columns in the courtyards, it came as a surprise, nonetheless, because the design here was based on the inner temple of the Ramesseum, which has numerous columns. Next year, we will expand excavation in the first courtyard in order to clarify further this curious situation.

During these excavations, we made interesting and somewhat disconcerting discoveries with regard to the recent historic activity at the site. In first courtyard, in the lowest stratum of the mud-brick mounds that are presumed to be from the destruction of the temple and not investigated by Petrie, there were several items of modern material culture, including bits of newspaper and a tag from a T-shirt stating that it had been made in “A.R.E.” (“Arab Republic of Egypt,” established after the Revolution of 1952). Elsewhere on the site, an historic Egyptian bus ticket was found (Fig. 1, next page) several meters deep in an area that had been looted, suggesting a timeframe. Such items support a conclusion that portions of the temple and surrounding area were unofficially dug *at least* twice (and probably three times) since Petrie’s work: ca. 1920, the mid-1980s, and early 1990s.



Fig. 1. An historic “Luxor City Council / Around City Bus” ticket, found on site.

SITE, TRENCH, AND FOUNDATION PRESERVATION

As more of the ancient site is revealed by removing mounds of decayed mud brick and fill that has washed down from the Theban hills, it appears more like a monument now than it has at any other time in perhaps the past 3,000 years. Accordingly, it requires greater protection. Unfortunately, multiple attempts to fence in the temple proper have been negated by local interference between seasons. Portions of the temple and all of its peripheral areas are used locally as roads or social spaces (e.g., sporting fields). In lieu of a fence, we routinely rebury temple foundation-related features in sand after they have been photographed and mapped, leaving only traces of the top surfaces showing.⁷ The fragmentary remains of superstructure walls are more difficult to preserve. To this end, in 2012 we filled the superstructure and temple foundation trenches with sand and built protective mud-brick walls to support and isolate the above-ground remains (Fig. 2).

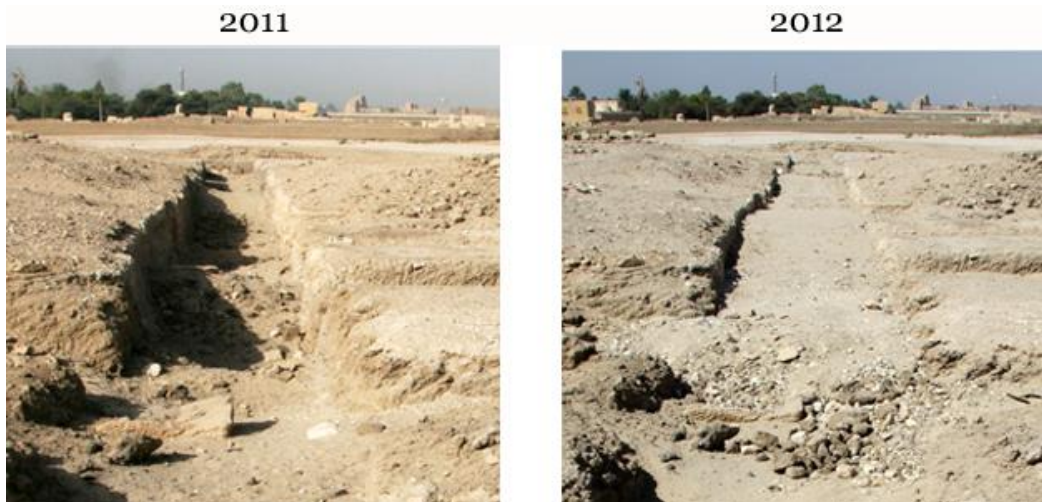


Fig. 2. Temple trenches before and after filling.

In previous seasons, we stabilized trench walls and reinforced weaker areas where necessary. In 2012, we backfilled all previously excavated or exposed foundation trenches to within 30 cm of capacity. The reinforced walls are now more secure and stable than if left free-standing. Filling these trenches is critical to preserving the temple and is not a small undertaking. The remaining temple areas are still clearly distinguishable, for enough of each surface area remains exposed to reveal the temple’s long-obscured floor plan. This is now visible from the road between the Theban ticket office and prominent sites such as the Valley of the Kings and Deir el-Bahri.

With most of the temple foundations now excavated and stabilized where needed, in 2013 we took an additional step to define the temple. We deposited several tons of clean, light-colored sand into the foundation trenches (Fig. 3) at the surface in order to provide a clear differentiation between trenches (denoting where the temple's stone walls would have been) and temple rooms (dark spaces, composed of the original *dekka* floors). Following the work scheduled for next season (2014), the temple should be clearly visible from the road and the air, having regained some of its former, if brief, prominence along "temple row."



Fig. 3. Temple trenches after topping with clean sand to display the floor plan.

OTHER FEATURES AT THE TEMPLE SITE

At least since Petrie's time,⁸ the presence of features post-dating Tausret's use of the site have been noted. According to local rumors, one such feature—a rock-cut tomb—was used successively by Petrie, Howard Carter, an unknown German team, and the Egyptian Antiquities Organization as a storehouse. Although said to have been located about 25 m north and west of the temple, the precise location of this tomb is unknown today. No maps or publications of which I am aware record anything more than a passing reference to any such features east of the modern road within the concession (Fig. 4).⁹ Nonetheless, for many years the UAEE has recovered evidence of later burials (often termed "intrusive" burials)¹⁰ and made more such finds in 2013.

In order to understand the use of the site after the temple was destroyed, understanding how the site was formed is necessary. Simple empirical observation at the site today reveals that the topography surrounding the temple was artificially squared and leveled before construction of the temple began. The area was probably lowered 3–7 m over the approximately 2 ha (4 acres) that include the temple and adjacent spaces. As Petrie noted, the leveling event occurred most likely prior to Tausret's reign, since the temple itself was not set squared within the leveled space.¹¹ It is believed that the leveling event was conducted during Amenhotep III's reign, creating the scarp that defines the western and northern boundaries of the Tausret site (see Fig. 4, next page).¹²

Since Amenhotep III's temple at Kom el Hettan (a few hundred meters south of Tausret's temple) was the largest temple in Thebes, it is hard to imagine that it was intended to be even larger, extended severalfold to encompass the area up to the northern scarp of the Tausret site. Equally difficult to accept is the possibility that the area in question was leveled to improve the view. Arielle Kozloff

describes a far more reasonable circumstance for the leveling event.¹³ She states that Amenhotep III built a processional route from his temple at Kom el Hettan, north to that of his ancestor Amenhotep II, and then on to the Valley of the Kings. Such a route cut through the area now occupied by Merenptah's temple (and possibly Tausret's, although Kozloff does not state so directly). This would provide a good reason for a leveling event of such massive scale while simultaneously explaining the general lack of evidence for pre-18th Dynasty occupation at the Tausret site, while similar sites farther north (and thus not subject to the leveling event) have such remains.¹⁴



Fig. 4. Modified satellite image showing the scarps and related features at the site.

LATER FEATURES IN THE WESTERN SCARP

As in our previous seasons (especially 2009–2012), we continued to clear the northwestern area of the temple, which produced more artifacts and small finds demonstrating the presence of one or more significant burials, probably of the 25th or 26th Dynasty. After more than a week of excavating fill (in addition to two weeks in 2012), we were asked to discontinue our work in this area because of concerns for the security of the tourist road. While a geologist has confirmed the stability of this area, we will no longer pursue excavation directly behind (west of) the temple. We refilled the area, built several retaining walls, and moved northward to where the scarp prompted no such concerns, being several meters farther away from the road (Fig. 5, next page).

To the north, we found disarticulated mummified human remains that, although looted, had evidently been buried with not insubstantial grave goods. These remains are possibly associated with the same feature(s) that yielded previous evidence behind the temple. In 2013, the discovery of several fragments of Bes jars, incense bowls with soot, and beaded nets, suggests strongly a 25th or 26th Dynasty date for whatever burial feature or features are in the area. The architectural remains appear to be based on the short cubit (ca. 45 cm) often associated with the Third Intermediate and Saite

Periods, including the 25th and 26th Dynasties,¹⁵ but more architecture in better condition is needed to confirm whether this is indeed the case.

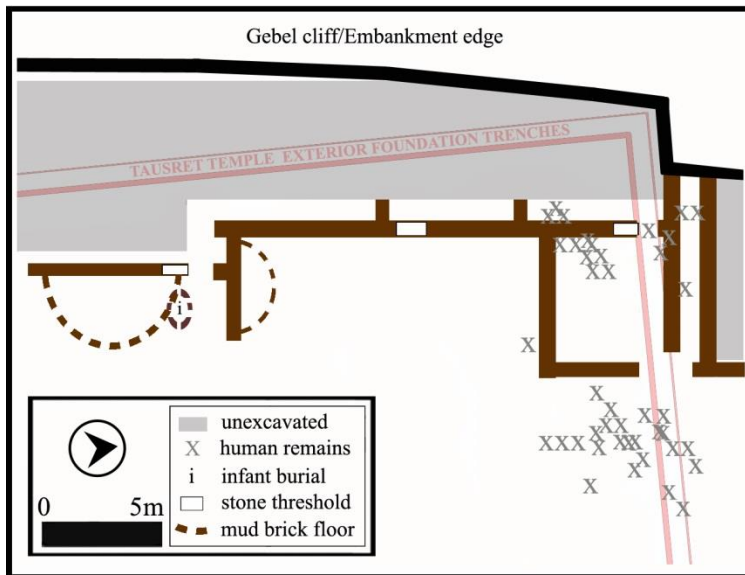


Fig. 5. Map of suspected Late Period wall network in the northwest corner of the temple.

NEW DISCOVERIES: FEATURES IN THE NORTHERN SCARP

Each year, the UAEE invests time cleaning portions of the temple and its surrounding areas. As the site is downslope from the road and the Theban hills, modern and historic garbage and debris have tended to collect around the edges. While clearing such debris from the northern scarp this past season (from a ca. 40 x 2 x 2 m area), we discovered a series of cave-like features, some of which contained ancient human remains. At least one of these features (“feature 1”) was, with little doubt, an ancient burial place (“tomb” being too generous a word in this instance), and very likely a second (“feature 2”) was, also. While tombs post-dating Tausret’s temple found in this area (of the 25th or 26th Dynasty, discussed above) were noted in passing by Petrie, these features are probably contemporary with the New Kingdom or early Third Intermediate Period. The features have been disturbed heavily, although whether by human activity or nature is unclear. More excavation and analysis is required to piece together the history of the northern scarp.



Fig. 6. Feature 1 from the northern scarp.

Compared to the archaeological remains from the western scarp, those from the northern appear to be sparser and in a worse state of preservation. The primary features are caves roughly carved into the conglomerate and sandstone strata. These lack the large, thick, mud-brick walls of those in the western scarp. A suggestion may be made that these northern features were perhaps some combination of lower-quality, regularly reused, or heavily looted burials that have been subjected to degradation by human and natural forces (e.g., floods).

As feature 1 is the best preserved of the three found in 2013, it is noted here. Feature 1 (Fig. 6, previous page) can best be described as a roughly hewn and irregularly shaped cave. The presence of one remaining layer of mud bricks stacked four wide at the threshold suggests that the cave was once bricked shut (see Fig. 6, right-center). In addition to the remains of at least two adults, the following items were found inside or immediately outside of feature 1, likely strewn from looting: fragments of three funerary cones, a small fragment of finished pink granite likely from a statue, seashells (bivalve molluscs), two broken and incomplete Mycenaean globular stirrup jars (Fig. 7), a variety of shabti fragments, a fragmented female figurine (“concubine figure”), several ostraca (including one on animal bone, likely a bovine rib), ringstands, bread trays, fragments of pilgrim flasks, jar fragments with horizontal blue bands on a cream slipped background, broken bread moulds, and hundreds of sherds of beer jars and red-rimmed bowls. These items have parallels as early as the 19th Dynasty but could have been reused at any later point in time.



Fig. 7.
Mycenaean
globular
stirrup jars
associated
with
Feature 1.

As of this writing, I have been unable to identify any passing references in the literature to burials, tombs, finds, or any other such feature(s) associated with the northern scarp. Given the immense amount of archaeological and other digging activity in Thebes during the past 200 years, it is likely that I have overlooked such a reference. At present, however, it appears that these features in the northern scarp are new to the archaeological record.

PRELIMINARY CONCLUSIONS

We are again glad to report that our latest season of work on the Tausret Temple Project was engaging and educational. The prospect of having discovered undocumented burial features is, of course, very exciting. Most importantly, however, we continue to develop our understanding of the form and history of the temple and other occupations at the site and we continue to record and publish our findings. We hope to return next year with additional specialists and a larger team in order to address the host of new questions presented by our work in 2013.

NEW AND FORTHCOMING PUBLICATIONS

As a directly related development, it is with great pleasure that I announce the publication of *Archaeological Research in the Valley of the Kings and Ancient Thebes: Papers Presented in Honor of Richard H. Wilkinson* (University of Arizona Egyptian Expedition, 2013; Fig. 8).

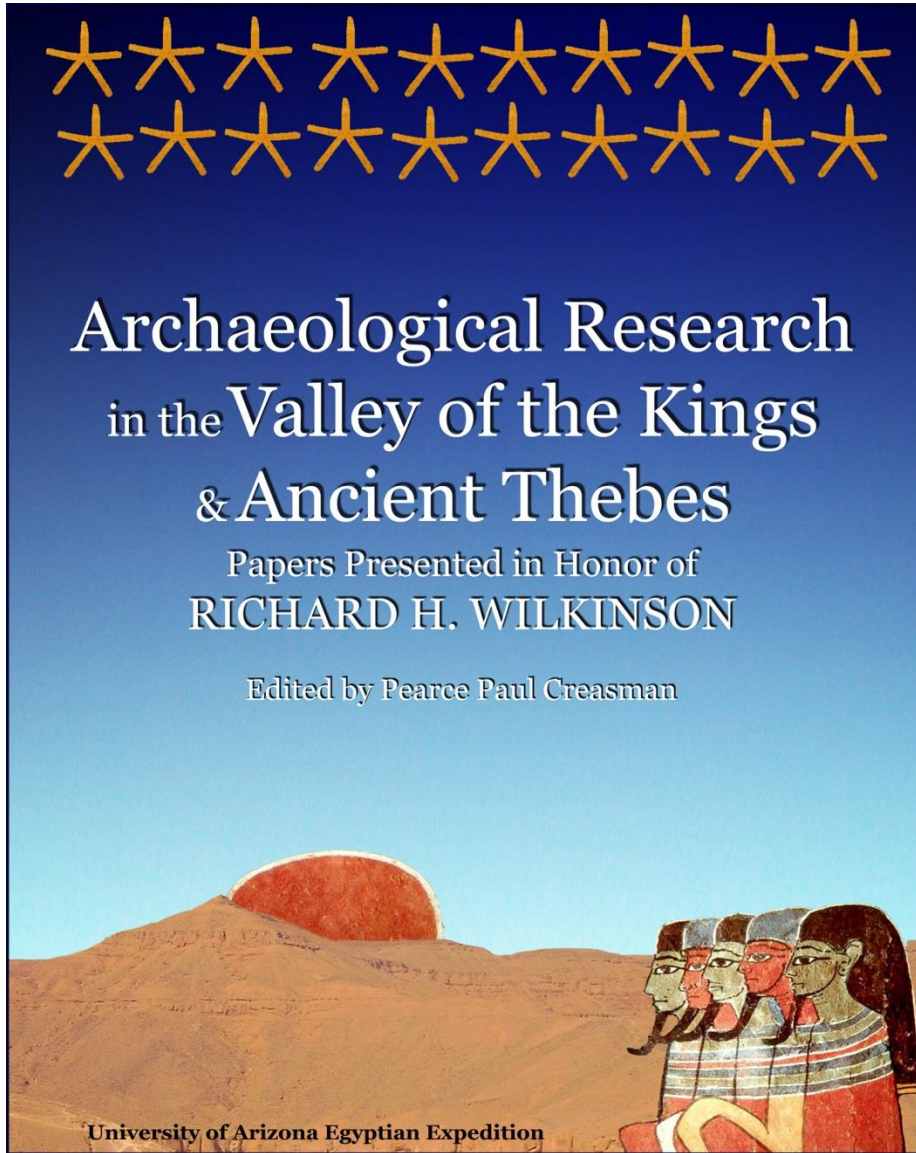


Fig. 8. Cover of *Archaeological Research the Valley of the Kings and Ancient Thebes*.

The book is divided into three sections: Part I follows a dedication (by Prof. David Soren) and foreword (by Prof. Kent R. Weeks) and describes the published and presented works of Professor Wilkinson, as well as honors and awards he has amassed during an exceptionally productive career. Part II reviews institutions he has founded and places their histories in context with their contributions to Egyptology (e.g., a history of the UAEE is provided). This section also includes summaries of the major fieldwork initiatives directed by Professor Wilkinson. Part III features sixteen manuscripts by an assembly of international scholars who present new research in honor of Professor Wilkinson's retirement. The volume can be purchased directly from the UAEE (<http://egypt.arizona.edu>) or via Amazon.com.

In the hope of honoring Professor Wilkinson further, this tome serves as the inaugural volume in the Wilkinson Egyptology Series, published by the University of Arizona Egyptian Expedition. The peer-reviewed series is open to all scholars to publish monographs, comprehensive site reports, conference proceedings, and other edited works. The goal of the Wilkinson Egyptology Series is to help scholars bring high-quality work to print quickly through a scholarly review process akin to those of most major journals. After a period not to exceed five years, each volume will be made available online, free of charge. The series is designed to reflect Professor Wilkinson's prolific academic career by producing only the highest quality work in a timely manner. Financial contributions to the UAEE in honor of Professor Wilkinson will be marked to support the Series specifically and are most welcome (<http://tinyurl.com/UAEE2013>).

NOTES

- 1 P. P. Creasman, "The Tausert Temple Project: Report for the 2011 Season." *The Ostrakon: Journal of the Egyptian Study Society* 23 (Fall 2012), 3–7.
- 2 Notably *The Oxford Handbook of the Valley of the Kings* (Oxford: Oxford University Press, in press), edited with Kent R. Weeks.
- 3 W. M. Flinders Petrie, *Six Temples at Thebes* (London, 1897), 13–16.
- 4 For the 2012 report, see: P. P. Creasman, "Excavations at Pharaoh-Queen Tausret's Temple of Millions of Years: 2012 Season," *Journal of the Society for the Study of Egyptian Antiquities*, in press.
- 5 Dieter Arnold, *Temples of the Last Pharaohs* (New York and Oxford: Oxford University Press, 1999), 26.
- 6 This work would not have been possible without the kind permission of the Ministry of State for Antiquities and Supreme Council of Antiquities; support from the members of the SCA Permanent Committee; and the kind and continued help of Dr. Mohamed Ismael, SCA Director of Foreign Missions, in arranging our work in Egypt. From the Luxor and Theban offices Mansour Boraik, Dr. Mohammed Abdel-Aziz, Nour Abdel Gafar, Gazafi Ali elAzib, Fahti Hassin, Hekmat Araby, and Mr. Azadin were, as always, supportive of our work and we are thankful. Shaimma Abdel Kareem Gadelrab served as our inspector and greatly facilitated our work. The American Research Center in Egypt, especially Mme. Amira Khatib and the Luxor office further supported our fieldwork. Finally, Reis Omar Farouk Sayed El-Quftawi and Reis Ali Farouk Sayed El-Quftawi managed our team of workmen with excellence, as usual.
The field team consisted of: Pearce Paul Creasman, Director; Theresa Musacchio, Epigrapher; Rexine Hummel, Ceramicist; Rebecca Caroli, Photographer; Stephanie Denkowicz, Field Assistant; Richard Harwood, Section Leader; Sharad N. Pandhi, Human Remains Analyst (dental specialty); Danielle Phelps, Manager of Field Operations; Mariel Watt, Assistant Registrar; Suzanne Vukobratovich, Ceramicist Assistant & Registrar. Richard H. Wilkinson (Egyptologist) and Robert Demarée (Egyptologist) consulted with the mission remotely.
- 7 The temple was so thoroughly destroyed in antiquity that little other than deep foundation trenches, the occasional foundation stone, and masses of mud-brick piles that formerly constituted the upper structures remains.
- 8 Petrie (*Six Temples*, 1897, 13) states that the back portion of the temple at the sanctuary was left unexcavated due to the excessive amount of "accumulated dust and chips from tombs cut in the scarp above it." However, as he did not record these tombs, this could be in reference to those on the opposite side of the road (west), labeled by F. Kampp (*Die Thebanische Nekropole. Zum Wandel des Grabgedankens von der XVIII. bis zur XX. Dynastie* [Mainz am Rhein: Philipp von Zabern, 1996]) as "-438-" through "-446-."
- 9 There are, however, several records of tombs or burials found behind (west) other major temples

- in the vicinity, such as the Ramesseum and temple of Amenhotep III (e.g., see D. Aston, *Burial Assemblages of Dynasty 21–25*, [Wien: Verlag der Österreichischen Akademie der Wissenschaften, 2009], 237–252).
- 10 See D. Greenwell, “The Late Period Burials,” in *The Temple of Tausret: The University of Arizona Egyptian Expedition Tausret Temple Project, 2004–2011*, ed. by R. H. Wilkinson (Tucson: University of Arizona Egyptian Expedition, 2013), 131–135.
 - 11 Petrie, *Six Temples*, 1897, 13.
 - 12 R. H. Wilkinson, “The Tausret Temple Site,” in *The Temple of Tausret: The University of Arizona Egyptian Expedition Tausret Temple Project, 2004–2011*, ed. by R. H. Wilkinson (Tucson: University of Arizona Egyptian Expedition, 2013), 2.
 - 13 A. P. Kozloff, *Amenhotep III: Egypt’s Radiant Pharaoh* (Cambridge: Cambridge University Press, 2012), 123.
 - 14 Special thanks to Richard Wilkinson for discussing this leveling event and framing this suggestion.
 - 15 The royal cubit used during the New Kingdom was ca. 52.5 cm. Note, however, that there is debate as to whether the cubit can be used as a chronological anchor: see D. Ussishkin, “Megiddo and Samaria: A Rejoinder to Norma Franklin,” *Bulletin of the American Schools of Oriental Research* 348 (2007), 49–70; N. Franklin, “Correlation and Chronology: Samaria and Megiddo Redux,” in *The Bible and Radiocarbon Dating: Archaeology, Text and Science*, ed. by T. E. Levy and T. Higham (London: Equinox, 2005), 310–322; N. E. Scott, “Egyptian Cubit Rods,” *The Metropolitan Museum of Art Bulletin* 1 (1942), 70–75.
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Pearce Paul Creasman has been conducting archaeological research in Egypt for a decade. Since 2009 he has been at the University of Arizona, where he serves in several capacities, including: Curator of the Laboratory of Tree-Ring Research, Assistant Research Professor of Dendrochronology, Assistant Professor of Anthropology, Associate Editor of the peer-reviewed Journal of Ancient Egyptian Interconnections, and as president of the Arizona Chapter of ARCE. In 2012, upon the retirement of Dr. Richard H. Wilkinson, he was appointed Director of the University of Arizona Egyptian Expedition. Dr. Creasman earned his doctorate from the Nautical Archaeology Program at Texas A&M University. His primary research interests are maritime life in ancient Egypt, Egyptian archaeology, and human/environment interactions.

Did the May Kamil Meteoroid Contribute to the Downfall of the Egyptian Old Kingdom?

By Aly A. Barakat

The remains of Old Kingdom route installations, particularly from the 6th Dynasty, have been found in the southwestern desert of Egypt, indicating well established communication between Egypt and the southwestern territories. During the reigns of Kings Pepi I, Mernere and the first reign of Pepi II, these communications reached their peak, when Yam, which according to recent discovery is located in or around the Jebel Ouenat region in southwest Egypt, became one of the major trade locations for Egypt. Harkhouf, the well-known traveler of this period, directed four missions to Yam Land bringing important goods. Suddenly, Yam was no longer mentioned on the list of trade missions that were directed to the foreign territories, as the 6th Dynasty Egyptian government began to dissolve and collapse.

The reasons for the downfall of the Egyptian Old Kingdom continue to be a mystery. Both natural and social phenomena may have contributed to its collapse. A natural cause may prove a worthy contender: could the May Kamil meteorite,¹ which struck southwestern Egypt during the historical ages, contribute to trade disturbance between Egypt and the southwestern territories and consequently weaken severely the last strong Pharaoh of the Old Kingdom's authority?

During the Old Kingdom (~3200-2200 BCE), Egypt achieved great accomplishments in various areas. Suddenly, following the 6th Dynasty (~2460-2200 B.C.), a period of instability extended nearly 150 years. The reasons for this are not fully known. Scholars speculate about the main causes of the collapse. No doubt, a number of combined factors led to the Old Kingdom's demise. Wendy Christensen refers to natural hazards as the main causes of the Old Kingdom's ruin, as she states,

While general disorder and the independence of local rulers helped bring about the collapse of the Old Kingdom, many scholars believe that climate change in Africa and the Near East had at least as much to do with it. Changes in the patterns of monsoon rains over the Abyssinian highlands caused widespread drought and a series of low Niles. Food production abruptly declined. Hot winds blew from the south for weeks at a time, according to some ancient texts. Sandstorms and dust storms hid the sun for days. Already dry farms turned to dust. In some places, the Nile was so shallow that it could be crossed on foot. Drought and famine in the Near East drove bands of starving, desperate refugees to Egypt's borders, putting additional pressure on food and water supplies.²

One of the other suggested reasons, however, is the collapse of trade with other territories. The southwestern territories surrounding the nowadays Ouenat (syn. Uweinat) region were essential trade centers for ancient Egypt, particularly during the 6th Dynasty. Today, the southwestern desert of Egypt is one of the driest regions on Earth, but in the past, it was rainy land. Kröpelin and Kuper summarize the climatic situation in the southwestern desert and the nearby human settlements during the Holocene epoch. Based on geological and archaeological studies, they refer to four major human settlements in the region: "(i) the Reoccupation phase (8500 to 7000 BCE), starting with a surprisingly early settlement in the Egyptian Sahara; (ii) the subsequent Formation phase (7000 to 5300 BCE), ending abruptly in all areas without permanent water; (iii) the Regionalization phase (5300 to 3500 BCE), featuring a retreat to highland refuges with continuing rains and temporary lakes; and (iv) the Marginalization phase (3500 to 1500 BCE), with only transient human activities in the Egyptian Sahara and prehistoric occupation restricted to the Northern Sudan."³

OLD KINGDOM COMMUNICATIONS WITH YAM LAND

Jebel Ouenat is a prominent topographical and geological feature in the Eastern Sahara covering nearly 1,500 square km. It stands at the intersection of three present day countries: Egypt, Libya and Sudan. The highest point of this massive feature is 1906 meters above sea level. The mountain is made up of a massive core of basement rocks of Archaean to Early Proterozoic age, overlaid by Carboniferous and Cretaceous sedimentary rocks. Plugs and dykes of Tertiary basalt intrude both the basement and sedimentary rocks. Sand sheets and sand dunes of the Quaternary age cover vast patches of the region. Paleozoic sandstone rocks stand exposed on the southern side of the mountain; granitic rocks are exposed on the western and eastern sides of the mountain, while Cretaceous sandstone rocks are exposed on the northern slopes of the mountain. The effect of the strong north-south wind erosion on the northern side of the mountain has created some fascinating natural vistas. The occasional rains in the area accumulate to form two water lakes at the southern base. Around these water lakes, cultures have been furnished with water since early times. Owing to the height of the mountain, occasional rains still fall on the site from time to time today. The massive Ouenat is drained by a wadi system into Karkur Talh and Karkur Murr where there is a permanent rock pool: Ein el Prince or Bir Murr. The water in the site supports the few life forms that survive today. There are two little mountains close to Jebel Ouenat: Jebel Arkenu is 1440 meters above sea level and due 20 km northwest of Jebel Ouenat in the Libyan territory, and Jebel Kissu is 1730 meters above sea level and due 25 km southeast of Jebel Ouenat in the Sudanese territory.

Ahmed Pasha Hassanein [Sir Ahmed Mohammed Hassanein; Ahmad Hussein] (1889-1946) brought the Jebel Ouenat region to modern scientific attention in the 1920s. However, there is a possible much earlier reference to Ouenat, for classical Arabic writers mention a mysterious oasis in southwestern Egypt. For instance, Ibn Abdel Moneium Al Homeri (d. 1496 CE), mentioned it in his book entitled *Arwad al Maatar fi Kabar al Aktar (The News of the Countries)*. Speaking of the Oases of southwestern Egypt, he refers to a mysterious oasis in the farther reaches of the southwestern territories. He states, "It has been said that far off from the southern oases, there is a large oasis called 'Sebro Oasis' that was reached accidentally by caravans that lost their way in the desert. It is a large area comprised of palm trees, fruits and crops, in addition to plenty of gold."⁴

The first possible modern mention of Jebel Ouenat may be found back in the early nineteenth century (1809/1810). When looking for a direct way from Ouadai to the Mediterranean coast, a Majabri Arab from Jalo named Shehaymah crossed a mountain called Jebel en Nari (Fiery Mountain) with two rock wells at its foot. Shaw thinks that the mountain mentioned in this story corresponds to Jebel Ouenat.⁵ The name "Ouenat" was derived originally from the Arabic word which means "little springs", referring to the water masses under the foot of the mountain in the region. No modern researchers knew of its real position until the 1920s when Ahmed Hassanein located the region, mapped its geographic position, and restored the original name "Ouenat" to the region.⁶ Since then, the area has become familiar to modern travelers, desert explorers, and researchers who reach the area via modern autos. The accounts of Ahmed Hassanein about the area, including the Goran tribe (150 people) who inhabited the region during the time of his journey, the water resources and natural vistas there, the rock pictographs he recorded, and his account of the antiquity of the rock carvings on the wall of Jebel Ouenat mesmerized researchers and encouraged them to travel to the region. Consequently, several missions have been directed to the area since the 1920s to investigate the geological characters, climatic situation, archaeology, rock arts, life forms, etc.

In contrast to the Egyptian Eastern Desert, there is no substantive information about ancient Egyptian activities throughout the Southwestern Desert. Owing to its dryness and lack of mineral wealth, the Western Desert was believed to have received little attention from the ancient Egyptian kings. However, the discovery of a pottery dump under the foot of Abu Ballas Hill (Fig. 1, next page) in 1917 and its possible connection with the town called Asil from the Old Kingdom in Dakhla,⁷ along with a recently discovered rock inscription west of Dakhla mentioning a certain official Meri "going up to meet oasis dwellers",⁸ reveals the existence of certain ancient Egyptian activities in the

southwestern portion of the desert. Detection of ancient installations between Dakhla and Gilf Kebir-Ouenat, in particular, may reveal a desert campsite of King Khufu (4th Dynasty) and thus indicate major Old Kingdom activities in the southwestern portion of the Western Desert. Subsequent archeological discoveries in the southwestern portion of Egypt show that during the 4th Dynasty and the 6th Dynasty there were major desert stations along the main desert trails going into the southwestern territories around Ouenat.⁹

Communications with the southwestern territories were well established during the 6th Dynasty (~2240-2200 BCE). The records of Uni, the minister of Pepi I, and the inscription of Harkhouf, Aswan Governor during the last period of the 6th Dynasty, reveal examples of Egyptian interest in the Yam Land during ancient times. Harkhuf, the earliest-known adventurer in the vast and heroic work of earth's exploration, made four missions to this territory and the surrounding regions. Three of these journeys were during Mernere's reign, and the last one was during the reign of Pepi II (2288–2194 BCE). Harkhuf describes his adventures and activities during these expeditions proudly on the rock wall of his tomb on the western side of the Nile at Aswan. Harkhuf's work in the last mission was acknowledged by Pepi II, who sent a letter thanking him for delivering a pygmy to him.

The Yam Land mentioned in this text is considered a mysterious territory. Several hypotheses have been put forward to disclose the location of Yam mentioned by Harkhuf. Several locations inside the Egyptian territory as well as more remote areas have been considered. In November of 2007, desert explorers Mark Borda and Mahmoud Marei discovered a hieroglyphic inscription on the rock walls of Jebel Ouenat that mention Middle Kingdom's Mentuhotep II (11th Dynasty, 2046-1995 BCE) and two countries that offered tribute to him: Yam and Tekhebet(en).¹⁰ This discovery indicates that Yam is Jebel Ouenat and its surrounding region 600 kilometers west of the Nile. According to Harkhouf's report, Yam was a major center for Egyptian activities during this period and a strategic station for controlling trade with these wealthy territories that provided the central government in Egypt with essential goods.

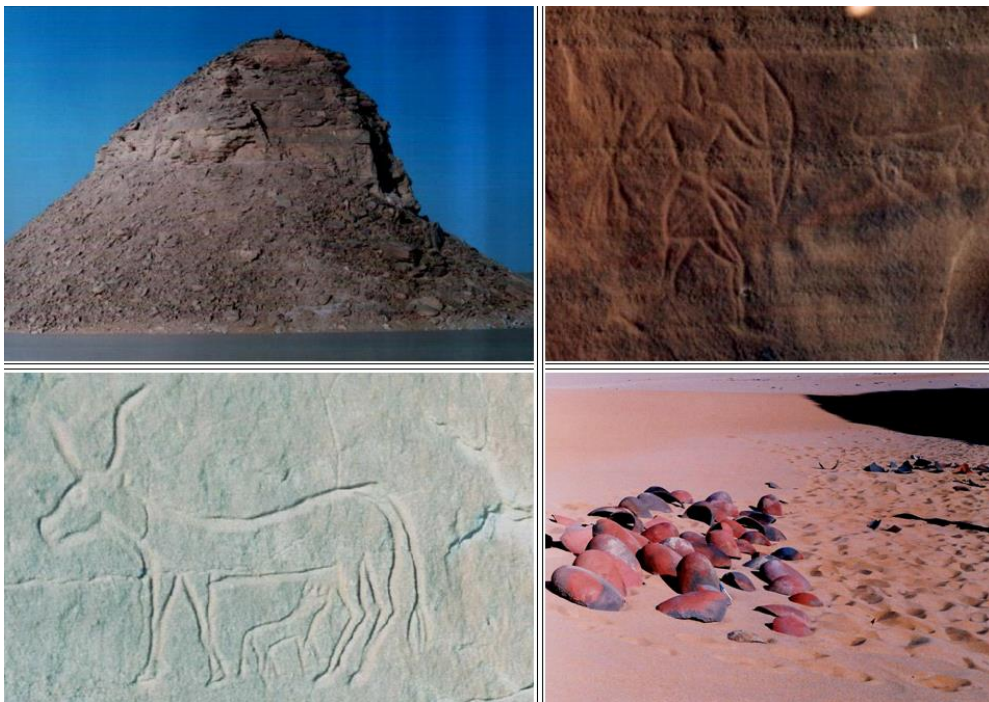


Fig.1. Abu Ballas Hill and some of the associated archaeological features (author's photos).

DESTRUCTIVE EVENT IN THE YAM REGION

By the end of 2008, Dr. Vincenzo de Michele reported via satellite images on a large meteorite impact site named Kamil Crater, 100 km due east Jebel Ouenat (Fig. 2). In 2010, a ground-check team of researchers confirmed the impact event and suggested that it may have occurred between 2000-5000 years ago.¹¹ What concerns us as scientists here is the terrible effect of the event. The event was in the form of a relatively large asteroid fragment accompanied by a huge fire when it crashed in the region. The projectile exploded on impact with the sandstone bedrock and created a crater that was 45 m in diameter (Fig. 3, next page). The explosion ejected large sandstone blocks and debris as well as meteoritic iron fragments a great distance in a circle surrounding it. Only one individual fragment separated from the projectile before striking the ground has been traced due 200 m north of the explosion center.

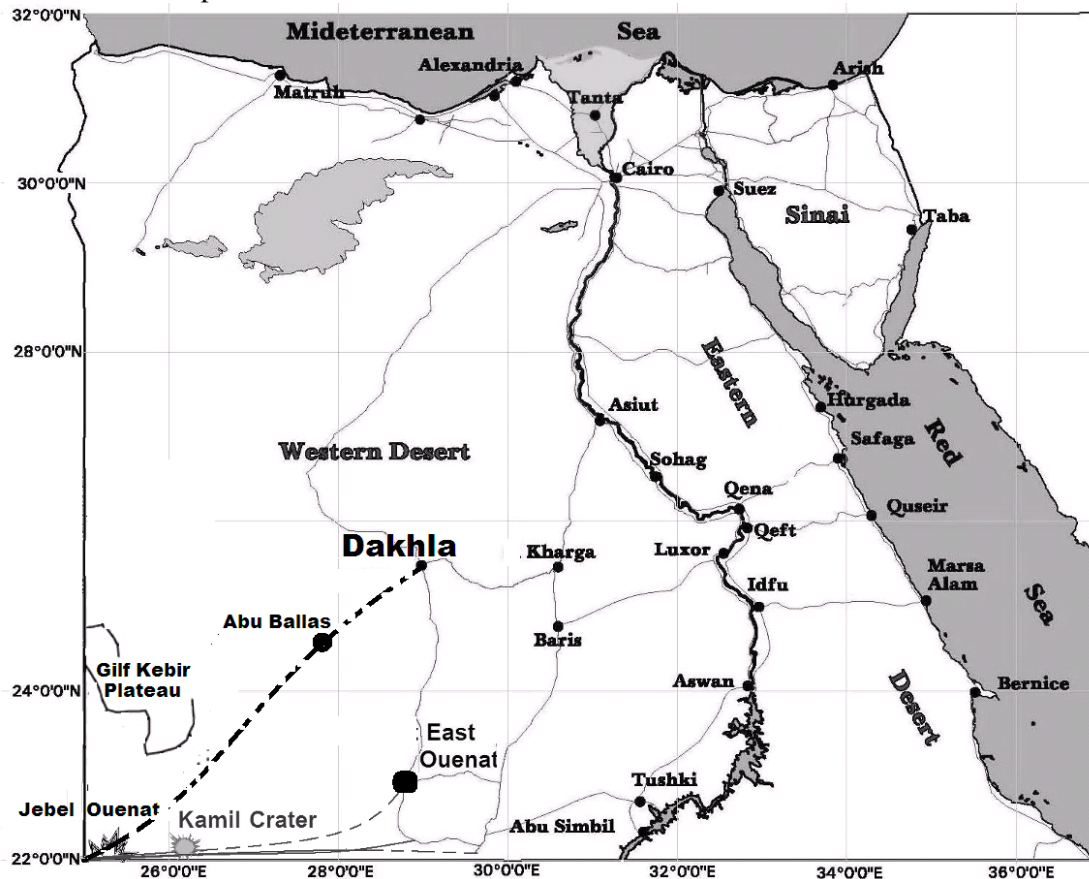


Fig. 2. Location of Kamil Crater along the known trails joins southwestern Egypt with the southern Oases and Nile Valley (author's map).

The area of the explosion was inhabited during different prehistoric periods (or during historical times), as remains of human settlements are found close to the crater. There is no clear evidence that the event happened while the settlements were occupied in the region. The event was surely of catastrophic effect on the region as a whole, nonetheless. The shock waves burned all living creatures in a wide region surrounding the epicenter of the explosion. Sporadic traces of more ancient human settlements occur in the area, for subsequent residents modified the desert landscape in many sites. They removed stone boulders from their original sites to create flat and clean spaces suitable as cattle and sheep farms. They arranged stone boulders in the form of circles, pavements, and low wall borders, also. Well-marked local trails run throughout the whole area. Ejected rock debris from the impact fell down on some of these trails (Fig. 4, next page). Evidence of the oldest settlement comes

from observing few Acheulian (Acheulean) axes in different parts of the area. There are also a few fragments of crude thick ceramic materials dated roughly as Neolithic. The stone circles are of different sizes, including small ones that could represent firing sites. More likely, though, they were water basins for animals. The other style of stone circle is two meters in diameter and found at different sites around the crater. Different stone implements were found associated with the stone circles, including hand axes, fragments of ceramics, and grinding stones. Few relatively large fragments from the projectile were found around these installations.¹²



Fig. 3. Panorama of the inner outline of the crater (author's photos)

Other human-created features are the stones that are arranged in rows like pavements. The apparent purpose of these rows is to divide properties or to prevent flooding during sporadic flash floods. In the western corner of the area, there is a primitive village-like settlement with wide-prepared spaces marked with low rows of stones. The stones were erected on the border between the prepared settlement spaces and a relatively low dry valley. There is no clear indication of human presence in the crater area except for faint track accesses on the outer rim going down to the crater bottom. Branches of the ancient trails connecting Jebel Ouenat region with the Nile Valley or the southern Egyptian oases cross the area of the Kamil Crater.



Fig. 4. Ejected rock debris that fell down on one of the ancient trails in the area (author's photo).

SUPPOSED IMPACT OF THE EVENT ON ANCIENT EGYPT

The meteoroid in the form of a huge heavenly descending fire would have been witnessed easily from Ouenat and the surrounding regions (Yam Land), Gilf Kebir Plateau, Dakhla, and Aswan, and even throughout the northern cities on the Nile Valley. Subsequently, huge clouds of black smoke and dust were spread in the sky. The event, of course, was a frightening sight to the Ouenat and Gilf Kebir dwellers. This is because it came from the northwestern horizon and struck the ground at a nearly low angle ~ 45 degrees (Fig. 5). Then dwellers of Ouenat, 100 km due west of the center of the explosion watched the huge fiery object crash through the horizon just 100 km due north of their homeland and 100 km above the ground. The dwellers of Gilf Kebir Plateau, nearly 100 km northwest of the explosion center, observed the fiery object pass directly over their homeland. No doubt, it was a very striking sight.

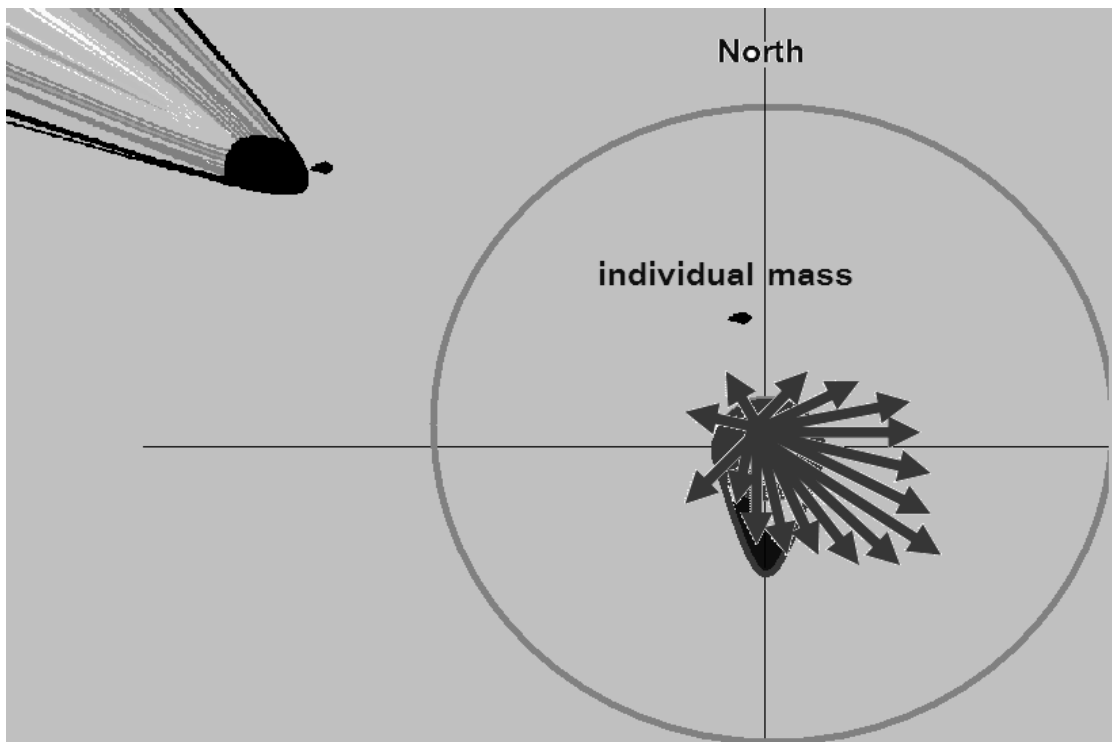


Fig. 5. Sketch simulates the orientation of the Kamil impact, separation of the individual mass, and the orientation of the main ejected rock debris and meteoritic fragments in response to the shock waves generated from the explosion (author's drawing).

Investigating reports of other meteorite falls can provide a good idea of how this event must have frightened the citizens of those territories. One of the interesting meteorite events in recent time is that of Sikhote-Alin, which fell around 10:30 am on February 12, 1947, over the western slopes of the mountain range of Sikhote-Alin, Russia. Eyewitnesses observed a large bolide (meteor) that was brighter than the Sun coming from the north, splashing across a clear sky. The object descended at an angle of about 41 degrees. Several eyewitnesses indicated that before its disappearance, it broke up into pieces which fell to the ground like lumps of fire. The bright flash and the deafening sound were recorded from three hundred km around the point of the explosion. A huge trail of smoke nearly 32 km long accompanied the bolide and remained in the sky for several hours.¹³ Humboldt provides an interesting report describing the features accompanying the fall of a meteorite on the town of Crema (Cremona), Italy in 1511. He states,

An enormous peacock was seen flying in the sky above the town of Crema (Cremona). The peacock appeared to change into a pyramid, and was carried from west to east with such rapidity, that in a moment it seemed to traverse the whole hemisphere, as some learned men imagined who saw it. Immediately afterwards such darkness arose from the denseness of the clouds as was never known by mortal before. During this midnight gloom, unheard-of thunders, mingled with awful lightning, resounded through that quarter of the heavens. The illuminations were so intense, that the inhabitants round Bergamo, could see the whole plain of Crema during the darkness. You will perhaps inquire what accompanied that terrific commotion of nature. On the plain of Crema, where never before was seen a stone the size of an egg, there fell pieces of rock of enormous dimensions and of immense weight. It is said that ten of these were found weighing a hundred pounds each. Birds, sheep, and even fish were killed. Under all these exaggerations it may still be seen, that the meteoric cloud out of which the stones fell, must have been of uncommon blackness and thickness. The "pavo" was undoubtedly a long and broad-tailed fire-ball. The terrible noise in the meteoric cloud is here represented as the thunder accompanying the lightning.¹⁴

Reinvestigation of some ancient Egyptian legends may reveal ambiguous words that may refer to the fall of huge celestial stones in the south of Egypt. For instance, the Ar-stone mentioned in the Hours War may indicate such a clue, as the legend states: ". . . and Isis carried Ar-stone of sand to Thest-Hor—Ar-stone of the Star was it and in every place in the South Land to which Horus went, there is Ar-stone found to this day."¹⁵ The Destruction of Mankind legend mentioned in ancient Egyptian texts may refer to the destructive force of celestial bodies, as it indicates that the god Ra became angry with man because he did not offer him the required respect. Then he sent his eye in the appearance of goddess Hathor to destroy mankind. The Ra eye in the legend may refer to a meteoritic event. According to Maspero, the shipwrecked sailor legend may refer to the fall of a huge meteoroid, as it states,

For a star having fallen, those who were in the fire with her came out of it, and the young girl appeared without my being with the beings of the flame, without my being in the midst of them; without which I should have been dead by their deed, but I found her after-wards, alone, among the corpses. If thou art courageous and thy heart is strong thou shalt press thy children to thy bosom, thou shalt embrace thy wife, thou shalt see thy house, and that which is of more value than all, thou shalt reach thy country and thou shalt be among thy brethren.¹⁶

In his comments on this passage, Maspero states,

This is the only mention of a falling star that has yet been found in the texts. It shows the idea held by the Egyptians of this phenomenon. They considered the mass as inhabited by genii, who came out of it as it fell to earth and were consumed in their own flames. The incident of the young girl appears to show that they believed that certain of these genii could survive and acclimatize themselves on our earth."¹⁷

Golénischeff compares this episode with the Arab legend of the Burnt Island, situated in the sea of the Zingis (Dinkas), which is reduced to ashes about every thirty years by a maleficent comet.¹⁸

There is, however, no solid evidence that ancient Egyptians reported the Kamil event, but at least residents of Ouenat and the surrounding regions witnessed it. Paintings on the rock walls of Jebel Ouenat region at Wadi Karkur Talh, nearly 100 km west of Kamil Crater, bear such clues. These paintings occur on the wall of a huge granite boulder and show a fallen celestial object represented by rays ending with the massive object (Fig. 6, next page). The artist shows a man close to the meteoroid image escaping in the other direction.



Fig.6. Paintings on a granitic boulder in Karkur Talh, Jebel Ouenat illustrate a fallen celestial body and escaping man (Courtesy of Dr. Romano Serra).

If the residents of the Ouenat region were affected by the event and migrated away, Egyptians may have lost one of their major stations for controlling trade with these rich territories in Africa. Consequently, communications between these territories would have been stopped and a main source of Egypt income gone. It follows that when Egypt regained its strength with the beginning of the Middle Kingdom, missions to these territories were restarted immediately, as indicated by the inscription of Mentuhotep II on the wall rocks of Jebel Ouenat. In addition, the event may have shaken the religious beliefs in Egypt toward the end of the Old Kingdom. What happened during the Kamil event was unprecedented historically for those who witnessed it. As a result, it could have had an impact on the belief of those ancient Egyptians towards their Pharaohs who were considered in control of maintaining the balance in the universe. Accordingly, the event may have contributed to the ideological changes in established traditions, beginning a period of doubt about a stable universe and the authority of the Pharaoh. This ideological change may have resulted in their criticism of the last Pharaoh of the 6th Dynasty (Pepi II), and their revolt against the authority of their priests and governors, as well as government employers. Evidence that the catastrophic event of Kamil may have played a part in the collapse of Old Kingdom may come from the previously mentioned statement by Wendy Christensen, "*Hot winds blew from the south for weeks at a time, according to some ancient texts. Sandstorms and dust storms hid the sun for days. Already dry farms turned to dust*".¹⁹ Meteorite impacts, such as Kamil event, could have provided such disastrous results.

NOTES

- 1 Meteoroid vs. Meteorite. According to *Hubblesite*, A *meteor* is the flash of light seen in the night sky when a small chunk of interplanetary debris burns up as it passes through our atmosphere. "Meteor" refers to the flash of light caused by the debris, not the debris itself. The debris is called a *meteoroid*. A meteoroid is a piece of interplanetary matter that is smaller than a kilometer and frequently only millimeters in size. Most meteoroids that enter the Earth's atmosphere are so small that they vaporize completely and never reach the planet's surface. If any part of a meteoroid survives the fall through the atmosphere and lands on Earth, it is called a *meteorite*. Although the vast majority of meteorites are very small, their size can range from about a fraction of a gram (the size of a pebble) to 100 kilograms (220 lbs.) or more (the size of a huge, life-destroying boulder). <http://hubblesite.org/>
- 2 Christensen, 28-9.
- 3 Kuper and Kröpelin 2006, 803.
- 4 Al Homeri nd, np.
- 5 Shaw 34, 64.
- 6 Hassanein 1924, 290.
- 7 Kuper 2003, 12-34.
- 8 Burkard 1997, 153.
- 9 Kröpelin, and Kuper 2006-2007, 220.
- 10 Clayton et al 2008.
- 11 Folco et al 2010, 804.

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| 12 Barakat 2012. | 16 Maspero 1915, 104. |
| 13 Krinov 1960. | 17 Ibid. |
| 14 Humboldt 1892, 587-9. | 18 Golénischeff 1906. |
| 15 Murray 1913, 70. | 19 Christensen 2005, 28-9. |

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About the author

Aly A. Barakat is an Egyptian researcher and writer. Since 1987, he has worked as a geologist for the Egyptian Geological Survey (nowadays the Egyptian Minerals Resource Authority). He holds a Ph.D. in Geology from Cairo University. He has published over one hundred articles and research studies in both Arabic and English. He has a published book in Arabic about meteorites (2008), and he is the coauthor of a published book in English on prehistoric cultures in Egypt (2006). This is his third article for The Ostrakon.



The Meidum Pyramid: Clues for an Undiscovered Chamber

By Charles Rigano

The Meidum Pyramid sits just outside the cultivated area in the desert, about 40 miles south of Cairo. Today, the structure appears not so much like a pyramid but as a stone tower built on a hill (Fig. 1). On close examination, the “hill” is found to consist of stone debris covering the lower portion of the true pyramid and the tower is what remains of the pyramid’s upper part.¹



Fig. 1. The Meidum Pyramid with the north face on the right and east face on left. Finished and unfinished bands are visible on the tower.

During several visits to Meidum and examinations of the pyramid interior, I noticed an interesting feature near the north end of the Main Chamber, the room usually considered to have been designed as the burial chamber. Just one foot below the top of the almost 15-foot high, corbelled ceiling,² a single 20-inch long ancient wooden beam is still in place. In Old Kingdom pyramids, beams were commonly used either to

support a platform, or to place a rope over to allow several men to raise heavy objects.³ If this beam was used to help raise objects, however, I could see no obvious place to which the objects were raised.

On my last trip to Meidum, I found a possible answer. I climbed up to the beam (for years there has been a ladder in the Main Chamber) for a closer look. Just below the level of the beam, the north wall of the Main Chamber consists of three blocks forming two courses which together measure 40 inches high⁴ (Fig. 2). Could these blocks plug the entrance to a hidden passage which might lead to an undiscovered chamber, perhaps the originally intended burial chamber? Was the beam used to raise objects up to this hidden entrance?

In fact, there are a number of clues that indicate that there might be a chamber still hidden in this pyramid.

SITE DESCRIPTION

The Meidum Pyramid was built in three phases, often referred to as E1, E2, and E3.⁵ In the tradition of its



Fig. 2. The Beam near the top of the Main Chamber north wall. Immediately below (as indicated by arrows) are the blocks that possibly plug the hidden passage entrance.

predecessors, both E1 and E2 were step pyramids; E1 had 7 steps which was later enlarged to 8 steps in E2. During phase E3, the steps were filled in and the shape was transformed into a true pyramid. The final pyramid had a square base measuring 473 feet on each side; it was 302 feet high, and had a side slope of $51^{\circ} 52'$.⁶ For purposes of comparison, the Meidum Pyramid had 25% of the volume of Khufu's Great Pyramid.⁷

Plainly visible on the tower are bands of smooth and rough casing stones from the E1 and E2 phases. These are the finely finished, outer limestone surfaces of the step pyramid stages, and the unfinished limestone blocks that form the hidden, internal stones that would have been covered by the finished casing blocks. Pyramid casing blocks were laid initially with excess protective material on the outer face. When the pyramid was complete and the casing fully in place, the casing blocks were finished smoothly from the top down as the last part of the building process.⁸ Under the debris around the lower part of the pyramid, Sir William Flinders Petrie found casing of the final, true pyramid that had been finely finished. The existence of finished surfaces on the visible part of the step pyramid phases, and the finely finished casing blocks at the bottom of the true pyramid, provide evidence that each of the pyramid phases (E1, E2, E3) had been completed.



Fig. 3. The Mortuary Temple flanked by mounds of rubble showing how deeply Petrie had to dig to discover the Temple. Behind are the two uninscribed stelae and the deteriorated east face of the pyramid.

The full Meidum Pyramid complex is typical of 4th, 5th, and 6th Dynasty pyramids:

- A wall surrounded the pyramid on all sides. However, instead of the expansive enclosures of the earlier pyramids, most of the walls at Meidum stood only about 120 feet from the pyramid face.⁹
- A small Mortuary Temple built against the sloped east side of the Meidum Pyramid, was uncovered by Petrie (Fig. 3). Two uninscribed stelae were found in the small courtyard. In the temple, Petrie found several ancient graffiti dated to 6th, 12th, and 18th Dynasties that mention Snefru.¹⁰
- Petrie found also two small structures, possibly small subsidiary pyramids, one on the north and one on the south side of the main pyramid and within the enclosure wall. Nothing of them can be seen above ground today.
- An unroofed causeway led east from the enclosure wall towards the current cultivation. Nothing remains today of the causeway except its base.
- A valley temple was at the end of the causeway and adjacent to a body of water; this temple is now lost under the cultivated fields.

The entrance to the Meidum Pyramid was built high into the north face (Fig. 4). From the entrance, a Descending Passage leads to a horizontal space almost 6 feet high containing two side recesses followed by the short Lower Passage, all with flat ceilings (Fig. 5, next page). The Recesses are shallow, measuring

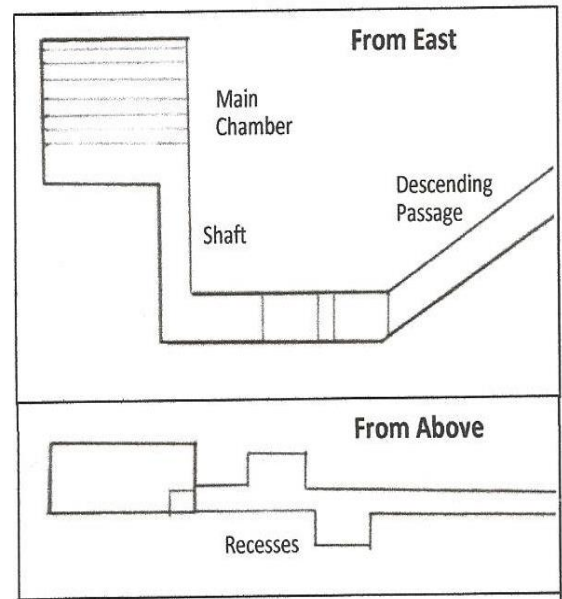


Fig. 4. Stairs leading to the entrance (lower center) on the inclined north face. The face was finely finished, but some parts have deteriorated giving an unfinished appearance.

4 feet deep and 8½ feet long,¹¹ and are of unknown purpose. At the end of the Lower Passage, a 21-foot high Shaft rises and emerges through the northeast corner of the floor in the Main Chamber. The Shaft now contains a narrow wooden staircase for the convenience of the modern visitor.

The Main Chamber is relatively small at 19'4" by 8'8"¹² (Fig. 6). Since the chamber was built within the actual core of the pyramid rather than below the ground level, it has a corbelled ceiling rising in seven courses in order to redirect the pyramid weight around the chamber. Each course extends beyond the course below it until they meet at the top. Just above the Shaft are three pairs of opposing holes set in a triangular configuration in the walls of the Main Chamber that originally held three wooden beams that spanned the chamber. The stub of one beam is still embedded in a hole. A fourth beam, described earlier, is set near the top of the corbelled ceiling.

Fig. 5. Internal layout of the Meidum Pyramid. Spaces discovered by Dormion and Verd'hurt are deleted for simplicity.



In 1998, Gilles Dormion and Jean-Yves Verd'hurt theorized that since the flat ceilings of the relatively wide Recesses were not cracked, there were weight-relieving spaces above the Recesses. In 1998, they removed two stones in the Shaft wall and revealed a corbelled space above the Lower Passage. Over the next two years, using an endoscope, they discovered and photographed weight-relieving corbelled spaces above the two Recesses and above the lower 49 feet of the Descending Passage.¹³

THE PROPOSAL

There are a number of clues that indicate a passage may exist behind and near the top of the north wall of the Main Chamber that connects to another chamber with a long east-west axis, perhaps intended as the actual burial chamber (Fig. 7, next page). What might be in this chamber today is unknown, but it is likely to be undisturbed since there is no evidence that the passage was opened after it was sealed.

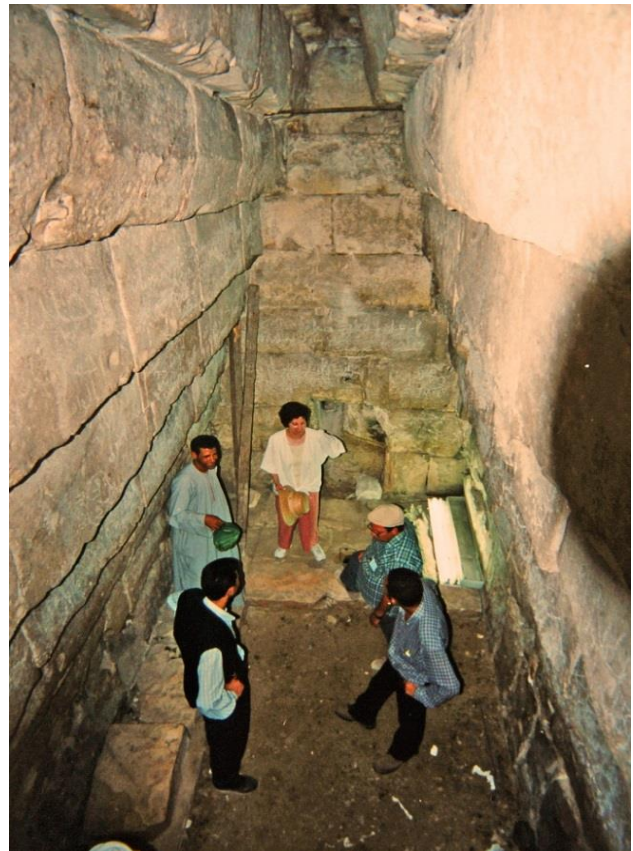


Fig. 6. The Main Chamber, from atop a ladder looking south, can be seen to be a relatively small space.

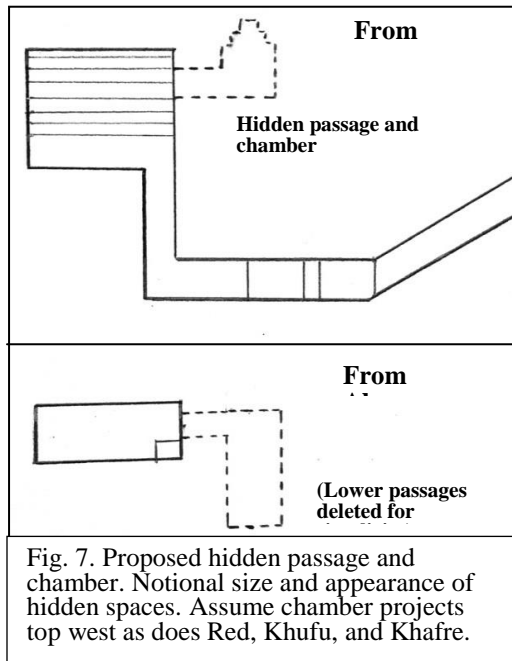


Fig. 7. Proposed hidden passage and chamber. Notional size and appearance of hidden spaces. Assume chamber projects top west as does Red, Khufu, and Khafre.

WHO BUILT THE PYRAMID?

There is no direct evidence indicating which king or kings built the Meidum Pyramid. Based on structural considerations, the Meidum Pyramid was built either at the end of the 3rd Dynasty or the beginning of the 4th Dynasty. The earlier 3rd Dynasty pyramids of Djoser, Sekhemkhet and Khafre (to whom the abandoned Layer Pyramid at Zawiyet el-Aryan is attributed) all had complex, internal substructures cut into the bedrock and were (or were intended to be) surrounded by very large enclosures. The differences between these pyramids and the Meidum Pyramid are so significant that the Meidum Pyramid represents not a transition, but a complete departure from the earlier pyramids.

Huni, the last king of the 3rd Dynasty, reigned for 24 years between Khafre and Snefru.¹⁴ With a long reign, it seems reasonable that a burial complex would have been completed, but none has

been identified. It has been theorized that Huni completed phases E1 and E2 of the Meidum step pyramid after which Snefru took over and finished the E3 phase to make it a true pyramid. There is, however, no mention of Huni anywhere at Meidum in the workmen's graffiti, inscriptions in the mastabas near the pyramid, or in any of the nearby burials. Nor are there any known cases in which one king usurped the pyramid of a preceding king. Thus, there is no real basis for assigning the Meidum Pyramid to Huni.

On the other hand, there are multiple references to Snefru near the pyramid:¹⁵

- Petrie dated graffiti found in the Mortuary Temple of the Meidum Pyramid to not later than 5th Dynasty, which he translated as "Thrice good is the name of King Snefru."¹⁶
- New Kingdom graffiti in the Mortuary Temple include Snefru's name.
- Place names containing Snefru's cartouche were found in the mastabas of both Nefermaat and Rahotep on the north side of the pyramid. These two men were identified in their mastabas as "king's eldest son" and "king's son of his body" respectively, although the name of the king is not mentioned.¹⁷

Most evidence points to Snefru as the sole owner of the Meidum Pyramid as well as the builder of the Bent and Red Pyramids, and the small pyramid at Seila on a hill several miles west of Meidum.¹⁸ The belief expressed in several works¹⁹ is that early in his reign, Snefru started the Meidum Pyramid as a step pyramid. Nefermaat, Rahotep, and other members of his family built their mastabas next to their royal relative at Meidum. After completion of the step pyramids, Snefru changed his mind and started a true pyramid at Dahshur (the Bent Pyramid). Both the E1 and E2 phases of the Meidum step pyramid and the lower part of the Bent Pyramid were similar in that they had blocks laid inclined towards the pyramid center, and their substructures were built in a trench cut below the pyramids. When cracks appeared in the Bent Pyramid which possibly created the fear that it would collapse, Snefru realized the fastest path to having a true pyramid in which to be buried would be to transform the Meidum Pyramid to a true pyramid, while at the same time he started construction of another true pyramid, the Red Pyramid. The time necessary to build the Red Pyramid was reduced by not building chambers in a trench and eliminating the up-front time needed to cut the trench. Additional time was saved by building the pyramid with a shallower angle which reduced the amount of stone needed, and by building it near the Bent

Pyramid to take advantage of the already established infrastructure. So as not to leave the Bent Pyramid unfinished, he completed that pyramid at some point with the same shallow angle as the Red Pyramid. Note that in E3 Meidum phase, in the Red Pyramid, and in the upper part of the Bent Pyramid, blocks were laid horizontally for the first time which indicates that all three of these pyramids were contemporary.

WHERE SNEFRU HID BURIAL CHAMBER ENTRANCES

With the attribution of all three pyramids to Snefru and all three having been built over a short time span, we would not anticipate wide deviations in their design and would expect to find similarities in the internal architecture, accordingly.

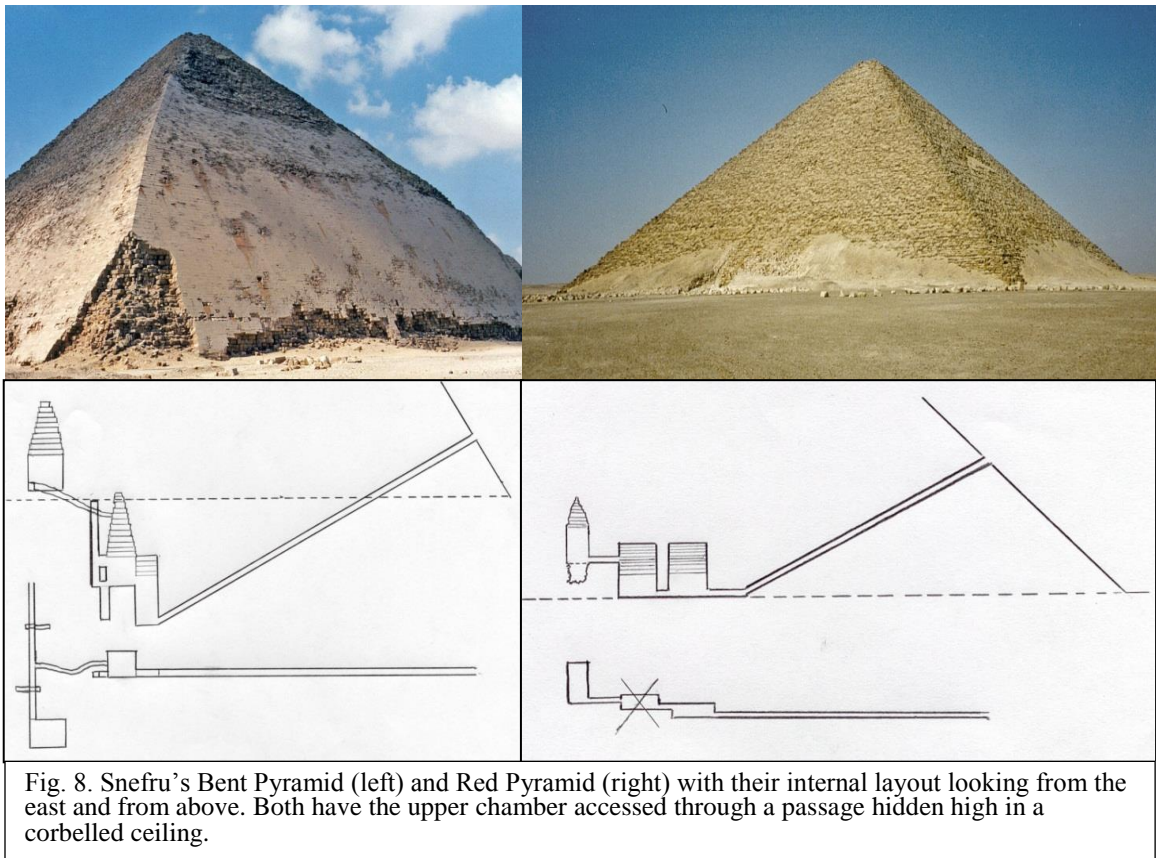


Fig. 8. Snefru's Bent Pyramid (left) and Red Pyramid (right) with their internal layout looking from the east and from above. Both have the upper chamber accessed through a passage hidden high in a corbelled ceiling.

The entrance to the Bent Pyramid is 39 feet high on the north face (Fig. 8). Most of the Lower Passage and Lower Chamber were built in a trench cut into the bedrock—just as they were at Meidum. From the entrance, the Lower Passage descends 257 feet to a corbelled-ceiling Antechamber, which connects to the Lower Chamber with a 56'9" high corbelled ceiling. In this corbelled ceiling, 41 feet above the Lower Chamber floor, an opening provides access through a Connecting Passage to the Upper Passage and Chamber. Near the opening of the Connecting Passage are pairs of holes evidently used for crossbeams similar to those found at Meidum.²⁰ There is no evidence that the opening of the Connecting Passage was blocked, but it is hard to imagine how ancient robbers were able to identify the entrance almost four stories high in the dimly lit chamber or to gain access to it. Possibly, it was never closed and whatever method the builders used to climb to the Connecting Passage was still in place. The Upper Chamber was apparently intended for the king's burial since there is a protecting portcullis. The portcullis remains in the raised position, moreover, providing some evidence that the pyramid was never used for a burial.

Snefru's Red Pyramid has internal passages and chambers built above the ground level and entirely within the pyramid core. As a result, the entrance is higher on the north face, 94 feet above ground level. A 205-foot descending passage leads to a short horizontal passage followed by two 40 feet high, offset corbelled chambers reminiscent of the Meidum Pyramid's lower chambers, but on a much grander scale. High on the south wall of the second chamber, 27' 9" above the chamber floor, a passage leads to what was apparently designed as the burial chamber. There is no evidence that this passage was plugged or left unplugged. Even though the passage entrance is hidden only half as high up as in the Bent Pyramid, it would still be very difficult to see the opening in the robbers' dim light.²¹ There are two holes just above the entrance to the passage which might have held beams used for ropes. In the side walls forming the corbelled ceiling, at the same level and within 4 to 8 feet of the entrance to the passage, are two other sets of holes that appear to have been used for a platform to gain access to the burial chamber.²²

Fig. 9. Pyramid Complex Features²³

King	Valley Temple	Causeway	Mortuary Temple	Enclosure	Subsidiary Pyramid	Sloped Sides	Blockage of Burial Chamber	E-W Burial Chamber ²⁴
Snefru (Meidum)	X	X	X	X	X	X		
DYNASTY 4								
Snefru (Bent)	X	X	X	X	X	X	Portcullis	²⁵
Snefru (Red)	NF	NF	X	X	NF	X	Unkwn	X
Khufu	X	X	X	X	X	X	Plug Blocks & Portcullis	X
Djedefre	NF	X	X	X	X	X	Area Destroyed	X
Khafre	X	X	X	X	X	X	Plug Blocks & Portcullis	X
Baufre Unfinished Pit	Minimal construction completed before the site was abandoned							X
Menkaure	X	X	X	X	X	X	Plug Blocks & Portcullis	²⁶
Shepseskaf	X	X	X	X	NF	Mastaba	Portcullis	X
DYNASTY 5								
Userkaf	NF	X	X	X	X	X	Portcullis	X
Sahure	X	X	X	X	X	X	Portcullis	X
Neferirkare	X	X	X	Not Completed		X	Portcullis	X
Ranefer	Not Completed		X	Not Completed				X
Neuserre	X	X	X	X	X	X	Portcullis	X
Djedkare Isesi	NF	X	X	X	X	X	Portcullis	X
Unas	X	X	X	X	X	X	Portcullis	X
DYNASTY 6								
Teti	NF	X	X	X	X	X	Portcullis	X
Pepi I	X	X	X	X	X	X	Portcullis	X
Merenre	NF	NF	NF	NF	NF	X	Portcullis	X
Pepi II	X	X	X	X	X	X	Portcullis	X

X – Attribute included NF – Not Found, exploration for the attribute is not complete

Unkwn – Exploration is complete, but no conclusion is possible

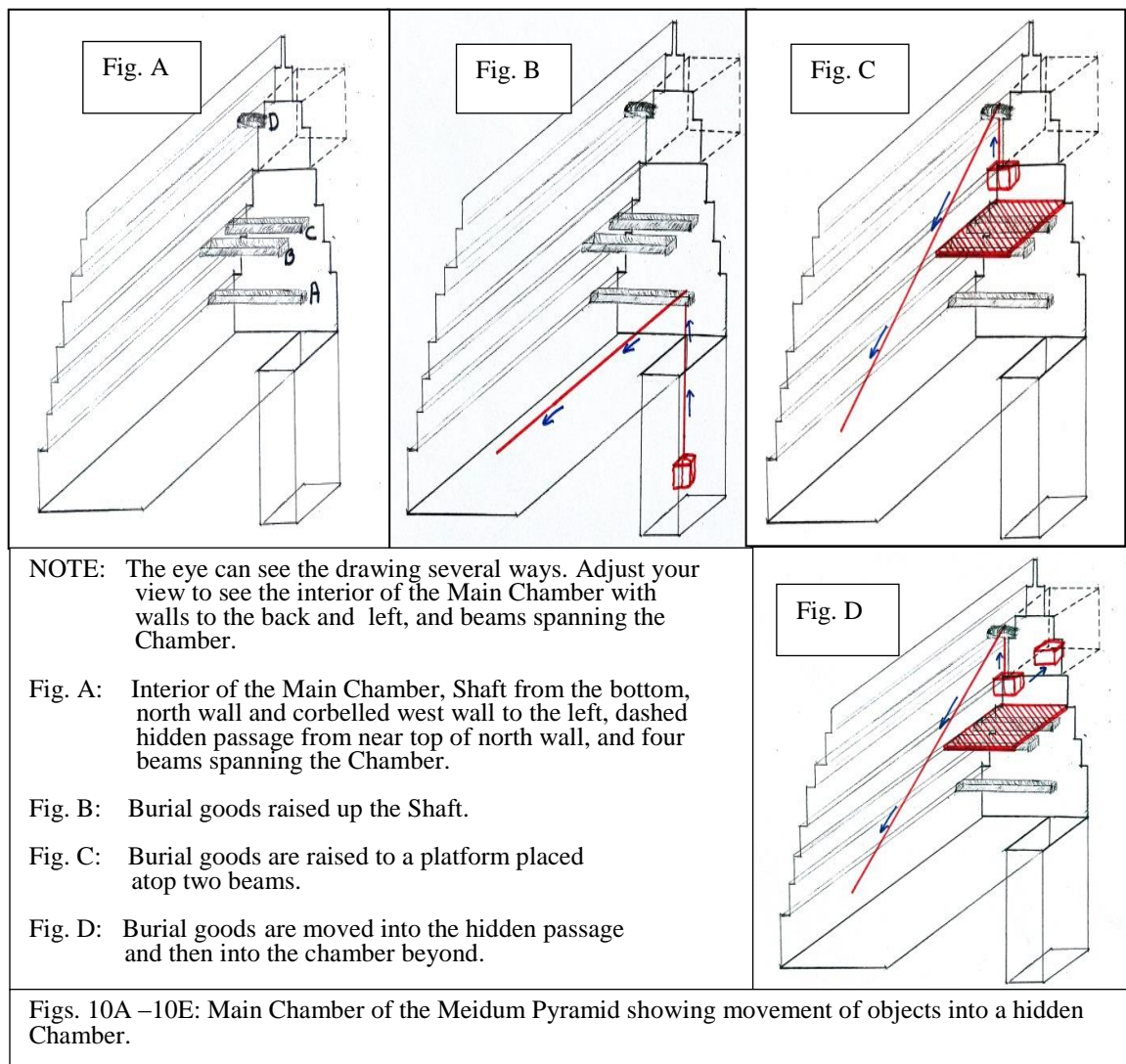
Not Complete – Build of the pyramid complex was halted before completion and not known if the attribute would have been included. Notes 24, 25, and 26 in last column of chart: See Notes area at end of article.

For the first time in pyramid building, the Bent, Red, and Meidum pyramids all had their entrances high on their north faces, descending passages leading to two internal spaces, and corbelled ceilings. Of particular importance to this analysis is that both the Bent and Red Pyramids have a passage hidden high in a corbelled ceiling that leads to the burial chamber, just as is proposed for the Meidum Pyramid.

BURIAL CHAMBER ORIENTATION

When we look at the various parts of pyramid complexes and the internal structure of all 4th, 5th, and 6th Dynasty pyramids that were built by twenty kings over more than 400 years, there is great, almost startling, consistency. Snefru's Meidum Pyramid complex was the first in a long line of successive complexes that followed a standard formula of features. Deviations from the formula are rare, as seen in Figure 9 (previous page). In fact, there are only four deviations in 129 established instances, two of which are in the Meidum Pyramid.

As can be seen in Figure 9, the two features missing from the Meidum Pyramid are a burial chamber aligned east–west, and plug blocks hiding the entrance to the passage leading to the burial chamber. These missing features are remedied by this proposal.



MAIN CHAMBER CONFIGURATION

If the Main Chamber of Snefru's Meidum Pyramid had been intended for the king's burial, only one beam spanning the chamber and above the entrance would have been needed to move burial goods from the Lower Passage, up the Shaft, and into the Main Chamber. There are four beams, however, spanning the Main Chamber (Fig. 10-A, previous page), located in just the right position to move burial goods from the bottom of the Shaft to a passage entrance high on the north wall by the following method:

- Items would first be raised up the Shaft using a rope placed over Beam A and stored in the Main Chamber (Fig. 10-B, previous page).
- A platform would be placed over Beams B and C. Relatively light items would be lifted manually from the floor of the Main Chamber to men on the platform and passed into the passage.
- Heavier objects could be raised from the floor of the Main Chamber using a rope over Beam D, set onto the platform, and then passed into the passage (Figs. 10-C and D, previous page).

The men pulling on the ropes would have to stand in the Main Chamber. For raising items up the Shaft, there would be room for about eight to twelve men pulling on two or three ropes. Due to the direction of a rope placed over Beam D, however, there could be only one person per rope, so the pulling power and the weight of the objects would be limited.

There are, nevertheless, alternatives for raising the heavier objects:

- The platform could be removed temporarily, the item raised from the Main Chamber floor to above the platform level, the platform replaced, the item lowered onto the platform, and then passed through the passage.
- The platform and Beams B and C could be removed and even heavier items could be raised from the Main Chamber floor by several men pulling on a rope placed over Beams D and A.
- The object could then be pulled directly into the passage by other men already standing there (Fig. 11).

SUMMARY

It seems possible, if not probable, that there is a blocked passage high on the north wall of the Main Chamber of the Meidum Pyramid that leads to an as yet undiscovered burial chamber. A number of clues lead to this conclusion:

- Snefru was the apparent builder and owner of the Meidum Pyramid.
- Snefru's Bent and Red Pyramids each have a passage hidden high in a corbelled ceiling that leads to the burial chamber. A similar architectural feature can be expected in the Meidum Pyramid.
- Pyramid complexes of the 4th, 5th, and 6th Dynasties followed a strict architectural formula. That formula was followed by Snefru in his Bent and Red Pyramids at Dahshur. However, in the Meidum Pyramid, no blockage before the burial chamber or a burial chamber with a long,

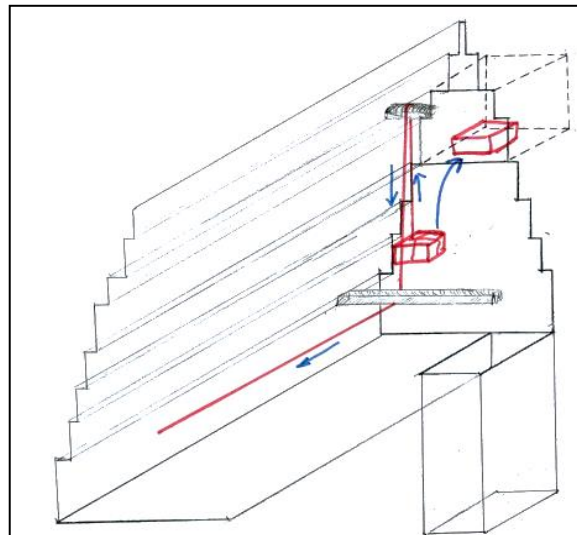


Fig. 11. Redirecting the rope over two beams would allow more men to raise heavier burial goods.

east–west axis has been discovered yet. It seems reasonable to assume that Snefru would have followed the same formula in all of his pyramids.

- The beams in the Main Chamber of the Meidum Pyramid are well placed for raising burial goods to a hidden passage and into another chamber beyond the passage.

NOTES

1. In 1974, Kurt Mendelssohn proposed that the mound was actually the debris left when the pyramid collapsed. The composition of the mound does not support this theory, however, and it has been discarded.
- ². According to Maragioglio, TAV. 4, the full height of the ceiling is 16' 7". However, the 1'8" high top corbel is only a couple inches wide, thus making the effective ceiling height 14' 11".
- ³. For example, beams are still in place on the exterior of Djoser's Step Pyramid, and holes that once held beams can be seen in the lower chambers of the Red Pyramid, in the Grand Gallery of Khufu's pyramid, and in the Antechamber of Menkaure's pyramid (which may have been designed as his original burial chamber).
4. Maragioglio, TAV. 4.
5. See, for example, Lehner, 97.
6. Petrie, *Medum*, 6. In measurements used by the ancient Egyptians, these correspond to a base of 275 cubits, a height of 175 cubits, and a slope of 5 palms and 2 digits.
7. Rigano, Chapter 2, pg. 3.
8. Lehner, 209, 221.
9. Petrie, *Medum*, 7. The enclosure wall actually measures 118 feet on the east and west sides, 116 feet on the south, and 183 feet on the north.
10. Petrie, *Medum*, 9.
11. Maragioglio, TAV. 4.
12. Maragioglio, TAV. 4 and Petrie, *Medum*, 11. For purposes of comparison, the Main Chamber of the Meidum pyramid is 166 sq. ft., Sekhemkhet's burial chamber is 464 sq. ft., the burial chamber in the Red Pyramid is 378 sq. ft., and the burial chamber in Khufu's pyramid is 590 sq. ft.
13. Dormion, 2 – 7.
14. Clayton, 38.
15. While these may be considered clues, none are a direct attribution to Snefru. Such attribution would require more direct evidence such as his name being inscribed on the Mortuary Temple stelae, a mention of him in the workmen's graffiti, or his identification as the contemporary king in the nearby mastabas.
16. Petrie, *Medum*, 10, 40, Plate XXXII.
17. Harpur, 26.
- ¹⁸. Lehner, 96-97.
19. See, for example, Edwards, Lehner, and Harpur, based largely on Rainer Stadelmann's analysis.
20. Maragioglio, 64. Although the holes are not included in the drawings in TAV. 12, Maragioglio states that there are numerous holes with both circular and square sections. It is possible that circular beams were used with ropes for raising objects and that square beams were used to hold a platform.
21. Consider, for example, that at the top of the Grand Gallery in Khufu's Great Pyramid, 24 feet above the floor, there is an entrance to a passage that leads to the lower of five Relieving Chambers. The pyramid had been open for 945 years before Nathaniel Davison found the passage in 1765.

22. Maragioglio, 130. Maragioglio describes two holes just above the entrance. Additional holes in the side walls were observed and photographed by the author.
23. Based on Lehner, and the current author's personal observations.
24. It is uncertain whether the standard was for the burial chamber to be oriented with a long east–west axis, or if this was just a means to have the sarcophagus oriented north–south.
25. While the Burial Chamber itself is slightly longer on its north–south axis, the whole upper structure, including the Connecting Passage, has a longer east–west axis.
26. The original burial chamber was oriented with a long, east–west axis. However, a passage was cut through the chamber floor and another burial chamber was constructed with a long, north–south axis. When Vyse opened the chamber, he found the sarcophagus against the west wall with the sarcophagus oriented north–south.

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